

SUMMARY REPORT OF NC COLLABORATORY COVID-19 RESEARCH

Principal Investigator:

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Project Title:

To Wear or Not to Wear a Face Covering:
Understanding Socioemotional Factors that Predict Sustained Adherence to Novel Behaviors for
the Prevention of COVID-19

Scope:

In step with the rise of large-scale civilizations, humans have endured pandemics, a reality made salient in early 2020 as COVID-19, the disease caused by SARS-CoV-2, reached multiple continents. Absent vaccines, societies rely on people's behaviors to curb the spread of disease. To the extent that government-mandated actions are lacking or inconsistent, people's intrinsic motivation to comply with behavioral recommendations from public health officials becomes a vital determinant of disease spread. The United States (US), however, faced both cultural and socio-political barriers to gaining immediate and widespread adoption of novel health-protective behaviors.

To accelerate understanding of these issues, the PI's team undertook theory-driven research to investigate factors that shape people's intrinsic motivation to adopt and sustain behaviors to protect community health. Guided by PI Fredrickson's *Positivity Resonance Theory* of co-experienced positive affect, Aim 1 was to test the hypothesis that high-quality social connections marked by co-experienced positive affect would bear a unique association with prosocial tendencies that are tied to behaviors that reduce viral spread, such as handwashing, mask wearing, and social distancing. Aim 2 was to test whether a tech-based behavioral intervention to increase the warmth and friendliness of safe, public interactions could strengthen prosocial tendencies and in turn promote sustained adherence this suite of behaviors that protect individual and public health.

Budget:

We requested a modest budget of \$98,558 to conduct a large-scale, longitudinal survey study of pandemic-related experiences and behavior during the Fall of 2020. We were pleased to be able to complete all project objectives on schedule and under budget, for a total of \$78,624. This cost efficiency allowed us to return \$19,934 to the NC Collaboratory in January, 2021.

In addition to expenses related to collecting longitudinal survey data, the following four project personnel received support from this project, all working at UNC-Chapel Hill (albeit remotely due to COVID concerns):

Principal Investigator:

Professor Barbara L. Fredrickson, Department of Psychology and Neuroscience

Graduate Student Research Assistants:

Michael Prinzing, Department of Philosophy

Taylor West, Department of Psychology and Neuroscience

Jieni Zhou, Department of Psychology and Neuroscience

Method:

We contracted for research services with Qualtrics to collect 4-wave panel data from a nationally representative sample of study participants in a randomized controlled trial. We aimed to recruit a nationally representative sample of at least 425 participants who would complete four weekly surveys via Qualtrics Panels. Assuming a conservative estimate of 50% attrition at each weekly survey, we recruited a Week 1 sample size of $N = 3,400$. The data were collected from September 18-October 28, 2020. A total of $N = 602$ participants (43.3% female, mean age = 51; age range: 18-92) completed all weekly surveys. This sample reflected the geographic diversity of the US population (25.6% Midwest; 18.4% Northeast; 31.9% South; 24.1% West), with 77.9% identifying as White or European American, 7.4% as Hispanic or Latin American, 6.5% as Asian or Asian American, and 5.7% as Black or African American.

Participants completed online surveys at each of four Waves, each 7 days apart. At each Wave, they reported on the emotional quality of their social interactions in the previous 24 hours, separately for the sum of their interactions with “close others” versus “strangers/acquaintances.” Respondents also indicated the extent to which they engaged in simple behaviors to limit the spread of COVID-19, including wearing face coverings, washing hands, and maintaining social distance. In addition, although no vaccines had yet been approved for emergency use, participants were asked: “When a vaccine for COVID-19 is offered and most scientific experts believe it is safe, how likely are you to get vaccinated?”

An additional aim of the study was to test the effectiveness of a novel behavioral intervention to improve the emotional quality of public social interactions. To meet this aim, we randomized participants into 2 groups: The Experimental Group watched a brief video on the value of positive social connections and were asked to make it a priority, on Survey Days, to experience more such moments with less familiar others (e.g., strangers, co-workers, neighbors) by showing kindness, interest, or gratitude. Those randomized to the No Intervention Control Group were simply asked to monitor their experiences on Survey Days.

Results:

Data collected for this project supported Aim 1 by showing a clear association between the emotional quality of people’s day-to-day social connections (i.e., positivity resonance) and their prosocial tendencies, a composite measure that reflected altruism, empathy, perceived oneness, and love of humanity. In turn, people’s levels of prosocial tendencies accounted for the link between high-quality social connection and behaviors undertaken to limit the spread of COVID-19.

Unfortunately, data did not allow test of Aim 2. This was because the Social Connection Intervention was not successful in shifting the emotional quality of day-to-day social connections among those randomized to the Experimental Group. We attributed this failed intervention to the constraints imposed by the study team’s infrequent contact with research participants, which occurred only weekly. We note that the team’s prior studies that maintained daily contact with research participants (which was cost-prohibitive for a panel design of this scale) had shown a similar behavioral intervention to be effective in shifting social behavior.

Nevertheless, the data collected with the support of the NC Collaboratory have supported (and will continue to support) the preparation of multiple empirical manuscripts related to the global pandemic. Among the most significant of these is a paper that demonstrates the link between people’s high-quality social connections and their intentions to be vaccinated, a link accounted for, as hypothesized, by prosocial tendencies (Berman et al., 2021). These data have also

supported the examination of the links among income, income inequality, and the quality of people's social connections in public settings, with results showing that low-income individuals residing in areas with the greatest income inequality report the most impoverished quality of social connections in public settings. Given the severe economic challenges associated with the pandemic combined with rising income inequality in the US, this research begins to document the socio-emotional costs and associated health risks of having low financial means in the context of others' apparent wealth (West et al., 2021). Our team also forged collaborations with researchers in Japan and South Korea to collect parallel survey data in these East Asian cultures. These parallel datasets will leverage the NC Collaboratory-supported data even further by supporting cross-cultural examination of the hypotheses tested under Aim 1 as well as ancillary tests of hypothesized cross-cultural differences in the socio-emotional correlates of widespread use of face coverings that were predicted based on established US-East Asian differences in the frequency and magnitude of smiling in public.

Discussion:

Overall, results supported the hypothesis, drawn from Positivity Resonance Theory, that the emotional quality of social connection builds self-transcendent prosocial tendencies that motivate behaviors to protect community health. Specifically, social interactions marked by mutual warmth, concern, and synchrony were associated, both cross-sectionally and prospectively, with reported pandemic-era health behaviors that can curb viral spread (i.e., washing hands, wearing masks, getting vaccinated). Furthermore, evidence suggested that the pathway between positivity resonance and COVID-19 health behavior is indirect, as hypothesized, accounted for by the higher levels of prosocial tendencies associated with more frequent experiences of positivity resonance.

This program of research offers the first evidence that the affective quality of people's ordinary social interactions in both private and public spaces may shape the enactment of infection-reducing behaviors. These studies contribute to a growing body of work on the importance of prosocial psychological processes for the promotion of public health behaviors such as handwashing and mask wearing during epidemics and pandemics. Importantly, this research expands past work by identifying positivity resonance, a marker of high-quality social connection, as a precursor to prosocial tendencies. Thus, this work is the first to our knowledge to spotlight the role of co-experienced positive affect in promoting adherence to behaviors that promote public health. This evidence bears implications for ongoing and future public health initiatives to address pathogen outbreaks in the US and other nations that face similar sociocultural barriers to immediate and widespread behavior change and must therefore rely on individuals' prosocial motives to protect that nation's health.

Outputs:

Although data analysis and manuscript preparation based on these Collaboratory-funded data are ongoing, our team has submitted a number of Abstracts to scientific conferences based on emerging evidence. Each will be translated into a full-length empirical article to be submitted for publication. Manuscripts in preparation based on these data include:

- Berman, C. A., West, T.N., Zhou, J., Le Nguyen, K. D., Tan, K. R., Prinzing, M. M., & Fredrickson, B. L. (2021). *The affective quality of social connections predicts vaccine intentions during the COVID-19 pandemic through prosocial tendencies*. Manuscript in preparation.
- West, T.N., Zhou, J., Hitokoto, H., Otake, K., Choi, I., & Fredrickson, B. L., (2021). *Within and between culture relational mobility & distal-other social connection during COVID-19: the role of behavioral adaptations when mask-wearing*. Manuscript in preparation.

- West, T.N., Payne, B. K., & Fredrickson (2021). *High economic inequality creates barriers to shared positive affect between weak ties for low-income individuals*. Manuscript in preparation.

Closely related work from Fredrickson's research team also addresses behavioral and psychological aspects of the COVID-19 pandemic and has recently been published. These early publications include the following three papers:

- Waters, L., Algoe, S. B., Dutton, J., Emmons, R., Fredrickson, B. L., Heaphy, E., Moskowitz, J. T., Neff, K., Niemiec, R., Pury, C., & Steger, M. (in press). [Positive psychology in a pandemic: Buffering, bolstering, and building mental health](#). *Journal of Positive Psychology*.
- West, T. N., Le Nguyen, K. D., Zhou, J., Prinzing, M. M., Wells, J. L., & Fredrickson, B. L. (in press). [How the affective quality of social connections may contribute to public health: Prosocial tendencies account for the links between positivity resonance and behaviors that reduce the spread of COVID-19](#). *Affective Science*.
- Prinzing, M. M., Zhou, J., West, T. N., Le Nguyen, K. D., Wells, J. L., & Fredrickson, B. L. (2020). [Staying 'in sync' with others during COVID-19: Positivity resonance mediates cross-sectional and longitudinal links between trait resilience and mental health](#). *Journal of Positive Psychology*.