Youth and adults in 21st-century society are exposed to various types of media and technology—including social media, Internet, television, films, music, video games, and advertisements—during the majority of their waking hours. Studies suggest that some of these exposures negatively influence key health behaviors such as substance use or diet and exercise patterns. However, other media messages—such as those from public service announcements or health-promoting smartphone applications—may improve health outcomes. Understanding how media, technology, and health outcomes interact will empower us to develop educational and policy-related interventions which encourage the positive and lessen the negative health impacts.

With this in mind, the first focus of MTH is to investigate associations between media messages, technological innovations, and health outcomes. In particular, we focus our interest on topics relating to substance use (such as tobacco and alcohol), mental health, and communications between patients and healthcare providers.

Second, we aim to improve health outcomes via developing, implementing, and evaluating interventions related to media messages and technological advances. Interventions involve policy implementation, education, and other organizational or procedural change.

A vital part of our work is focused around mentorship. MTH supports interdisciplinary research interests for all mentees, including undergraduate and graduate students, medical trainees, and post-doctoral scholars. The symbiotic relationship between MTH and mentees results in one-of-a-kind educational experiences as well as innovative research ideas.

TABLE OF CONTENTS
2 Mission Statement
3 Director’s Message
4 The People of MTH
6 Student Spotlights
7 Students
8 Affiliated Faculty
9 Publications
12 By the Numbers
13 Grants
14 Center News
16 In the Headlines
19 Contact Us
DIRECTOR’S MESSAGE

MEET BRIAN A. PRIMACK, MD, PHD

Dr. Brian Primack is the Director of the Center for Research on Media, Technology, and Health; Professor of Medicine, Pediatrics, and Clinical and Translational Science; Dean of the University Honors College; and Bernice L. and Morton S. Lerner Endowed Chair.

After graduating from Yale University with degrees in English and Mathematics, Brian spent four years teaching adolescents and studying human development for his master’s degree, which he received from Harvard University. He subsequently graduated first in his class from Emory Medical School and trained in Family Medicine in Pittsburgh.

WELCOME

In response to two high profile suicides related to social media, some Colorado teens took matters into their own hands. More than 1500 students—recognizing the role social media had played in this tragedy—pledged to give up social media for the entire month of October 2017. The movement continues well after October and now involves youth from 240 schools in 7 countries.

We are pleased that our research investigating social media and mental health was featured in news coverage around this grassroots movement. Furthermore, one of our research publications in this area, “Social media use and perceived social isolation among young adults in the U.S.,” became the University of Pittsburgh’s #1 publicized article for 2017. It has also been named by Altmetric as the #1 publicized article ever published in the American Journal of Preventive Medicine. Notable news outlets included the NIH Director’s Blog, NPR, and BBC.

But social media is here to stay, and it is therefore crucial that we help determine best practices for its use to maximize our emotional health. Leveraging the generous support of the Fine Foundation, we are currently developing these best practices in an evidence-based way. Stay tuned for our 2018 report!
Ariel Shensa, MA • Statistician and Data Manager

Ariel Shensa has been with MTH since 2010. She received her BA in Psychology from Chatham University and MA in Research Methodology from the University of Pittsburgh. She is currently enrolled in the University of Pittsburgh’s Clinical and Translational Science PhD program. Her current research focuses on social media-derived support, classification of problematic social media use patterns, and developing longitudinal models of social media use and mental health outcomes among young adults.

Beth L. Hoffman, BSc • Research Assistant

Beth Hoffman joined MTH in 2014. She received a degree in Human Biology from Brown University. She is currently a Master of Public Health student in the Department of Behavioral and Community Health Sciences at the Graduate School of Public Health at the University of Pittsburgh. Her research focuses on the portrayal of health topics in primetime television shows and anti-vaccination sentiment on Facebook.

César G. Escobar-Viera, MD, PhD • Postdoctoral Associate

César G. Escobar-Viera became part of MTH in 2016 and is currently working on several projects related to the impact of social media on mental health outcomes, especially potential risk and protective factors associated to social media use among sexual minority individuals and other minority populations. He received his PhD in Health Services Research from the University of Florida. César completed his medical education and clinical training in Psychiatry in Paraguay, where he also served as CMO of the only public psychiatric hospital during the Psychiatric Reform in the country. His main research interests include leveraging social media and consumer information technology to improve both mental health outcomes and access to mental health services for minority individuals.

Jaime E. Sidani, PhD, MPH, CHES • Assistant Director

Jaime Sidani joined MTH in 2011 after practicing as a university health educator for five years. After graduating from the University of Rochester with a BA in Health & Society, she received a Master of Public Health degree from the Northwest Ohio Consortium for Public Health and a PhD in Health Education from the University of Toledo. Her main research interests include adolescent health behavior and tobacco use prevention, with a specific focus on media and technology.
Michelle Woods became part of MTH in 2016 after working in the publishing industry and in social media management. She received a BA in Writing from Grand Valley State University in Michigan and earned a copy editing certificate at the University of Chicago. She is currently enrolled in the Master of English program at the University of Pittsburgh. She is interested in adolescent media use.

Jason Colditz, MEd • Program Coordinator

Jason Colditz has been with MTH since 2012 and is responsible for overseeing day-to-day operations and research staff. He received a BS in Psychology and Communications and an MEd in Social and Comparative Analysis, both from the University of Pittsburgh. Jason is currently a PhD student in the Clinical and Translational Science program at the University of Pittsburgh. His primary research interests include social media use typologies, early-intervention models and social support for behavioral health conditions using online technologies, and econometrics of research.

Kar-Hai Chu, PhD • Assistant Professor of Medicine

Kar-Hai Chu joined MTH in 2016 after being a Research Scientist at the University of Southern California for several years, studying various public health issues, including tobacco control, community health coalitions, and social media based health surveillance. He received his BS in Computer Science from Johns Hopkins University, MS in Computer Science from Columbia University, and PhD in Communication and Information Sciences from the University of Hawaii. His current research is focused on innovative methods of using online technologies to support health science.

Michelle S. Woods, BA • Communications Officer

Michelle Woods became part of MTH in 2016 after working in the publishing industry and in social media management. She received a BA in Writing from Grand Valley State University in Michigan and earned a copy editing certificate at the University of Chicago. She is currently enrolled in the Master of English program at the University of Pittsburgh. She is interested in adolescent media use.
Elyse Harrington, MPA
Director of Data Management and Analysis, Independent Sector
MTH mentee, 2008–2009

Elyse Harrington completed an internship at Magee Womancare International where she developed healthcare programs for Somali women living in Pittsburgh, after which she decided to focus on healthcare and sociology for her honors thesis. The paper she developed under Dr. Brian Primack’s advisement, “What works to prevent adolescent smoking? A systematic review of the National Cancer Institute’s research-tested intervention programs,” was published in the Journal of School Health. The manuscript, on which Elyse was first author, was accepted for publication before she even finished her undergraduate studies.

After earning her BA in Sociology, she attended George Washington University for her Masters of Public Administration. Her focus on nonprofit management prepared her for her current role as Director of Data and Analysis at Independent Sector, where through her work in the charitable sector she advocates for public policies, does research, and connects organizations and leaders. By creating strategies for collecting and analyzing data, Elyse ensures that the nonprofit is continuously improving processes and making data-driven decisions. The analytic expertise she uses daily in her work were vital skills that she developed under Dr. Primack’s mentorship while working on her honors thesis.

Daria Williams
Undergraduate psychology student, University of Pittsburgh
MTH mentee, 2015–present

Daria Williams joined MTH as a First Experiences in Research (FER) student, which culminated in the presentation of her original research, a practical opportunity to explain her work to the University of Pittsburgh community. Her FER research project used Yelp to identify waterpipe tobacco smoking establishments near large U.S. universities.

Using the experience she gained from her FER project, she helped to extend this work toward a follow-up project using Yelp to track the characteristics and proliferation of vape shops in Pennsylvania. Daria co-authored the resulting presentation, which was well-received at the 2017 Conference of the American Public Health Association. Through this work, she also mentored a subsequent FER student in codebook development and qualitative coding. For Daria, MTH provides opportunities to learn about new areas of public health research, gain confidence in presenting her work, and develop research skills that she then can pass on to newer research assistants at MTH.

In addition to continuing her research with MTH, Daria is part of several chemistry research labs at the University of Pittsburgh. She also completed a summer undergraduate research fellowship at the University of Rochester Medical Center, which was comprised of research and educational components including emergency and operating room rotations, MCAT prep, and problem-based learning. After graduation, Daria plans to go to medical school to pursue a career in pediatric psychiatry.
University of Pittsburgh students thrive at MTH. The Center offers students guidance and direction, work experience, and insight into the world of academic research. The following showcases our students in 2017 and their research topics.

**STUDENTS**

**GRADUATE STUDENTS IN MEDICINE OR PUBLIC HEALTH**

- **Meghan Bisbey**  
  Type of social media use and emotional health

- **Bethany Corbin**  
  Prescription education for medical students

- **Sabrina Karim**  
  Social media content and social isolation

- **Daniel Rzewnicki**  
  Attitudes toward technology and emotional health

**UNDERGRADUATE STUDENTS**

- **Daria Williams and Charis Williams**  
  Waterpipe tobacco smoking establishments on Yelp

- **Kirsten Wade**  
  Social media platforms and eating concerns

- **Tabitha Yates**  
  Public opinion of hookah on Twitter

- **Erica Barrett**  
  E-cigarette and vaping establishments on Yelp

- **Christine Stanley**  
  Public opinion of e-cigarettes on Twitter

- **Chandler Larkin**  
  Real-time infoveillance of Twitter health messages

- **Erin Whaite**  
  Social media and mental health, Facebook ‘likes’
MTH is positioned across the health sciences, which includes the University of Pittsburgh schools of medicine, public health, nursing, pharmacy, rehabilitation sciences, and dental medicine. We also work with many researchers outside of health sciences, including the schools of social work and arts and sciences. The following are some of our key collaborators within Pitt and beyond.

**Nicholas Bowman, PhD**  
Communications, Social Media  
West Virginia University

**Carl Fertman, PhD, MBA, CHES**  
Education, Adolescent Development

**Michael Fine, MD, MSc**  
Medicine, Clinical and Translational Research, Health Disparities

**Renee Hobbs, EdD**  
Media Literacy Education, Communications  
University of Rhode Island

**A. Everette James, JD, MBA**  
Health Policy and Government

**Kevin Kraemer, MD, MSc**  
Alcohol Use, Clinical Medicine

**Jessica Levenson, PhD**  
Clinical Psychology, Sleep

**Mike Marshal, PhD**  
Public Health, LGBT

**Steven Martino, PhD**  
Health Psychology  
RAND Corporation

**Elizabeth Miller, MD, PhD**  
Pediatrics, Adolescent Medicine,  
Community-Based Research

**Brooke Molina, PhD**  
Psychiatry, Psychology, Youth Development,  
Substance Use

**Ana Radovic, MD**  
Adolescent Medicine

**William Shadel, PhD**  
Health Psychology, Media Messages,  
Substance Use  
RAND Corporation

**Ron Stall, PhD**  
Public Health, LGBT

**Galen Switzer, PhD**  
Medicine, Psychiatry, Psychometrics

**Charles Wessel, MLIS**  
Library Science, Systemic Reviews
## 2017 PUBLICATIONS

<table>
<thead>
<tr>
<th>Author(s)</th>
<th>Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levenson J, Shensa A, Sidani JE, Colditz JB, Primack BA.</td>
<td>Social media use before bed and sleep disturbance among young adults in the United States: A nationally-representative study. <em>SLEEP.</em></td>
</tr>
<tr>
<td>Colditz JB, Chu K, Switzer GE, Pelechrinis K, Primack BA.</td>
<td>Online data to contextualize waterpipe tobacco smoking establishments surrounding large U.S. universities. <em>Health Informatics Journal.</em></td>
</tr>
</tbody>
</table>
## 2016 PUBLICATIONS

<table>
<thead>
<tr>
<th>Title</th>
<th>Journal</th>
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<tbody>
<tr>
<td>Associations between internet-based professional social networking and emotional distress.</td>
<td>Cyberpsychology, Behavior, and Social Networking.</td>
</tr>
<tr>
<td>Consensus statement on assessment of waterpipe smoking in epidemiological studies.</td>
<td>Tobacco Control.</td>
</tr>
<tr>
<td>Trajectories of substance use as predictors of antisocial personality disorder, major depressive episode, and generalized anxiety disorder.</td>
<td>Addictive Behaviors.</td>
</tr>
<tr>
<td>Association between social media use and depression among U.S. young adults.</td>
<td>Depression and Anxiety.</td>
</tr>
<tr>
<td>The association between social media use and sleep disturbance among young adults.</td>
<td>Preventive Medicine.</td>
</tr>
<tr>
<td>Systematic review and meta-analysis of inhaled toxicants from waterpipe and cigarette smoking.</td>
<td>Public Health Reports.</td>
</tr>
<tr>
<td>Social media use and perceived emotional support among U.S. young adults.</td>
<td>Journal of Community Health.</td>
</tr>
<tr>
<td>A randomized crossover study of Web-based media literacy to prevent smoking.</td>
<td>Health Education Research.</td>
</tr>
<tr>
<td>Waterpipe tobacco policy: Qualitative synthesis of national, state, and local policy texts.</td>
<td>American Journal of Health Promotion.</td>
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<tr>
<td>2015 PUBLICATIONS</td>
<td></td>
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<tr>
<td>-------------------</td>
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<tr>
<td>Phelps-Tschang J, Miller E, Rice K, Primack BA. Web-based media literacy to prevent tobacco use among high school students. <em>Journal of Media Literacy Education.</em></td>
<td></td>
</tr>
<tr>
<td>Soneji S, Sargent JD, Tansky SE, Primack BA. Associations between initial waterpipe tobacco smoking and snus and subsequent cigarette smoking: Results from a longitudinal study of U.S. adolescents and young adults. <em>JAMA Pediatrics.</em></td>
<td></td>
</tr>
</tbody>
</table>
### BY THE NUMBERS

Citations since 2010: 3,912*

Publications since 2010: 78

News articles on MTH in 2017: 1,044†

Total audience reached in 2017: 56,800,000†

* Google Scholar estimate
† Estimates provided by University of Pittsburgh Medical Center Media Relations Office

### MTH’s Top Five Most Cited Publications

<table>
<thead>
<tr>
<th>Publication Description</th>
<th>Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Progression to traditional cigarette smoking after electronic cigarette use among U.S. adolescents and young adults. <em>JAMA Pediatrics</em>, 2015.</td>
<td>192</td>
</tr>
<tr>
<td>Association between media use in adolescence and depression in young adulthood: A longitudinal study. <em>Archives of General Psychiatry</em>, 2009.</td>
<td>189</td>
</tr>
</tbody>
</table>
CURRENT GRANTS

**Leveraging Twitter to monitor nicotine and tobacco-related cancer communication**
National Cancer Institute (NCI R01)
2018–2022

**Optimizing mental health in the age of social media**
Fine Foundation
2017–2019

**Cessation in non-daily smokers: An RCT of nicotine replacement therapy with ecological momentary assessment**
National Institute on Drug Abuse (NIDA R01)
2014–2019

**Waterpipe tobacco smoking among adolescents and young adults in the United States**
National Cancer Institute (NCI R01)
2010–2018

**Alcohol marketing and underage drinking**
National Institute of Alcohol Abuse and Alcoholism (NIAAA R01)
2014–2017

**Improving U.S. health policy regarding waterpipe tobacco smoking**
National Cancer Institute (NCI R21)
2014–2017

**Sponsored health information technology and evidence-based prescribing among medical residents**
Agency for Healthcare Research and Quality (AHRQ R21)
2014–2017
On March 6, UPMC and University of Pittsburgh medical experts hosted a press conference to discuss Allegheny County’s proposed e-cigarette regulations. Among the speakers was MTH’s Dr. Brian Primack, informing about current e-cigarette research. Dr. Primack, referencing MTH research and additional sources, spoke about secondhand vaping exposure and e-cigarettes as initiation to traditional cigarette smoking rather than a smoking cessation aid.

The following day, Allegheny County Council members voted to approve the vaping regulations, which prohibit e-cigarette use in restaurants, stores, and public buildings, as identified in the state ban on indoor tobacco smoking.

The faculty and staff of MTH represented the University of Pittsburgh with eight posters, two roundtables, and two oral presentations on a variety of topics between the Society for Behavioral Medicine in San Diego in the spring and the American Public Health Association annual meeting in Atlanta in November.

César G. Escobar-Viera
- Passive and active social media use and depressive symptoms among online recruited young adults

Beth L. Hoffman
- PA policymakers’ attitudes & knowledge regarding waterpipe tobacco smoking & electronic nicotine delivery systems
The American Public Health Association Annual Meeting

Kar-Hai Chu
- Detecting opinion change about waterpipe tobacco smoking on social media

Jason Colditz
- Observation of public sentiment toward Human Papillomavirus vaccination on Twitter
- Regional prevalence of ENDS retailers in Pennsylvania using open data from the Yelp platform

Jessica Levenson
- Social media use before bed and sleep disturbance among young adults in the United States: A nationally-representative study

Brian Primack
- The association between valence of social media experiences and depression among U.S. young adults
- Comparison of toxicant load from waterpipe and cigarette tobacco smoking among young adults in the United States
- Positive and negative social media experiences and social isolation

Ariel Shensa
- Real-life closeness of social media contacts and depressive symptoms among university students

Jaime Sidani
- Individual social media platforms and eating concerns: A nationally-representative study of U.S. young adults

Erin Whaite
- Social media use, personality characteristics, and social isolation among young adults in the United States
In March, MTH published “Social media use and perceived social isolation among young adults in the U.S.” in the *American Journal of Preventive Medicine*.

The study was widely covered by more than 200 news sources, including the *NIH Director’s Blog*, *NPR*, *BBC*, *Psychology Today*, *Australian National TV*, and 12 live interviews for Canadian Broadcasting Corporation, which is similar to *NPR* in the United States.

To the left is the Altmetric score for “Social media use and perceived social isolation among young adults in the U.S.” This graphic quantifies the amount of public exposure the article has received, which includes more than 250 major news articles. A score of 2,157 ranks in the top 1% of all Altmetrics, and the top score for all 2,500 articles in the *American Journal of Preventive Medicine*. It was also 73rd in Atlmetric’s Top 100 Articles of 2017 from a pool of 2.2 million articles and the top research output from the University of Pittsburgh.
In August, the *New Pittsburgh Courier* featured e-cigarettes on their health page, which included an editorial by Dr. Kar-Hai Chu on the link between vaping and social media and commentary from Dr. Brian Primack on e-cigarette laws, flavors, and potential to lead to traditional cigarettes.

In December, the *American Journal of Medicine* published MTH research, "Initiation of traditional cigarette smoking after electronic cigarette use among tobacco-naïve U.S. young adults." Media coverage included the *Pittsburgh Post-Gazette, International Business Times*, and *Pittsburgh Tribune-Review*. 
Other news sources sought to add the expertise of MTH to their articles by featuring commentary by Dr. Brian Primack.

- **Time**
  - 8 ways to stay energized all day

- **Weight Watchers**
  - Can screens make you sad?

- **Forbes**
  - Ways social media makes millennials feel insecure

- **Pittsburgh Post-Gazette**
  - Pokémon Go, the app that turned a video game into a movement, has its first birthday

- **CBS Pittsburgh**
  - ‘Powerful piece of art’: Musician's new song kicks off ‘Put Down the Phone’ movement

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**Portrayal of alcohol brands popular among underage youth on YouTube:** A content analysis. *Journal of Studies on Alcohol and Drugs.*
A digital copy of this report is available at http://mth.pitt.edu/media/AnnualReport_2017.pdf