

## Health and Social Interactions:

Lane Strathearn, Jian Li, Peter Fonagy and P. Read Montague. What's in a Smile? Maternal Brain Responses to Infant Facial Cues. *Pediatrics* 2008;122;40

Healthy mothers were shown images of their infant's facial expressions while undergoing functional MRI. "This study shows that when... mothers observe their own infant's face, all of the key dopamine-associated reward-processing regions of the brain are activated."

Yang Claire Yang, Courtney Boen, Karen Gerken et al. Social relationships and physiological determinants of longevity across the human life span. *PNAS* 2016; 113(3): 578-583.

"Full social participation is such a fundamental human need that research since the 1900s has found the lack of social connections increases the odds of death by at least 50%...When multidimensional assessments of social relationships were considered, the odds of mortality increased by 91% among the socially isolated."

"Embeddedness in social networks seems to be especially critical for health during the formative years of building social relationships in adolescence... The robust findings ...suggest that these early relationship contexts and connections play a role in predisease pathways into adulthood...[A]dolescent social connections differentiate health risks in young adults, long before symptoms or overt signs of disease emerge."

Julianne Holt-Lunstad, PhD, Theodore Robles, PhD and David A Sbarra PhD. Advancing social connection as a public health priority in the United States. *Am Psychol* 2017; 72(6): 517-530.

Broad-based epidemiological studies provide clear and compelling evidence that social relationship status and functioning predict an array of important health outcomes and risk for premature mortality...Academics in interdisciplinary fields...have known about these findings for decades...Most notably, the World Health Organization now lists "Social Support Networks" as a determinant of health and the United Kingdom Minister of Health has established loneliness as a health priority...[Lack of social support is] largely unrecognized or underappreciated by the general public...[B]eing socially connected is associated with a 50% reduced risk of early death, demonstrating that social disconnection is indeed a severe problem...In sum, a significant portion of the US population lack social connections...and the magnitude of this risk is comparable currently recognized leading health determinants...Changes in US demographic trends further point to an exacerbation of social disconnection, suggesting an increasing urgency."

Timothy W. Smith, PhD and Karen Weihs, MD. Emotion, social relationships, and physical health: concepts, methods, and evidence for an integrative perspective. *Psychosomatic Medicine* 2019; 81: 681-693.

"Broad patterns such as low social support, social isolation, and loneliness predict earlier mortality...Furthermore, symptoms and diagnoses related to emotional dysfunction (e.g., anxiety, depression, anger, and stress) have robust associations with the development and course of cardiovascular disease, cancer and diabetes, as well as with premature mortality from these and other medical conditions...[E]motional expressions etched on the face and embedded in vocalizations are powerful and rich social communications...Emotions do things, and many of those things are social in nature...Even during pregnancy...evidence suggests that the resulting levels of mothers' stress, social support, and emotional adjustment predict pregnancy outcomes...with consequences for later child health and well-being...[I]t is clear that intimate relationships, parent-child relationships, and relationships with friends and peers are essential contexts for...risk and protective factors for health."

Xiaoquann Zhao, PhD, Maria L Roodis, PhD, Tesfa N Alexander, PhD. Fear and humor appeals in “The Real Cost” campaign: evidence of potential effectiveness in message pretesting. *American Journal of Preventive Medicine* 2019; 56(2S1):S31-S39.

“Research on fear appeals shows that, under the right conditions, fear can be leveraged to motivate behavior change...Existing evidence shows that youth and adults alike tend to rate fear appeal messages as more effective than humorous messages...The study...included two specific at-risk youth groups aged 13–17 years: those who have experimented with smoking but have not yet smoked  $\geq 100$  cigarettes in their lifetime and those who have never smoked cigarettes but are susceptible to initiation...Post hoc comparison showed that exposure to fear messages produced significantly more negative attitudes toward smoking compared with the control condition... Exposure to humor ads did not produce a significant effect.”

#### **Unintended Consequences of COVID Mitigation Measures:**

Stephen W. Patrick, MD, MPH, MS, Laura E Henkhaus, PhD, Joseph S. Zickafoose, MD, MS et al. Well-being of parents and children during the COVID-19 pandemic: a national survey. *Pediatrics* 2020; 146(4): 1-8.

This study was conducted in June 2020 and had 1011 responses, which correlated to a 50% response rate. “More than 1 in 4 parents reported worsening mental health, and 1 in 7 parents reported worsening behavioral health for their children since the pandemic began. Worsening of parental mental health and children’s behavioral health were at times intertwined, with nearly 1 in 10 families reporting worsening of both. Loss of child care, delays in health care visits, and worsened food security were common...Disruption in routines can be detrimental for children, especially those already with behavioral health diagnoses.”

Antonio Ivan Lazzarino, Andrew Steptoe, Mark hamer, Susan Michie. Covid-19: Important potential side effects of wearing face masks that we should bear in mind. *BMJ* 2020; 369.

Editorial discussing possible negative consequences of masking, including quality and volume of speech, exhaled air may go into the eyes which generates impulse to touch them with dirty hands, and masking may cause deeper breathing thus forcing viral particles deeper into the respiratory tract. “It is necessary to quantify the complex interactions that may well be operating between positive and negative effects of wearing surgical masks at population level. It is not time to act without evidence.”

Vanessa C. Fong MSc and Grace Iarocci, PhD. Child and family outcomes following pandemics: a systematic review and recommendations on COVID-19 policies. *Journal of Pediatric Psychology* 2020; 45(10): 1124-1143.

“In the midst of high uncertainty, panic, and fear, parents play a crucial role in providing a stable, secure environment for their children...Coping with social isolation and being cut off from previously relied upon supports in the school and community may be especially difficult.

[Recent] studies have found that PTSD symptoms remain stable after a 6-month and 30-month follow-up...These studies have shown that [quarantine] is a highly stressful and even traumatic experience for adults. One [study] that examined the impact of quarantine on children found that children being isolated were four times more likely to show PTSD symptoms compared to families who were not isolated.

Measuring adolescents’ fear of COVID-19 revealed that a greater level of fear was linked to higher levels of anxiety, depression, and OCD symptoms. A risk factor for PTSD in children was experiencing quarantine and parents’ elevated levels of PTSD symptoms...Adolescents who engaged in social

distancing because they wanted to avoid judgment or because a friend advised them to, reported greater anxiety and depressive symptoms, respectively.

Greater awareness of COVID-19, specifically factual information about the disease, prevention measures, and projections of COVID-19, was a protective factor for negative mental health outcomes in children...[however] these results are correlational and should be interpreted cautiously.

This review has shown that children experiencing social isolation are at a high risk for developing PTSD and anxiety related symptoms...[and] unanticipated consequences of social isolation policies, such as the shutdown of supportive services, has left vulnerable individuals at risk”

Rodrigo S Fernandez, Lucia Crivelli, Nahuel Guimet et al. Psychological distress associated with COVID-19 quarantine: latent profile analysis, outcome prediction and mediation analysis. *Journal of Affective Disorders* 2020; 277: 75-84.

“4408 Argentine volunteers ranging from 18 to 92 years [were included]...Only 102 individuals (2.3%) from the sample tested positive for COVID-19 or knew someone with the disease, and 4328 (98.2%) reported complete quarantine obedience...Data collection started 11 days after the beginning of mandatory quarantine, and...[p]articipants were on average on 20 days in quarantine.

Overall, 60.1% of individuals was over the cut off community norms values, in at least one symptom dimension...The quarantine experience was associated with mild-severe psychological distress and a high prevalence of mental health symptoms [and] the overall quarantine experience was similar for every individual...[I]ndividual characteristics such as being a woman, tobacco smoker or a student, having a previous neurological or psychiatric diagnosis or previous trauma, predicted more severe psychological distress, while being an adult or older adult, married, having upper-class income and exercising during quarantine, were associated with better mental health outcomes.”

Avram R Shack, Leo Arkush, Stephen Reingold, Giora Weiser. Masked paediatricians during COVID-19 pandemic and communication with children. *Journal of Paediatrics and Child Health* 2020; 56: 1475-1476.

An anonymous, online survey was circulated through Israel’s pediatricians with 356 respondents. “The majority agreed that mask-wearing interrupts their ability to interact with children (82%), and that children are more fearful of mask-wearing clinicians (63%). Over half experienced difficulty effectively assessing or treating patients while wearing a mask (59%).” Significant differences were reported when engaging with patients while wearing a mask vs no mask.

Ryan M. Hill, Katrina Rufino, Sherin Kurian et al. Suicide ideation and attempts in a pediatric emergency department before and during COVID-19. *Pediatrics* 2021; 147: 1-6.

Positive suicide-risk screens were reported from January to July 2020 and compared to the same months in 2019 in a large metropolitan area of Texas. Total pediatric ED visits were greatly reduced in 2020 compared to 2019, but suicide ideation was significantly higher in March and July 2020 compared to the same months in 2019 and suicide attempts were significantly higher in February, March, April and July 2020 vs the same months in 2019. Restrictions were beginning to be lifted in May of 2020 in Texas, which could correspond to the timeline of this data.

### **Physician Opinions:**

Dimitri A Christais, MD, MPH. Pediatrics and COVID-19. *JAMA Pediatrics* 2020; 324(12): 1147-1148.

Children make up a very small proportion of the overall COVID-19 cases, typically with minimal symptoms and their greatest risk is a post-inflammatory syndrome (MIS-c), which rarely causes death. "...[M]easuring the effects of COVID-19 on children...involves understanding that they are experiencing other adverse effects from the virus and recognizing that those effects will have lasting and yet to be appreciated consequences...Perhaps the most profound of these effects involves their psychological and educational well-being...the full measure of the effects of COVID-19 on children will not be recognized so much today as it will 15 to 20 years from now... The mantra of my lab is "If you change the beginning you change the whole story." The COVID-19 pandemic has assuredly changed the beginning for millions of children."

Simon Thornley, Michael D Jackson, Gerhard Sundborn. Danish mask study: masks, media, fact checkers, and the interpretation of scientific evidence. *BMJ* 2020; 37:1.

"Firstly, the study was designed to detect a minimal effect of halving of infection proportions with 80% statistical power. In the event, 90% power was achieved. Thus, conventionally, the results...indicate that masks do not prevent covid-19 spread...Should we abandon convention altogether? If we did, we may eventually promote ineffective treatments...Pointing to observational evidence to contradict trial results is another subversion of usual epidemiological practice. While this may seem trivial, it is a subtle distortion of results and the politicisation of evidence in the covid-19 era."

### **Transmission of COVID in Schools:**

Benjamin Lee and William V Raszka Jr. COVID-19 transmission and children: the child is not to blame. *Pediatrics* 2020; 146.

"[A]t Geneva University Hospital...Of 39 evaluable households, in only 3 (8%) was a child the suspected index case...Of 68 children with confirmed COVID-19 [in China] 65 (95.59%) patients were [household contacts] of previously infected adults...Of 10 children hospitalized outside Wuhan, China, in only 1 was there possible child to adult transmission...[T]ransmission of SARS-CoV-2 by children outside household settings seems uncommon...In...France, a 9-year old boy with respiratory symptoms associated with picornavirus, influenza A, and SARS-CoV-2 coinfection was found to have exposed over 80 classmates at 3 schools; no secondary contacts became infected, despite numerous influenza infections within the schools, suggesting an environment conducive to respiratory virus transmission...In New South Wales, Australia, 9 students and 9 staff infected with SARS-CoV-2 across 15 schools had close contact with a total of 735 students and 128 staff. Only 2 secondary infections were identified, none in adult staff; 1 student in primary school was potentially infected by a staff member, and 1 student in high school was potentially infected via exposure to 2 infected schoolmates." Overall, 1070 people were exposed to children with COVID-19 and only 7 became infected.

David J. Weber, Daniel K. Benjamin Jr, Panayotti, Sarah C. et al. Incidence and Secondary Transmission of SARS-CoV-2 Infections in Schools. FOR THE ABC SCIENCE COLLABORATIVE; *Pediatrics* Originally published online January 8, 2021; 147.

11 out of 115 school districts in NC provided data and had in-person school during the entirety of the 9-week study period. There were "...32 adjudicated cases of secondary transmission across the 11 districts combined in 9 weeks of instruction...[and] no cases of child-to-adult within-school transmission". For comparative data, there were 773 total community cases during the same 9 week period. Facemasks when unable to distance (type not reported), distancing and hand hygiene were used in all participating schools.

Water S Gilliam, PhD, Aryn A. Malik, MBBS, MPH, PhD, Mehr Shafiq, BS et al. COVID-19 transmission in US child care programs. *Pediatrics* 2021; 147(1): 1-9.

A total of 57,335 child care providers participated throughout the US. About ½ reported their center closed at the beginning of the COVID-19 outbreak. Most centers were operating with fewer kids than pre-pandemic, sanitizing more frequently, cohorting children, but over ½ reported no mask use in workers or children >2. “Results indicated no association between COVID-19 outcome and exposure to child care.”

Jay K. Varma, MD, Jeff Thamkittikasem MPA, Katherine Whittemore, MPH et al. COVID-19 infections among students and staff in New York City public schools. *Pediatrics* 2021; 147(5): 1-8.

“October 12 to November 20, 288,199 students attended hybrid learning, and 80,876 adults were employed and physically present in schools...During December 7 to 18, these numbers were 164,673 students and 44,634 adults...[COVID-19] [t]esting was performed at least once per month in each school [initially, followed by once per week]...[Out of] 234,132 asymptomatic persons tested ...986 (0.4%) tested positive.” The incidence of COVID-19 cases were higher in the community compared to those associated with the schools throughout the study period.

“A total of 36,423 persons were classified as school-based close contact...[of which], 191 (0.5%) tested positive for COVID-19 during the 14 days of quarantine. For these 191 case patients, 132...[had sufficient information] to infer the likely direction of transmission...[which is as follows:] 67 (51%)...transmission from staff to staff, 36 (27%) from staff to student, 18 (14%) student to staff, and 11 (8%) from student to student...notably...a staff person was the likely index case for 78% of these secondary cases.”

### **Effectiveness of Masks**

C Raina MacIntyre, Holly Seale, Tham Chi Dung et al. A cluster randomized trial of cloth masks compared with medical masks in healthcare workers. *BMJ Open* 2015; 5: 1-10.

Participants in Asia (1,607 people) were divided into three arms: 1) medical masks at all times during shift, 2) cloth masks at all times during shift or 3) control arm which was standard practice (mix of cloth masks, medical masks or no masks). The infection rate of influenza-like-illness (ILI) was significantly higher in the cloth mask arm compared to the other groups. No significant difference between the medical masks arm and control arm.

Noreen Qualls DrPH, Alexandra Levitt, PhD, Neha Kanade, MPH et al. Community mitigation guidelines to prevent pandemic influenza—United States, 2017. *MMWR* 2017; 66(1): 1-32.

Nonpharmaceutical interventions (NPI) recommended for seasonal influenza include: “voluntary home isolation of ill persons, respiratory etiquette, and hand hygiene...[as well as] environmental surface cleaning measures...[NPI] reserved for pandemics include voluntary home quarantine of exposed household members and use of face masks in community settings when ill...[h]owever, little evidence supports the use of face masks by well persons in community settings...[and] [f]ace mask use by well persons is not routinely needed in most situations to prevent acquiring the influenza virus.” The article goes on to discuss social distancing measures, school closures, surface cleaning and online guides for various scenarios.

Patrick Saunders-Hastings, James A.G. Crispo, Lindsey Sikora, Daniel Krewski. Effectiveness of personal protective measures in reducing pandemic influenza transmission: a systematic review and meta-analysis. *Epidemics* 2017; 20: 1-20.

This study looked “to quantify the effectiveness of PPMs [personal protective measures] in reducing the risk of human-to-human pandemic influenza infection.” These measures included hand hygiene, face masks or respiratory etiquette (covering one’s mouth when coughing or sneezing). There were 16 studies included that “described at least one measure of hand hygiene...eight measured the effectiveness of facemask use” and none evaluated the use of respiratory etiquette. A significant protective effect was found for hand washing while “meta-analysis found a non-significant protective effect of mask use in preventing influenza infection.”

Lewis J. Radonovich Jr MD, Michael S Simberkoff MD, Mary T. Bessesen MD et al. N95 respirators vs medical masks for preventing influenza among health care personnel: A randomized clinical trial. *JAMA* 2019; 322(9): 824-833.

Health care providers in outpatient settings were randomized to N95 (1,993 participants) or medical masks (2,058 participants). Primary outcome was laboratory-confirmed influenza. There were 207 influenza cases in the N95 group and 193 in the medical mask group. There was no statistical difference of the incidence of influenza between the two groups.

Tom Jefferson, Chris B Del Mar, Liz Dooley et al. Physical interventions to interrupt or reduce the spread of respiratory viruses. *Cochrane Database of Systematic Reviews* 2020.

There were 67 randomized controlled trials (RCTs) and cluster-RCTs included in this meta-analysis. Of the pooled data, there was no clear reduction in respiratory viral infections when comparing medical/surgical masks to no masks or N95 or P2 respirators to medical/surgical masks. There is a low certainty of evidence that hand hygiene may offer a reduction in respiratory viral illnesses.

Derek K Chu, Elie A Akl, Stephanie Duda et al. Physical distancing, face masks, and eye protection to prevent person-to-person transmission of SARS-CoV-2 and COVID-19: a systematic review and meta-analysis. *The Lancet* 2020; 395: 1973-1987.

This report included 172 observational studies in the systematic review and 44 comparative studies in the meta-analysis. Mask and eye protection were ill-defined. Data only available to analyze intervention effects for transmission (rather than severity of disease). Most studies reported bundled interventions.

“[A] strong association was found of proximity of the exposed individual with the risk of infection...the use of both N95 or similar respirators or face masks...was associated with a large reduction in risk of infection (low certainty)...with stronger associations in health-care settings compared with non-health-care settings...eye protection was [also] associated with lower risk of infection...(low certainty)...[I]n view of the limitations of these data, we did not rate the certainty of effect as high. [It is also to be noted that] some of the masks studied in our review were reusable 12-16 layer cotton or gauze masks.”

Jingyi Xiao, Eunice YC Shiu, Huizhi Gao et al. Nonpharmaceutical measures for pandemic influenza in nonhealthcare settings—personal protective and environmental measures. *Emerging Infectious Diseases* 2020; 26(5): 967-975.

A systematic review of protective measures in reducing influenza infection including hand hygiene, respiratory etiquette and face masks as well as surface and object cleaning as an environmental measure. 12 RCTs did not find a statistically significant effect of hand hygiene decreasing transmission of influenza, 10 RCTs did not find a statistically significant effect of face masks worn by infected persons or uninfected persons on transmission of influenza and was limited evidence that surface cleaning does not reduce the transmission of influenza. No studies were found on respiratory etiquette. “In theory

transmission should be reduced the most if both infected members and other contacts wear masks...but improper use might increase the risk for transmission”.

Henning Bundgaard, DMSc, Johan Skov Bundgaard BSc, Daniel Emil Tadeusz Raaschou-Pedersen, BSc et al. Effectiveness of adding a mask recommendation to other public health measures to prevent SARS-CoV-2 infection in Danish mask wearers: a randomized controlled trial. *Annals of Internal Medicine* 2021.

3030 people were randomly assigned to wear masks in addition to other public health recommendation in Denmark and 2994 were assigned no mask. There was no significant difference in rate of infection with SARS-CoV-2 between groups.

### **Mandatory Vaccines:**

Stanley A. Plotkin and Ofer Levy. Considering Mandatory Vaccination of Children for COVID-19. *Pediatrics* originally published online March 11, 2021

Argument to vaccinate children to protect adults despite the acknowledgement that: “widespread adult vaccination has a good chance of controlling the epidemic...[and] [m]andating vaccination of adults...is likely to be unacceptable in our society...[whereas] mandatory pediatric vaccination has been accepted by most Americans.” It is also acknowledged that “...rate of severe COVID is much lower in the young...[and]...secondary transmission to adults from children was less frequent than from other adults...[but]... children may excrete the virus in stool [therefore putting adults at risk of disease]”.

These arguments are not based on present evidence.