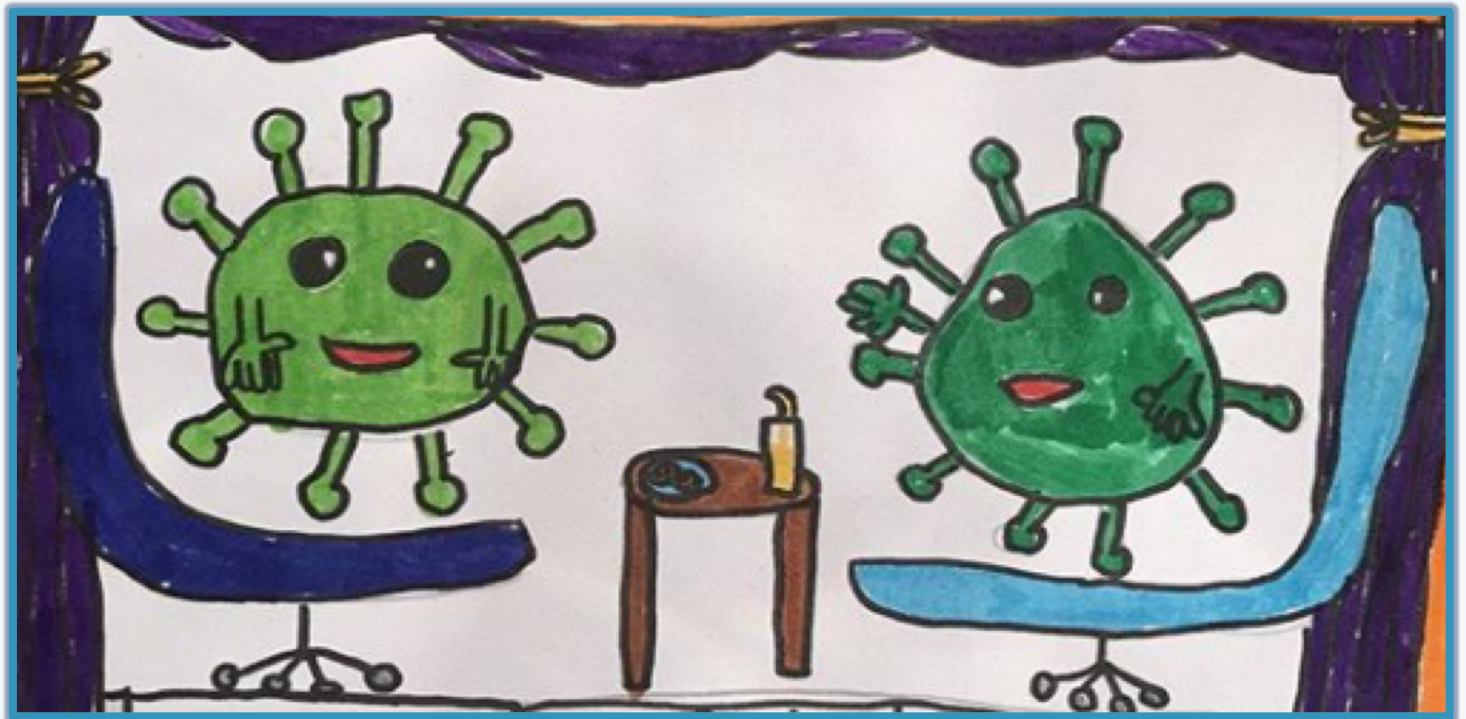


Children's Questions, Worries, and Information Needs During the COVID-19 Pandemic

A study based on listeners of the children's science podcast


brains on!



Drawing submitted by Brains On! child listener

EXECUTIVE SUMMARY

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STUDY OVERVIEW

With the world in the midst of the COVID-19 pandemic, families are seeking trusted and engaging sources of scientific information to help their children understand prevention, transmission, treatment, and many other topics related to COVID-19 in an effort to ease children's fears. The goal of our NSF-funded RAPID research study¹ is to understand how children's science podcasts, as well as other educational products, can provide families with information to help ease children's fears and worries during a pandemic by increasing children's understanding of pandemic-related science concepts, empowering children to ask more pandemic-related questions, and supporting pandemic-related family conversations. This research builds on previous studies we have conducted of the children's science podcast Brains On! (see <http://bit.ly/BrainsOnResearch>).

In March 2020, Brains On! began producing episodes related to COVID-19 and has continued to develop them based on findings from this research (coronavirus episodes released March 10, March 24, April 7, and May 19 can be found here <https://www.brainson.org/page/coronavirus>). The release of the first few episodes coincided with many parts of the United States shutting down schools and restricting various kinds of group activities. However, Brains On! has a global listening audience, so some listener families were experiencing the effects of the pandemic long before the first episode was released. We drew on these global listeners of the Brains On! coronavirus episodes as our sample for this study.

This document provides an overview of findings from the first stage of our research. As you'll see, our research has revealed important insights into the kinds of questions children are asking, the worries they have, and the types of support parents (caregivers) are seeking to be able to engage in discussions with their children about the COVID-19 pandemic specifically, and the science behind viruses and preventative health measures more broadly. We as researchers are living through the virus too, and we acknowledge that our findings may be influenced by our own experiences, even as we have used many strategies to check interpretations, with others beyond the immediate research team. However, taken together, we believe that these findings provide a snapshot of children and families' experiences and questions during the early months of the pandemic.

Methodology

The data for this study are drawn from two different data collection methods: 1) a listener survey, and 2) children's questions submitted to Brains On! or posted on Brains On!'s Facebook page. Detailed descriptions of our data collection methods and corresponding sample information can be found in the full report.

An online survey was conducted with caregivers of children ages 5 to 12 years old who listened to at least one Brains On! coronavirus-related episode. Invitations to participate in the survey were added to current and past Brains On! episodes, posted on Brains On! social media (Twitter, Facebook, Instagram), and included in the Brains On! newsletter. Survey data was collected between June 7 and June 21, 2020. A

¹ This material is based upon collaborative work supported by the National Science Foundation under Grant No. 2029209 titled *RAPID: Addressing Families' Covid-19 Information and Education Needs Through Podcast Media*. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the authors and do not necessarily reflect the views of the National Science Foundation.

total of 401 caregivers of 5 to 12-year-old Brains On! listeners responded to the survey. Caregivers were asked questions specific to the Brains On! coronavirus-related episodes (those findings will be shared in a different report), as well as general questions about the coronavirus. This report is focused on the results of survey questions related to children's general conversations and worries about the coronavirus as well as the resources caregivers are using and additional support they need for talking to their children about coronavirus-related topics.

A unique feature of Brains On!, compared to other children's science podcasts, is that the content of each episode is based on questions children submit to the show. Caregivers submit their children's questions through a Contact Us form on the Brains On! website. We decided to capitalize on Brains On!'s pre-existing audience engagement and question submission process as a data source for our research. We also drew on children's coronavirus-related questions that caregivers posted on Brains On!'s Facebook page. The findings in their report are based on 177 coronavirus-related question submissions from children aged 3 to 13 that were submitted to Brains On! or posted organically to the Brains On! Facebook page from February 1st to June 3rd, 2020.

MAIN FINDINGS

Children's Questions Related to the COVID-19 Pandemic

Children have many questions about the coronavirus and are looking to their caregivers for answers. Almost all caregivers in our study (97%) said their child had asked them a question about the coronavirus. Overall, caregivers are "comfortable or very comfortable" answering their child's questions (90%).

The coronavirus-related questions children submitted to Brains On! spanned a wide range of topic areas. The most frequently submitted questions were related to preventative measures and uncertainty around the length of the pandemic. Some children asked questions about the origin of the coronavirus; transmission, or spread, of the coronavirus; and/or treatments for coronavirus, both in terms of preventative treatment through a vaccine or medicine to treat someone who has contracted the virus. See Figure 8 on Page 39 of the full report for the complete list of question topics.

Child-Caregiver Conversations Related to the COVID-19 Pandemic

All caregivers in our study had at least one conversation, if not more, with their child about the coronavirus. Most had talked with their child about a variety of topics including what the coronavirus is, what children and their families can do to prevent getting sick and prevent spreading the virus, and how their family's daily life had changed because of the pandemic. Overall, caregivers were "comfortable or very comfortable" talking to their child about the coronavirus (96%). More caregivers said they were "very comfortable" talking to their child (74%), than answering their child's coronavirus-related questions (62%).

Children's Worries About the Coronavirus

Worry and fear are common emotions for children during the pandemic. Over two-thirds (68%) of children in our study expressed worries or fears about the coronavirus. Children were worrying about a wide range of things in relation to the coronavirus during the earlier part of the pandemic (between December 2019 to early June 2020). The most frequent worry during this time period was around people getting sick from the coronavirus, often talking about an immediate family member, grandparent, or themselves. A smaller percentage of children were worried about death. Many of children's worries were related to changes in

their lives because of preventative guidelines (such as stay at home orders and social distancing) to stop the spread of the coronavirus – missing family and friends, not being in school, changes in plans, and preventative measures they needed to take themselves. The uncertainty surrounding the pandemic was also worrisome to children as they didn't know how long their life would be changed because of these preventative measures, and some children were worried their life would never go back to "normal." See Figure 5 on Page 12 of the full report for the complete list of children's worries.

Supporting Caregivers' COVID-19 Pandemic-Related Information Needs

Most caregivers in our study (90%) reported turning to resources in addition to the Brains On! podcast to help their child understand coronavirus-related topics. News sources and podcasts (other than Brains On!) were the most frequently mentioned resources. When looking at the intended audiences of these resources, more caregivers are relying on resources meant for adults or a general audience (65%), rather than resources developed specifically for children (40%). This is because there is a lack of sufficient child-focused resources to support kids' pandemic-related information needs. This dearth of ready and appropriate information has left caregivers in the precarious position of filtering and translating complicated and changing pandemic information to their children. As one caregiver described, *"We are doing a lot of 'translating' into accessible terms."*

Caregivers are looking for help discussing a wide-range of topics related to the coronavirus with their child. The topics most frequently mentioned by caregivers are related to the impact of preventive measures on children's lives, more so than topics related to the science of the virus. These impacts of preventative measures include changes in how kids experience school, how to safely socialize and reenter society, what a "new normal" focused on prevention might look like, how to talk about people who are not following guidelines, uncertainty around how long everyone's lives will be different, and effects on mental health related to kids being lonely. The range of emotions kids are experiencing during the pandemic and information about treatment options (especially vaccines) were also topics some caregivers wanted help discussing with their child. See Figure 7 on Page 23 of the full report for the complete list of topics.

CROSS-CUTTING THEMES ACROSS THE RESEARCH

Dealing With Uncertainty

Broad questions and worries about uncertainty -- well beyond the uncertainty of the scientific process -- turned up across the data. There was a sense that while people may know that things will return to normal eventually, no one knows how long that will take. It's important to note that even though the uncertainty caused worries, a sense of continued hope for a return to normalcy was evidenced by many of the participants in this study. But at the same time, we saw repeated concerns that leaders and health experts cannot say how long preventative measures will be in place or how long until key activities, like school, socializing with friends and family, camp, sports, and vacation, will be back to "normal" again, if ever. Some children even expressed a worry that life may never go back to "normal." Underlying much of the uncertainty are questions about vaccine development and when a vaccine will be available, which is seen by many as key to returning to a normal routine.

One way to help address children's feelings of uncertainty is to provide historical context for what they are currently experiencing. Caregivers may have knowledge of historical examples of pandemics, or may have experienced a similar type of disaster, however most children have not. As seen in the data,

caregivers want help talking about historical comparisons of other pandemics. Drawing on historical examples of how children and their families lived during a pandemic, how specific aspects of their lives were different (e.g. school, playing with friends), and how they coped with these changes can help address the uncertainties and worries children are currently feeling, giving them some hope for the future.

Understanding the Nature of Science

Now is a time when people are seeing the scientific process in action in a way they may never have before, including the testing of theories, the gaining of new insights, and the missteps that can happen along the way. In an effort to increase collaboration across the global scientific community, studies are being shared before they are peer reviewed and public health guidelines change as new information about the virus is learned, which at times can contradict what scientists previously thought they knew about the virus. There is a transparency about the messiness of the scientific process that the public often does not see or may not have previously paid attention to. This transparency may make the scientific process seem messier than the version of science often taught in school, causing some people to feel like no one knows the answers, or even harder, that we don't have a roadmap to show us how to get to the answers. As information about the virus changes and guidelines become revised, it can lead people to feel like they don't know what information to believe or what guidance to follow. This changing nature of science is a topic caregivers want help discussing with their child.

This attention to the scientific process, and how new insights are developed, is often referred to as the *Nature of Science*. One aspect of the nature of science particularly relevant to our research is described in the Next Generation Science Standards² as, "Scientific knowledge is open to revision in light of new evidence". As illustrated in Table 1, across ages 5 - 12 (grades K - 6) the standards stress the need to understand the idea that scientific knowledge can change when new information or evidence is found. Though ideas related to the *Nature of Science* have been integrated to a certain extent in science classes for years, it has been added in greater depth to school science standards only in the last decade or two, perhaps missing many of the parents of today's elementary school students and so they may not be adequately equipped for talking about this idea with their children, hence the desire we saw from some caregivers for help talking about this topic with their child.

Table 1. Learning outcomes by grade related to the standard "Scientific knowledge is open to revision in light of new evidence."

Grade range	Learning outcomes
K - 2	<ul style="list-style-type: none"> Science knowledge can change when new information is found.
3 - 5	<ul style="list-style-type: none"> Science explanations can change based on new evidence.
6 - 8	<ul style="list-style-type: none"> Scientific explanations are subject to revision and improvement in light of new evidence. The certainty and durability of science findings varies. Science findings are frequently revised and/or reinterpreted based on new evidence.

² Next Generation Science Standards Lead States. (2013). *Next Generation Science Standards: For States, By States. Appendix H – Understanding the Scientific Enterprise: The Nature of Science in the NGSS*. Retrieved from: <https://www.nextgenscience.org/resources/ngss-appendices>

Changes in Children's Lives Because of Preventative Measures

Many of children's worries are related to the changes in their lives because of preventative guidelines intended to stop the spread of COVID-19 (e.g. stay at home orders, mask rules, and social distancing recommendations). These measures, while instigated for worthwhile reasons, have caused huge disruptions both physically and emotionally for children. Children are not physically going to school, socializing with friends and family, or engaging in routine or planned activities. Avoiding these various activities, while a health precaution, has led to increased social isolation and feelings of loneliness in some children. Caregivers expressed a need for support talking about and acknowledging the sense of loneliness their children may be experiencing. They are also looking for meaningful ways children can safely socialize with friends and family, especially when they lack the in-person interactions with other kids at school.

As parts of society begin to reopen and a "new normal" of living during a pandemic sets in, caregivers want help discussing and navigating the risks related to safely re-entering society and interacting with people outside of their household. This includes visiting businesses that are reopening, going back to school in-person, and participating in other activities that involve interacting with people in close proximity while keeping preventative guidelines in mind. As evident in our data, caregivers are clearly struggling themselves with understanding and evaluating the risks associated with participating in various activities. They are looking for guidance about how their children can socialize safely and navigate the risks involved, particularly setting up activities that children can do with their friends. Caregivers also need support in explaining the reasoning behind relative risks to their children, why preventative measures are important, and how their children can employ them to ensure they are having safe interactions with others.

Children's Mental and Emotional Health

In addition to the emotional impact of preventative measures on their social relationships, many aspects of the pandemic are causing children to experience worry or fear. Much of what children are seeing and hearing about the coronavirus is scary, particularly if they know someone who has contracted COVID-19. Children's top worries about the pandemic were that someone they knew, including themselves, would get sick. Death from the virus came up less often, but was a worry for some children. Worries that weren't related to getting sick, but consequences of following preventative measures as discussed above, also had an impact on children's emotions and mental health. Disruptions to children's daily life and routines, the uncertainty of when they may get to see friends and family again, and a variety of worries related to going back to school were just some of the other worries taking an emotional toll on children. Caregivers are looking for resources to help children understand and cope with the range of emotions they might be experiencing, as well as guidance on how they can support their children's mental health during this time.