GETTING TO THE HEART AND MIND OF THE MATTER:

A Toolkit to Build Confidence as a Trusted Messenger of Health Information

Edition 4 – 2023

WASHINGTON STATE UNIVERSITY

EXCITE
Extension Collaborative on Immunization Teaching & Engagement

Attribution

Getting to the Heart and Mind of the Matter: A Toolkit to Build Confidence as a Trusted Messenger of Health Information

Publish Date: May 23, 2023, Edited September 28, 2023

Citations for this publication may be made using the following:
Washington State University EXCITE (Extension Collaborative on Immunization Teaching and Engagement) Project Team (2023). Title (1st ed). Kansas City: Extension Foundation.

Producer:
Welcome to Getting to the Heart and Mind of the Matter, a resource created for the Cooperative Extension Service and published by the Extension Foundation. We welcome feedback and suggested resources for this publication, which could be included in any subsequent versions.

This work is supported by Extension Foundation EXCITE grant no. 2021-2179 from the USDA National Institute of Food and Agriculture. Any opinions, findings, conclusions, or recommendations expressed in this publication are those of the author(s) and do not necessarily reflect the view of the U.S. Department of Agriculture.

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Acknowledgements

Washington State University's EXCITE (Extension Collaborative on Immunization Teaching and Engagement) team, operating out of the Edward R. Murrow Center for Media & Health Promotion Research, led the charge of providing Extension professionals with resources to equip and empower them to implement vaccine education and other health education initiatives in their communities.

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Executive Summary

The purpose of this workbook is to better equip and empower all Extension professionals to participate as active agents in vaccine education and any other health education initiatives in their communities. The toolkit, and accompanying workshops materials, were created to help professionals learn and enhance communication skills, with an emphasis on HOW to communicate with audiences rather than what to communicate. This research-based, theory-informed, multidisciplinary approach combines the influence of emotions and reason on behavior change communication.

INTRODUCTION

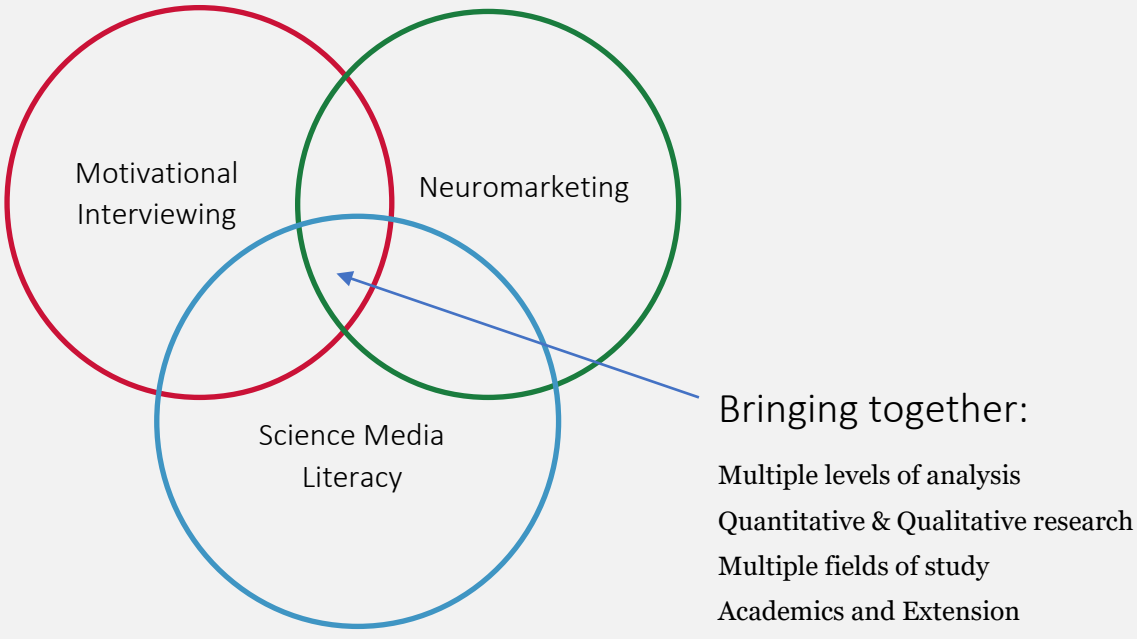
Section 1

Introduction

Welcome to *Getting to the Heart and Mind of the Matter: A Toolkit and Workshops for Building Confidence in Being a Trusted Messenger of Health Information*. In preparation of this e-field book, the Washington State University's EXCITE team conducted a needs assessment to enhance resource development and evaluation for providing Extension professionals with resources to equip and empower them to implement vaccine education in their communities. The assessment, which involved a mixed-methods survey and follow-up focus groups, identified four key needs: tailoring trainings based on Extension roles, prioritizing preserving community trust and professional credibility, establishing connections with medical experts, and strengthening science media literacy skills to counter misinformation and communicate emerging science. The needs assessment findings informed the current toolkit by addressing the unique needs of Extension professionals and offering evidence-based strategies for promoting vaccine education while maintaining trust and credibility within the community.

Our approach combines the influence of emotions and reason on behavior change communication.

Figure 1: Integration of Motivational Interviewing, Science Media Literacy, and Neuromarketing



The content and resources reflect the three-prong approach to this work. The first chapter on *Motivational Interviewing (MI)* discusses that the foundation of how we communicate with individuals is to make them feel understood, confident, and in control to make good decisions. The second chapter on *Science Media Literacy (SML)* focuses on how our SML confidence and skills help ensure we can access, analyze, evaluate, create, and act using media in a variety of forms. The third chapter is about *Neuromarketing (NM)* where we reflect on the human mind and how to apply brain friendly messaging to develop vaccine education content. The pandemic inspired this vaccine focused content, but the information is applicable to all health education initiatives beyond adult vaccination. This tool kit and the accompanying materials are an opportunity to learn and enhance your communication skills, with an emphasis on HOW to communicate with your audience rather than WHAT to communicate with them.

Resource Box:

Peer Reviewed Journal Article	**Effective Messages in Vaccine Promotion: A Randomized Trial** https://doi.org/10.1542/peds.2013-2365

Which of these approaches do you predict are effective for addressing vaccine hesitancy?

- ❑ Correcting misinformation
- ❑ Presenting information on disease risks
- ❑ Using dramatic narratives (stories)
- ❑ Using images of individuals with the disease to make those risks more relevant

Nyhan et al (2014) discovered these approaches may further confuse the issue or increase resistance to vaccinations. Here is a summary of what they found when they showed these different types of vaccine education materials to parents:

- Correcting misinformation about the link between MMR and autism successfully reduced misperceptions ***BUT decreased intent to vaccinate among parents most resistant to vaccinate***.
- On average, simply providing information about disease risks ***didn't improve either attitudes or intentions for vaccinations***.
- An emotional story about an infant in danger ***increased belief in serious vaccine side effects***.
- Showing images of children with visible symptoms of measles, mumps, and rubella ***increased belief in the link between autism and the MMR vaccine***.

Take Aways:

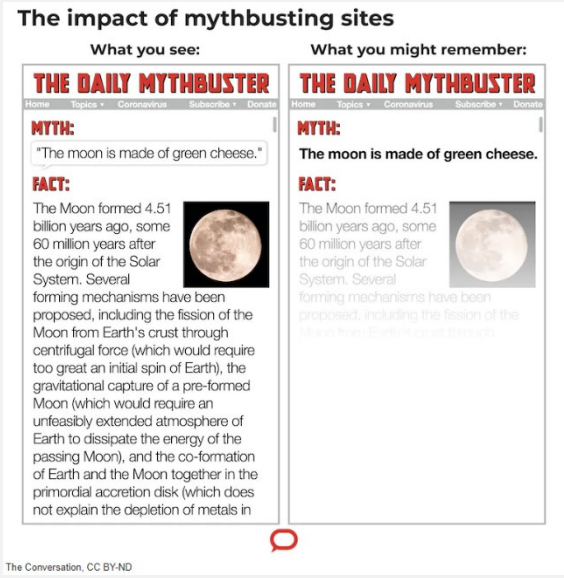
- Trying to change vaccine hesitancy by simply providing facts may backfire and increase resistance.
- Current public health communications about vaccines may not only be ineffective but may increase misperceptions and reduce vaccination intention.

Table 1: Making the Truth Stick

5 Minute Read

Another typical approach for addressing misinformation is to use a “Myth versus Facts” format. But due to how our brain works, this can increase the salience and spread misinformation!

Website Link:



Moving Beyond Facts

> ***"Given that emotions are found to influence vaccine risk perceptions and intentions more strongly than statistical information, vaccine education efforts must move beyond presenting factual information to address emotions surrounding COVID-19 ."***
>
> *-Chou & Budenz, 2020*

According to Chou & Budenz (2020), leveraging and balancing positive and negative emotions are essential for significantly addressing vaccine hesitancy and increasing vaccine confidence.

They recommend three specific strategies, which align with the three communications strategies of Motivational Interviewing, Science Media Literacy, and Neuromarketing.

Table 2. Three Strategies for Leveraging and Balancing Emotions

	Chou & Budenz Recommendations	Examples
1.	Acknowledge fear, anger, and other negative emotions while supporting self-efficacy.	Motivational Interviewing: Use Reflections and Affirmations to validate emotions; provide new information with Ask-Offer-Ask to support autonomy.
2.	Raise awareness of how anti-vaccine groups use negative emotional appeals to amplify fear and anger.	Science Media Literacy: Recognize how groups spreading misinformation and disinformation are manipulating emotions. Develop skills to manage emotions to work with rather than against self-interests when evaluating science media.
3.	Counteract negative emotions and activate positive emotions.	Neuromarketing: Tailor vaccine education content to activate but not overwhelm with negative emotions. Use narrative and images promoting community-

		focused, pro-social values that elicit positive emotions. Motivational Interviewing: highlight feelings of control by emphasizing choice, providing accurate & trusted information and connect vaccine decision to values.

Resource Box:

Peer Reviewed Journal Article	**Considering Emotion in COVID-19 Vaccine Communications: Addressing Vaccine Hesitancy and Fostering Vaccine Confidence.** Article Link

NOTES

MOTIVATIONAL INTERVIEWING

Section 2

Motivational Interviewing

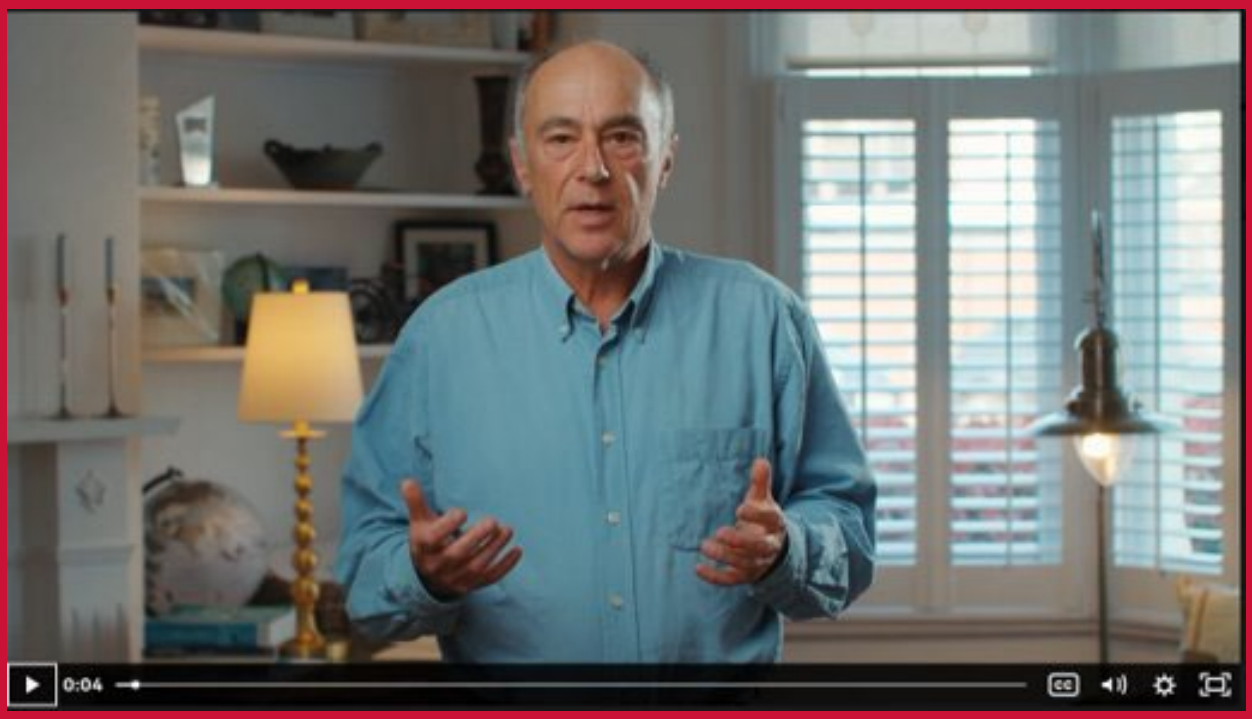
What is Motivational Interviewing? Why Motivational Interviewing for Vaccine Education?

Motivational interviewing (MI) was developed by Drs. Miller and Rollnick to help people change their substance use and health behaviors. MI is defined as:

> A collaborative, goal-oriented style of communication with particular attention to the language of change. It is designed to strengthen personal motivation for and commitment to a specific goal by eliciting and exploring the person's own reasons for change within an atmosphere of acceptance and compassion. (p. 29, Miller & Rollnick, 2013)

In the video below, Dr. Rollnick provides a brief overview of MI.

Video Resource Box: Stephen Rollnick explains Motivational Interviewing



Source: https://psychwire.com/motivational-interviewing/resources/what-is-MI

Why Motivational Interviewing for Vaccine Education?

MI is an evidence-based strategy to engage people in conversations about changes in health behaviors (Rollnick et al., 2023). It is effective in supporting a variety of health behaviors such as medication adherence (Palacio et al., 2016) and smoking cessation (Lindson-Hawley et al., 2015), and has recently been identified as an effective strategy to decrease vaccine hesitancy (Gagneur, 2020).

When utilized by Extension Professionals it provides the avenue for:

- Communicating confidently with anyone about adult vaccines.
- Avoiding unpleasant confrontations while maintaining trust and credibility.

The following exercise is an opportunity for you to reflect on the difference between traditional approaches to vaccine education and MI. Below, you will find a Case Study by Gagneur (2020). Read through the two approaches to responding to a parent, and in the third column record your observations regarding 1) the differences between the two approaches and 2) what other follow up question(s) you could ask to continue the conversation.

Table 3: Case Study (Gagneur, 2020)

Example of traditional approach and use of motivational interviewing in a dialogue about immunization between a Health Care Professional (HCP) and Mother		
Traditional Approach based on education and counseling	Motivational interviewing approach	Record your observations
HCP: It's important to immunize your child. If not, you're putting him in danger. Do you know there are still cases of measles in Canada? This disease could be very dangerous. And what about meningitis? It could be fatal, you know? You should update your child's vaccinations as he is already late according to the schedule. We could do that now if you want. **Mother:** I don't see the urgency. And autism is worse than measles. There are more problems than solutions with this vaccine. Moreover, it's completely unbelievable to give so many vaccines at the same time.	**HCP:** What do you think about the advantage of vaccination? (Open-ended question) **Mother:** Well, I know that vaccines protect children against several diseases that we don't see anymore. My child received all his first vaccines but I'm worried that the measles vaccine could cause autism. For other vaccines, I have fewer doubts but I'm still hesitating.	1) 2)

Source: https://doi.org/10.14745/ccdr.v46i04a06

The Spirit of Motivational Interviewing

Motivational interviewing is founded upon the following principles, also known as the Spirit of MI (Miller & Rollnick, 2013):

Partnership: Invite people to share their expertise on their own lives and experiences. Ask permission to share your expertise about vaccines and check-in about how the information that you share fits with people's values and goals.

Acceptance: Accept people where they are and do not try to persuade or change them. Support people's autonomy to make choices about their lives, affirm their strengths and values, and demonstrate empathy.

Compassion: Communicate to people that we hold their autonomy and well-being as the highest priority.

Evocation: Believe that people have skills, resources, and reasons to change. To this end, actively explore these skills, resources, and reasons to support sustainable change.

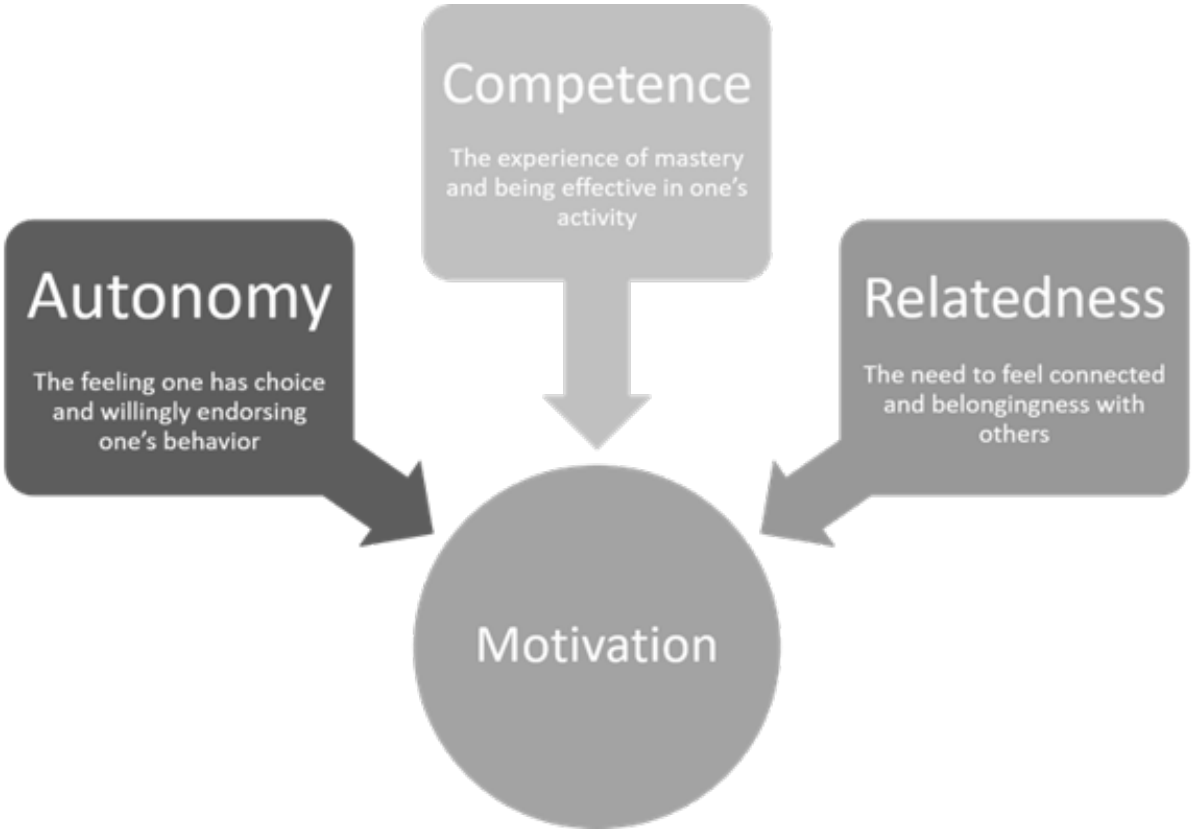
An easy way to remember the Spirit of MI is to think of the acronym **PACE**. We **PACE** our conversations with others: we partner and accept them from a compassionate and evocative stance.

The Spirit of MI helps prevent or decrease *interpersonal discord* (Miller & Rollnick, 2013). *Interpersonal discord* arises when people do not feel heard or understood. It can look like a power struggle, irritation, anger, or giving one-word answers or not answering at all. To decrease *interpersonal discord*, you can (1) come alongside the person and try to understand their point of view, (2) change the topic of the conversation, (3) apologize, or (4) affirm person's autonomy.

Motivational Interviewing and Self-Determination Theory

MI Spirit aligns with the principles of Self-Determination Theory (SDT; Ryan & Deci, 2017). In SDT, intrinsic motivation is supported by *autonomy*, *competence*, and *relatedness*. In MI, intrinsic motivation is supported by Partnership, Acceptance, Compassion, and Evocation. Through Partnership and Compassion, we strengthen our *relationships* with people. Through Acceptance and Evocation, we strengthen people's sense of *autonomy and competence*. In sum, SDT provides a theoretical foundation for supporting intrinsic motivation and MI provides concrete strategies for doing so (Miller & Rollnick, 2012).

Figure 2: Self-Determination Theory of Motivation (Patrick & Williams, 2012)



Four Processes of Motivational Interviewing

Motivational interviewing has four processes that can be used as a roadmap for MI practitioners (Miller & Rollnick, 2013):

Engaging: Before having a conversation about change, you need to build sufficient engagement. During *engaging* you demonstrate curiosity about the other person and who they are.

> *Tip:* Ask the person about their successes, strengths, or values. Affirm their life experiences.

Focusing: Once you have sufficient engagement, you can start to focus on the conversation. Collaboratively with the person, you identify the focus of the conversation. Having a focus will help you move the conversation toward the direction of change.

> *Tip*: Provide the person with a menu of options or a list of potential topics that you could talk about. Invite them to choose one of the topics or identify a different topic.

Evoking: Having a focus helps you evoke the person's own arguments for change (also known as *change talk*). The higher the frequency of these statements, the higher is the likelihood that the person will engage in change. You will find more information about *change talk* in the next section of the Toolkit.

> *Tip*: Explore with the person how *important* it is for them to consider receiving a vaccination and what would need to happen for it to become a little more important. Explore with the person how *confident* they feel about getting a vaccination and what could help them feel a little more confident.

Planning: The planning process invites the person to develop a formal or informal plan of next steps towards a new behavior.

> *Tip*: Invite the person to summarize why this change is important to them, the next steps that they are willing to take towards that change, and who could support them during this change.

Change Talk: Statements about Change

Change talk is at the heart of motivational interviewing and refers to the person's own arguments for change (Miller & Rollnick, 2013). An increase in the frequency of change talk is related to behavior change (Magill et al., 2018). Below you will find the seven categories of change talk. You do not have to memorize these categories; however, having some familiarity with them might help you notice change talk in your conversations.

- **Desire:** I want to change.
- **Ability:** I can change.
- **Reasons**: These are my reasons for changing.
- **Need**: I need to change
- **Commitment**: I will start engaging in the new behavior
- **Activation**: I am considering change.
- **Taking Steps**: I will start/have started to take these steps towards change.

Now, it's your turn to practice recognizing change talk! Find Table 4 below. Read each statement in the first column. In the second column, write-in what change talk category this statement falls under (desire, ability, reasons, need, commitment, activation, taking steps). Have fun with this!

Table 4: Change Talk Exercise

Statement	**Change Talk Category?**
Example: I'd like to find out more information about vaccine safety.	Desire
I am a little afraid that if I don't get the vaccine, I might get sick and not get better.	
I must take care of my family and can't afford to take sick time off.	
I have nothing against medicine. I go to the doctor when I need to.	
I scheduled an appointment at the pharmacy to get my vaccine.	

The Key Motivational Interviewing Technical Skills for Vaccine Hesitancy

- Avoid Righting Reflex
- Reflections
- Open-ended questions
- Affirmations
- Ask-Offer-Ask
- Assessing Vaccine Readiness

In the next pages, we will explore each of these key MI skills that help us demonstrate *the Spirit of MI,* move through the *Processes of MI*, and evoke and reinforce *Change Talk*. This section will provide information to help you understand MI concepts and provide strategies for how to put each concept into practice. Whether you are brand new to MI or have explored these skills in the past, this section gives you the opportunity to apply MI skills to audiences experiencing vaccine hesitancy.

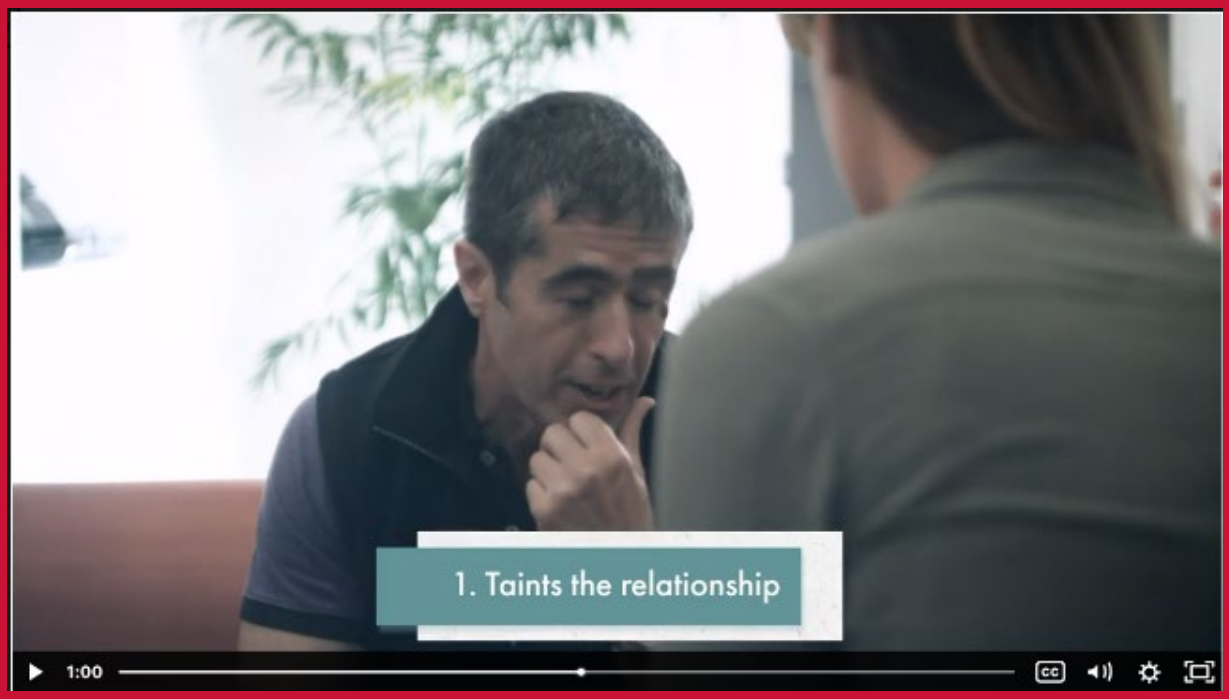
Note: Is it important to emphasize that these motivational interviewing skills are not always utilized in a linear process. Based on the conversation, you might utilize any one of the motivational interviewing skills in any order.

Additionally, these skills do not cover the entire array of Motivational Interviewing skills or concepts. We tailored the information provided in the Toolkit to be focused on the most essential elements of Motivational Interviewing likely to be relevant to Extension professionals engaged in individual or group vaccine education or community outreach.

Avoid Righting Reflex

The “righting reflex” is our urge to correct misinformation or tell people what to do when we have important information. The “righting reflex” makes it difficult to build an effective working relationship and can shut down a conversation (Miller & Rollnick, 2013).

Video Resource Box: Stephen Rollick Explains the Righting Reflex



Source: https://psychwire.com/motivational-interviewing/resources/the-righting-reflex

Think about a time when you used righting reflex in a conversation. Record your thoughts about the conversation: What happened during and after the conversation? How did you feel about the conversation? How do you think the other person felt?

_____

_____

_____

_____

It is important to establish connection before correction and information.

- Resist the righting reflex and just listen
- Use reflections and open-ended questions to build understanding
- Use affirmations to build confidence

What situations will be most difficult for you to resist the righting reflex? What will you do to prepare yourself ahead of time or adjust during the conversation?

_____

_____

_____

_____

Reflections

Reflections are statements that communicate "I hear you and I want to understand you." Reflections, as the name suggests, reflect back to the person what they just said. Sometimes you may want to reflect exactly what that person said (*simple* reflection). Sometimes, reflecting the underlying meaning or feeling of the person's statement might be more impactful (*complex* reflection). Using accurate reflections can build a strong working relationship and help you evoke and reinforce change talk (Miller & Rollnick, 2013). Here are some tips for using reflections:

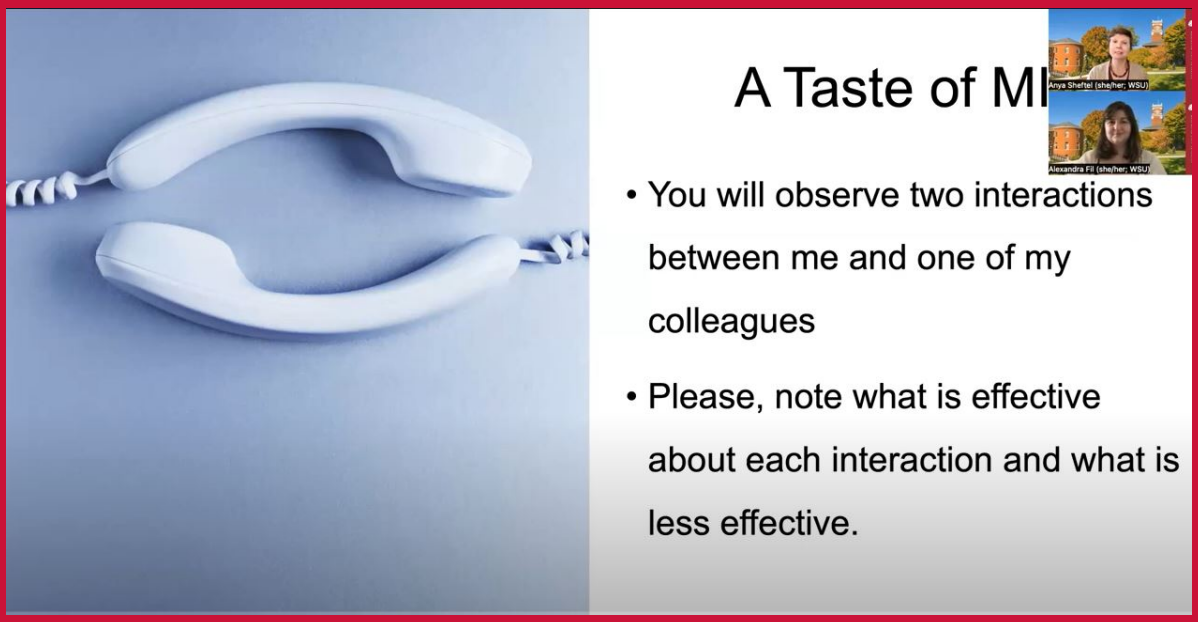
- ❑ Listen for total meaning
- ❑ Respond to feelings
- ❑ Note all cues, including non-verbal clues
- ❑ If possible, avoid: "I hear you saying…" or "I feel like you are…"

1. Practitioners often interrupt a patient's story within _____ seconds of them starting!

2. Motivational Interviewing suggests trying not to do this for _____.

(Answers: 1. 30 seconds; 2. a minute or two)

Video Resource Box: Listening Saves Time



Source: https://www.youtube.com/watch?v=x_hsAx_vXpk&list=PL1KsfivfFEt20R4QIb7KdlecpV16PmiE3&index=4

Reflections help the person you are talking to feel accepted and prompts them to think a little more about what they said. Reflections can be *simple* (restating what the person said) or *complex* (reflecting the underlying meaning or feeling of what the person said) (Miller & Rollnick, 2013).

Scenario 1

Extension Stakeholder:

"I don't see why Extension is doing vaccine education. That is work for the health department."

Simple reflection:

"You don't think Extension should be doing vaccine education."

What other ideas do you have for a simple reflection for this statement?

Scenario 2

Extension Co-worker:

"I wouldn't touch vaccine education with a ten-foot pole! It is so controversial and political. Besides, it is a personal decision, and you can't change people's minds."

Complex Reflection:

"You want some evidence that vaccine education is effective and can support people's individual health choices."

What other ideas do you have for a complex reflection for this statement?

Notes:

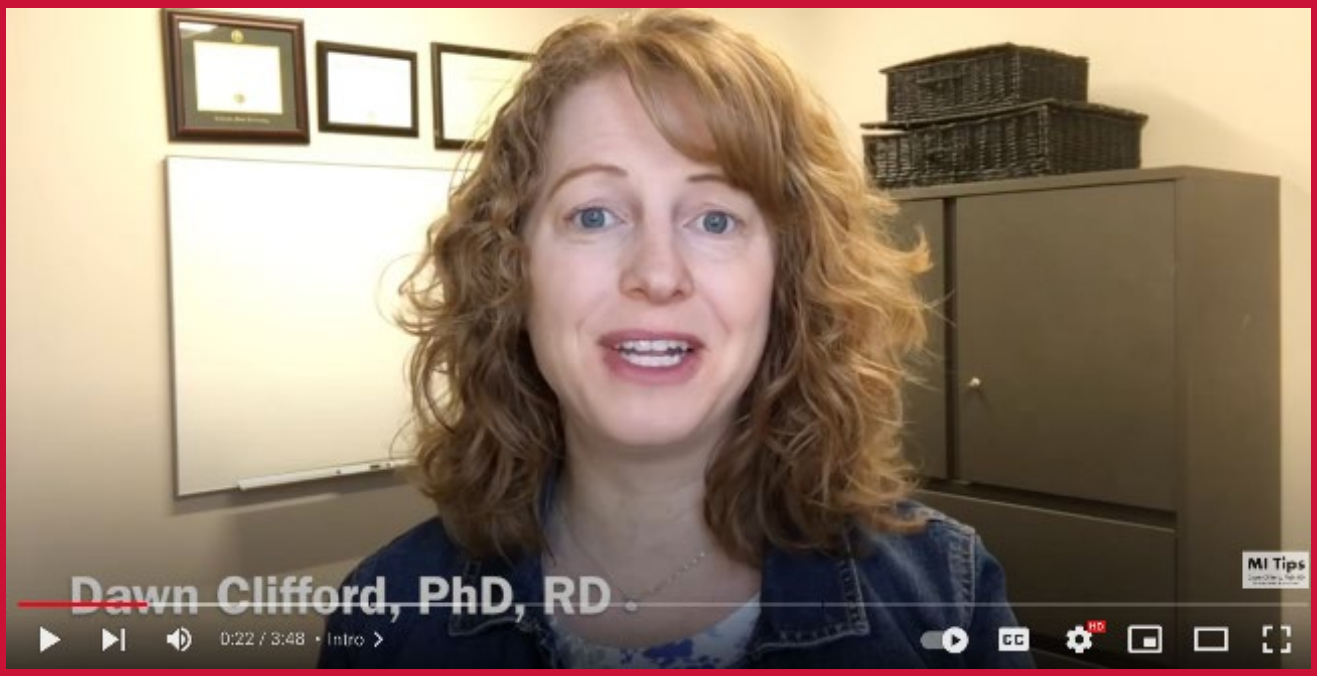
Open-ended questions

Open-ended questions help you move the conversation forward. They are questions that prompt more than just a yes or no response (Miller & Rollnick, 2013). Open-ended questions often begin with the words *How, What, When, and Tell me more about that*. A fun fact – sometimes open-ended questions can sound like a statement rather than a question.

Examples:

- Tell me more about that.
- What do you like/dislike about that?
- What is your biggest concern?
- What are the pros and the cons?
- How might this impact your life?
- How could you find out more information?
- Tell me about the time when you had a make to big decision.

Video Resource Box: Example Open-Ended Questions



Source https://www.youtube.com/watch?v=H582SH2sp8M

Here is an example of using open-ended questions in a conversation:

Community Member: "*Well, don't take that personally, but yes to be honest. At least you are listening to me and trying to understand how we feel in this community*."

Extension Professional: "*What will help you feel more comfortable about this?*" (Open-ended question)

Take a few moments to make the statements below into open-ended questions:

Do you have any questions about adult vaccines?

_____

_____

_____

_____

Do you have any concerns about getting the COVID booster?

_____

_____

_____

_____

Affirmations

Affirmations reflect a person's value, strength, effort, or skill and help build confidence (Miller & Rollnick, 2013).

Video Resource Box: Affirmations in Motivational Interviewing

Source: https://www.youtube.com/watch?v=txbE-cpeLic

In the exercise below, you have an opportunity to practice providing affirmations.

Extension stakeholder: "*Extension shouldn't be promoting vaccines and telling people they should get them*."

Example of an affirmation: "*Making sure people have a choice about vaccines is important to you.*"

What other value, strength, effort, or skills can you get from this statement and provide as an affirmation?

_____

_____

_____

Ask-Offer-Ask for Providing Information

Ask-Offer-Ask is a strategy to share information in an MI-consistent way (Miller & Rollnick, 2013). There are several steps to using this strategy effectively.

Step 1: ASK: "What do you know about _____?"

This step supports the person's autonomy and competence. Additionally, it elicits what information they already know so you don't have to repeat it. After the person shares what they know with you, *affirm* them for their knowledge. Consider using a reflection to highlight any change talk that they might share. See an example of Asking below:

Extension Professional: "*What do you know about vaccine safety*?"

Extension Stakeholder: "*Well, I know that some of them are safe. But some, I am not sure about*."

Extension Professional: "*You've done your homework (*affirmation*). And if you had more information about some of the other vaccines, that'd help you make up your mind about them (*reflection*).*"

Extension Stakeholder: "*Yeah, that sounds about right*."

Extension Professional: "*Would it be ok if I share some information about these vaccines?* (asking permission)" Note: asking permission supports the person's autonomy to decline. If they decline, you do not move to Step 2. If they agree, then go to Step 2.

Extension Stakeholder: "*Sure*."

Step 2: OFFER**:** [Share 1 piece of information].

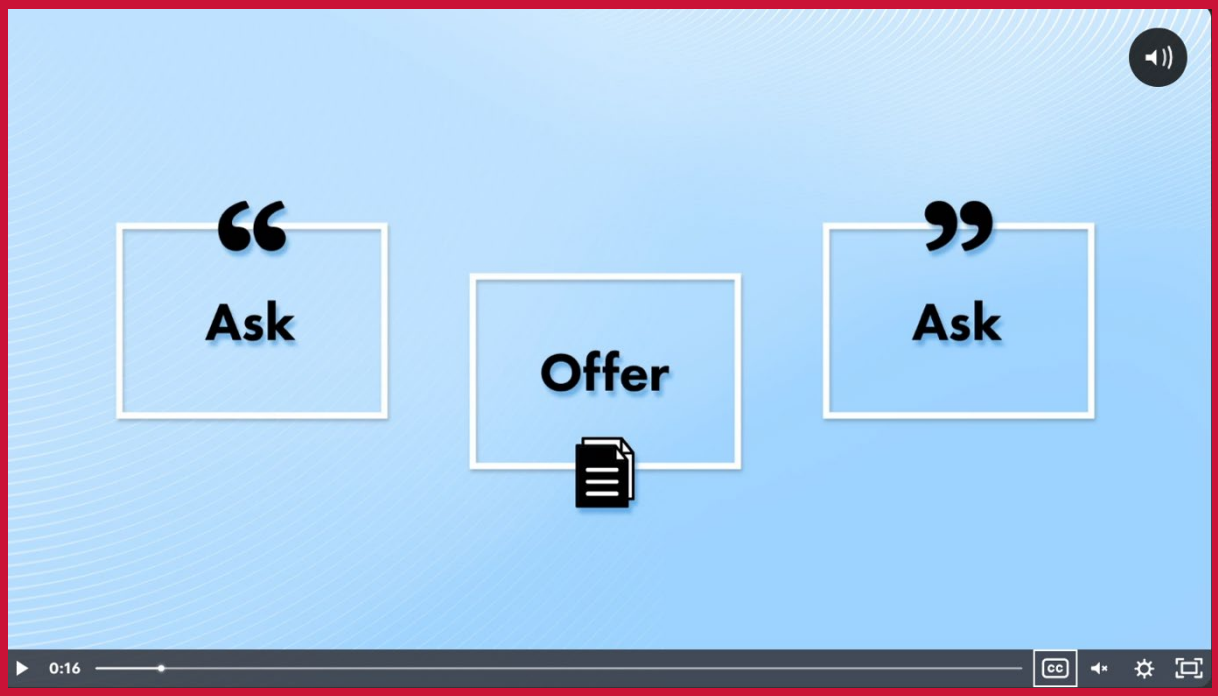
Step 3: ASK: "*What do you think about what I shared*?"

This step allows the person to discuss how this information impacted them. See an example of Asking below:

Extension Stakeholder: "*Well, it kind of makes sense but I am the kind of person who likes to do my own research*."

Extension Professional: "*If you had some resources you read, you would feel more confident in being able to make up your own mind about these vaccines (reflection).*"

Video Resource Box: How to Give Advice in Motivational Interviewing



Source: https://psychwire.com/motivational-interviewing/resources/how-to-give-advice-in-motivational-interviewing

Assessing Vaccine Readiness

Assessing readiness helps us understand how we can best support the other person (Miller & Rollnick, 2013). For example, if the person is not ready to talk about vaccines, we could start to build a relationship with them by having a conversation about their health and affirming their efforts to keep themselves healthy. If a person is very ready and wants to know how they can schedule an appointment to receive their vaccine, we can help them to come up with a plan.

Below you will find the steps of assessing a person's readiness:

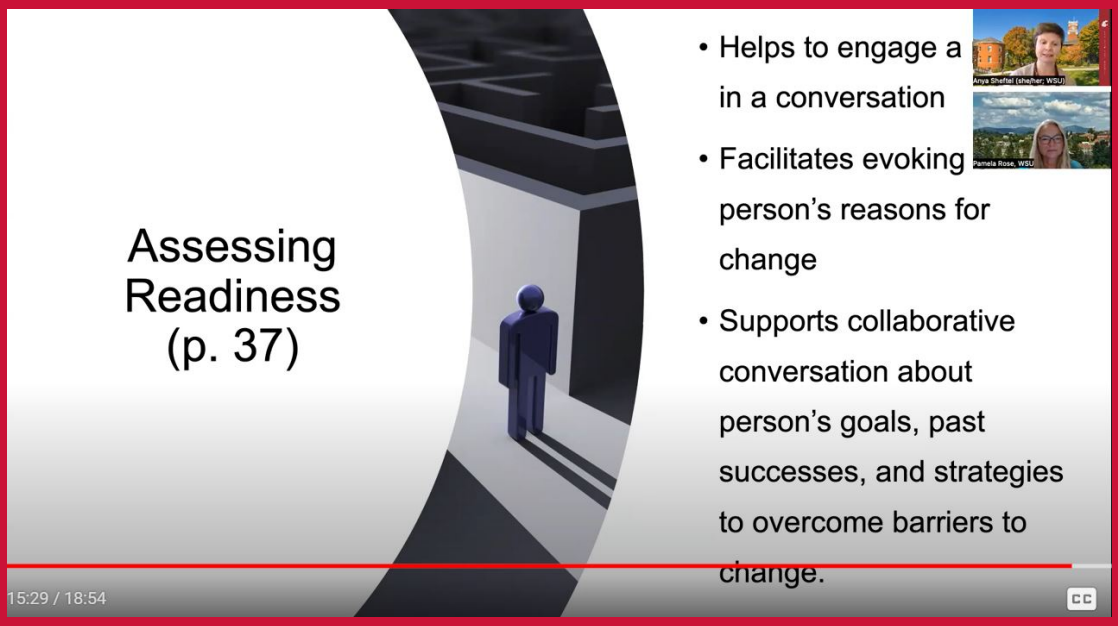
Step 1: Ask the person on a scale from 1 to 10, how ready they are [insert the focus of your conversation].

Step 2: Ask the person *why they are as high as this number and not lower*. This elicits change talk. If a person is at a 1, then affirm that at this time they are not ready.

Step 3: Ask the person *what would help them to become a little more ready*. This also can elicit change talk and help you understand how you can best support them.

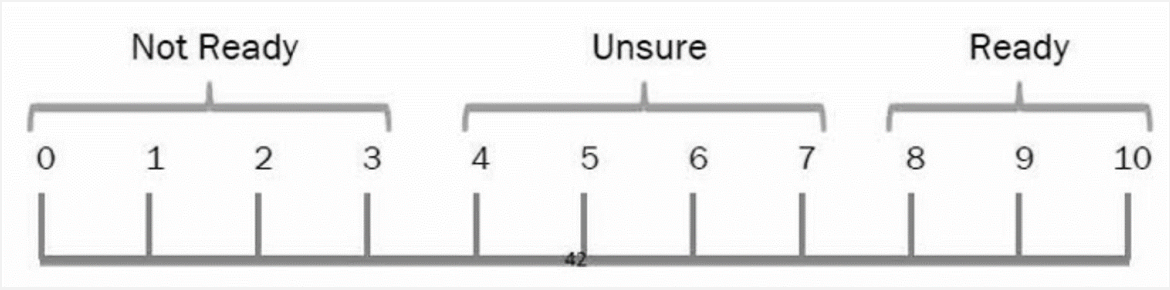
Step 4: Summarize and highlight any change talk. Example: "You are at about a 3 for how ready you are to consider getting a covid vaccine. Your health and the health of your young children is important to you and if you had more reliable information about the safety of the covid vaccine, it might make you feel more ready, like at a 5 or a 6."

Video Resource Box: How to Assess Vaccine Willingness



Source: https://youtu.be/2sL9Tu-pgFo?si=gITHvBYrKp5qOHih&t=942

Figure 3: Vaccine Willingness Readiness Assessment



NOT READY	UNSURE	READY
Get to consider information Avoid psychological reactance	Connect values to vaccines Help resolve ambivalence	Access to information Reduce barriers

Reflection on Conversation Goals of Extension Professionals

A person's readiness can inform the focus of your conversation with them. Perhaps the focus of one conversation is to increase a person's importance to get a vaccination by connecting it to their values. Yet, in another conversation, the focus could be simply building a positive relationship with an Extension Professional. Yet another conversation could focus on increasing a person's confidence in talking to their family members about their decision to get a vaccine. Overarchingly, any conversation will be grounded in MI Spirit: Partnership, Acceptance, Compassion, and Evocation. Another way to think about this is: listen more, talk less.

For Extension Professionals, some of the most challenging conversations about vaccines may be around the topic of whether other Extension professionals or members of the community think Extension should be engaged in vaccine education. This topic provides a great opportunity to reflect on and put into practice the various motivational interviewing skills covered in this section. Keep in mind, the motivational interviewing skill that is used is dependent on the needs of the conversation. There is not a magical order to which motivational interviewing skills are used, as all can have a place in any conversation.

Here is an opportunity for you to practice having these conversations.

Imagine that an Extension stakeholder has made the following statement to you:

"Extension shouldn't be in the business of vaccine education."

Write out possible statements or your personal thoughts in utilizing the following MI strategies in a conversation with this stakeholder:

Think back to MI Processes. How could you engage this person in a conversation?

_____

_____

What could be the potential focus of this conversation?

_____

_____

How could you Assess their Readiness?

_____

_____

How could you use Ask-Offer-Ask?

_____

_____

What Open-Ended Questions could you ask?

_____

_____

What Affirmations could you offer?

_____

_____

Write down a sample Simple Reflection:

_____

_____

Write down a sample Complex Reflection:

_____

_____

How could you evoke Change Talk?

_____

_____

How Could You Avoid the Righting Reflex?

_____

_____

Persona Engagement

Resource Box: Vaccine Hesitancy Course and Video

Source: https://med.stanford.edu/cme/featured-programs/vaccine-hesitancy.html

This course was adapted from the California Coronavirus Testing Task Force, Human Centered Recommendations for Increasing Vaccine Uptake. Published June 8, 2021. Stanford CME is extremely grateful to Kaiser Permanente for permission to create this adaptation. As we see pockets of people unwilling to get the COVID-19 vaccine, we need to ask ourselves what their values are and why they perceive vaccination as a threat to such. This document presents a set of human centered recommendations to increase vaccine uptake and close the gap of herd immunity. World views are the lens through which we perceive risk and make decisions. These are deep seated and unchanging values. They can be understood and used to adapt messaging to be more effective.

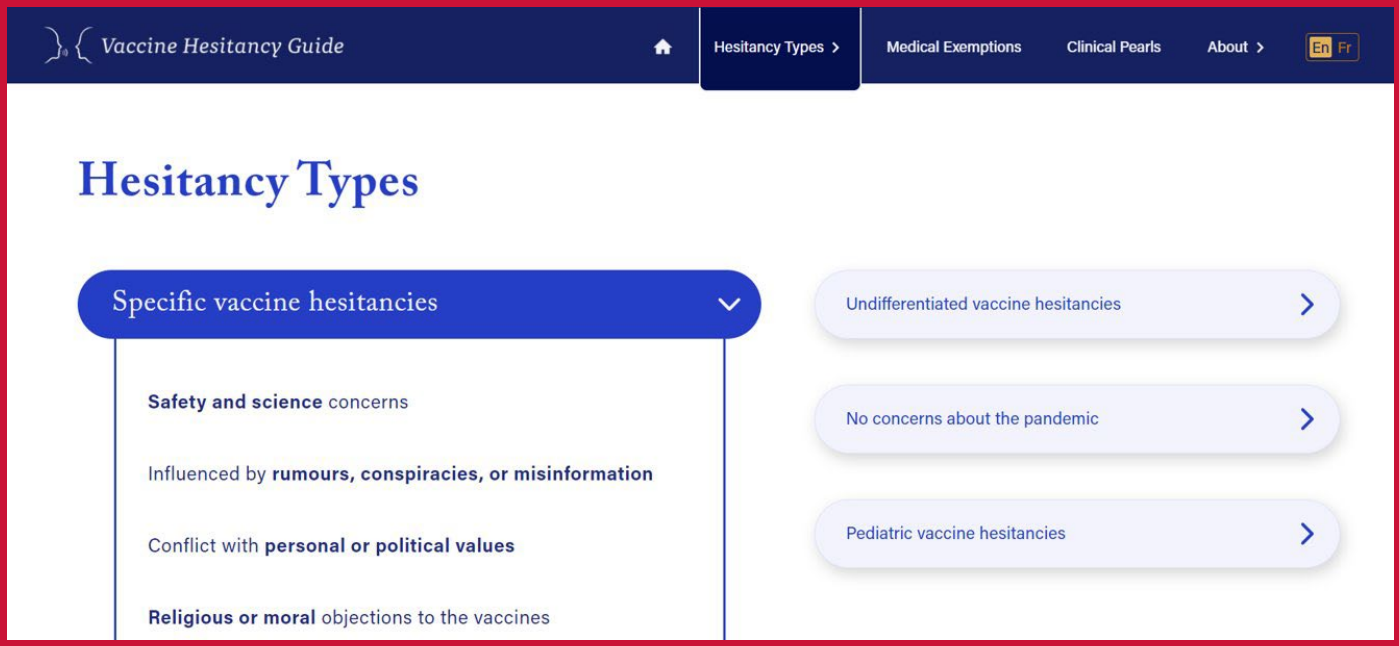
Seven archetypes illustrate people's attitudes and mindsets towards COVID-19 vaccination. These archetypes provide insights into how to improve messaging and engagement to shift people towards vaccine acceptance. Specific examples of messaging and service delivery considerations are provided for each archetype.

Given the information in the video and workbook, utilize the worksheet below to make some observations about individuals you are currently working with as a way to understand the various personas. Think of three people you have recently engaged with on the topic of vaccines. Place their names in the far-left hand box. Then based on your conversations with them, determine which persona best reflects where that individual is at this time. Then also note what does that means you might consider when you approach a future conversation with them.

Table 5: Personas of Engagement for Extension Professionals Worksheet (adapted from Vaccine Mindset Spectrum)

Individuals you work with	Personas of Engagement for Extension Professionals						
Invest	Invest						
Motivate			Motivate				
Inspire						Inspire	
Individuals you work with	Steadfast Opponent	Healthy Independent	Concerned Skeptic	Indifferent Individual	Cautious Supporter	Reluctant Vaxxer	Vaccine Advocate
Name:							
Name:							
Name:							

Resource Box: Vaccine Hesitancy Guide



Source: https://www.vhguide.ca/

The Guide presents advice, scripts, and resources to help navigate conversations about COVID-19 vaccines with hesitant patients. These have been developed with clinicians from across Canada.

Contemplation Worksheet

What resonates with you about motivational interviewing?

_____

_____

What information did you already know but maybe hadn't integrated into your work?

_____

_____

What will be your next steps for employing Motivational Interviewing for vaccine education?

_____

_____

Strategies for adapting MI to groups:

Motivational interviewing is an effective group facilitation strategy (Wagner & Ingersoll, 2012). In a group setting, the Spirit and Processes of MI and MI Technical Skills are used to engage group participants in a conversation, support conversations about change, build group cohesion, and focus on solutions. Think of a group as an opportunity to hear multiple perspectives and increased opportunities to evoke and reinforce change talk. Below you will find concrete strategies by Drs. Wagner and Ingersoll (2012) about how to use MI to engage individuals in a group conversation.

Have a Plan

We encourage you to have a flexible plan and focus for the group conversation. It is easy to be pulled off track by multiple perspectives that might emerge during a group conversation. Having a plan that is shared with the group participants will ease the redirection of the conversation towards to topic at hand. With that said, we encourage you to maintain the stance of Partnerships, Acceptance, Compassion, and Evocation as you move through your plan. For example, if the next item on your plan is for group participants to discuss vaccine efficacy information, yet some of the group participants appear hesitant about this topic you can (1) **Partner** with the group by acknowledging that that this topic might be challenging for some of the group members, (2) demonstrate **Acceptance and Compassion** by affirming that group members want to be thoughtful about their decisions, and (3) **Evoke** from group member how they made difficult decisions in the past. Note, that the last step is focused on increasing change talk among the group participants.

You may also want to start the group with reviewing Group Norms or Group Agreements. This could be a good introductory activity where group participants could have an opportunity to share and engage in a collaborative process of identifying group norms.

Focus on the Positive

Engage the group participants and start to build group cohesion by focusing on the positive. It easy to move into the direction of the negative, or in the case of vaccine hesitancy, why group members do not want to be vaccinated. This can disrupt the group process. To prevent this, you can use MI technical skills to (a) explore participants' reasons for attending this group, (b) briefly acknowledge the reasons why some group members are hesitant about vaccines and (c) elicit any change talk from the group.

Scenario 1

Group Participant 1: "*I don't know if I trust all the information that is out there.*"

Group Participant 2: "*Yeah! Everyone has an agenda.*"

Extension Professional: "*Some of you have concerns about what information to trust. Let me ask the group – how do you all vet information about vaccines to make sure that it is reliable?*"

Bring Group Participants into the Moment

Staying in the present moment can enhance the feelings of safety and group cohesion. Sometimes group participants begin talking about the past or the future. Refocus the conversation on the current thoughts and emotions and tie together common themes across group participants. Doing so will help build a sense of comfort and trust among group participants.

Scenario 2

Group Participant 1: "*I remember when my neighbor got a vaccine and then was really sick. I am so worried about getting sick from a vaccine.*"

Extension Professional: "*Tell me about what it's like for you all to be a part of this group and hearing all sorts of thoughts about vaccines.*"

Group Participant 1: "*It is interesting. I am just not sure I am so ready yet. I have lots of questions.*"

Group Participant 2: "*I kind of like it. As I listen to folks talk, it makes me think more about why I haven't gotten vaccinated yet and maybe it's not that bad.*"

Group Participant 3: "*I actually really appreciate all the information about vaccines through the Extension Office. I hear you all, it is kind of scary with all the mixed messages out there. But it's nice to know that there are ways to find accurate information.*"

Extension Professional: "*It is kind of scary to hear about people getting sick or vaccines not working. And I am also hearing that for some of you this group is making some things more clear, like maybe it's not that bad and maybe actually helpful to get vaccinated.*"

Explore Perspectives and Focus on the Present

To continue to build group cohesion, consider engaging group participants in a values and/or strengths exploration activities. Doing so will help them share more about themselves and their perspectives in a safe and positive way. Use open-ended questions and reflections to elicit information, use affirmations to focus on the positive, and use summaries to tie together and identify common themes in statements from group participants.

Broaden Perspectives and Focus on the Future

It can be helpful to focus on the present and explore perspectives as you are building group cohesion. At the same time, the focus of an MI-based group is on the future choices and actions. Oftentimes people feel stuck in one way of thinking and see their options for the future as restricted. Utilizing the many voices of the group, you can elicit multiple future goals, choices, and options, thus helping group participants broaden their sense of agency in their lives.

Scenario 3

Extension Professional: "*Thank you all for sharing with me about what's important to you and what brings you to this meeting. When you imagine your life in one year, what would it look like?*"

Group Participant 1: "*Well, I'd like to be healthy, and I'd like my kids to be healthy! We are planning a big cross-country trip.*"

Group Participant 2: "*I hope this covid thing really quiets down. I am tired of hearing about it.*"

Group Participant 3: "*I am not sure if I understand your question, but I think I just want to have a good life. Like they said, no worries and healthy.*"

Extension Professional: "*You all want to stay healthy and not feel so on edge. I heard cross-country trip, staying healthy, not worried. What decisions are you making right now that will help you achieve these goals?*"

Group Participant 2: "*We are all here, aren't we? We want to get some clarity about vaccines.*"

Reflect and Explore Change Talk

Help group participants hear each other's change talk. You can use open-ended questions, affirmations, and reflections to amplify group's change talk, thus building a stronger momentum for change. A word of caution – we don' want you to ignore participant statements about not wanting to get vaccinated or their fear about that. If you ignore those statements, the group participants will keep bringing them up because they would want to make sure that you understand their perspective. One suggestion is to briefly acknowledge those statements and then pivot to statements about change. See if you can notice this technique in the scenarios shared above.

Assessing Vaccine Readiness could also be a helpful activity. This will help group participants who are not as ready hear others' perspectives about why they are more ready. You can ask group participants to mark down on a white board where they are at in terms of vaccine readiness. Or, if you want to get them out of their seats, consider asking them to line up from 1 to 10. Then, follow the Assessing Vaccine Readiness instructions from an earlier section in the Toolkit.

Counteract Negative Reactions before the End of the Group

Sometimes tensions will arise during a group conversation. Actively working to reduce interpersonal discord, acknowledging the value of everyone's contribution, and providing affirmations can reduce the feeling of tension. Think of a group activity that you can do to close out the group, such as "affirmation conga line" where each group participant has an opportunity to share what they appreciated about the group. Finally, you can have the group participants share out what next steps they may take towards reducing their vaccine hesitancy. Be sure to give the option of "passing" for participants who are not ready to think about their next steps.

General Considerations: Support Self-Efficacy

The power of the group is that through working together, group participants can walk away feeling supported and heard by multiple others. Group conversations have the potential to help group participants clarify their goals. You can support this process by affirming group participant strengths and values, their past accomplishments, and their commitment to keep themselves and others healthy. It is also important to note that group members will have different goals and while some of them may experience a decrease in vaccine hesitancy, others may not. Reminding group participants that it is ok to have different goals and perspectives can reinforce their sense of autonomy.

General Considerations: Reduce Interpersonal Discord

When interpersonal discord arises, come alongside the group participants. Acknowledge that this is a challenging conversation and affirm group participants' candor. Sometimes it could be helpful to shift the focus of the conversation away from a "hot" topic.

In summary, we encourage you to see group facilitation as an exciting opportunity to elicit and get to know multiple perspectives that your community has about vaccines. Bringing forth these multiple voices can be helpful in understanding what your community needs in terms of vaccine education and how you can best support them, with the ultimate goal of reducing vaccine hesitancy.

Resources for Continued Skill Development

American Hospital Association. (2021). Human-centered recommendations for increasing vaccine uptake. Retrieved from https://www.aha.org/system/files/media/file/2021/06/Human-Centered-Recommendations-For-Increasing-Vaccine-Uptake.pdf

Miller, W. R., & Rollnick, S. (2013). *Motivational interviewing: Helping people change.* Guilford press.

Psychwire. (n.d.). Addressing Vaccine Hesitancy with Dr Stephen Rollnick. Retrieved from https://psychwire.com/motivational-interviewing/addressing-vaccine-hesitancy

Rollnick, S., Miller, W.R., & Butler, C. (2023). Motivational Interviewing in Health Care: Helping People Change Behavior. Guilford Press.

Rosengren, D. (2017). Building Motivational Interviewing Skills: A Practitioner Workbook. Guilford Press.

Wagner C. & Ingersoll, K. (2012). *Motivational Interviewing in Groups*. Guilford Press.

NOTES

SCIENCE MEDIA LITERACY

Section 3

Science Media Literacy

Remember “The Righting Reflex” from Motivational Interviewing?

(Tip: The righting reflex is our urge to correct misinformation or tell people what to do when we have important information.)

What are some examples of misinformation you have heard recently that you have wanted to correct?

_____

_____

How comfortable do you feel addressing misinformation about the COVID-19 vaccine?

- ❑ Very Uncomfortable
- ❑ Uncomfortable
- ❑ Neither
- ❑ Comfortable
- ❑ Very Comfortable

Comfort in addressing misinformation, whether with COVID-19 vaccine, or any other health information topic relates to our confidence in interacting with others about the misinformation. Some people have confidence without skills. Some people have skills without confidence. We must have both confidence and skills. One without the other won’t do.

The objective of the Science Media Literacy section of the toolkit is for you to leave with both more confidence and more skills for identifying and addressing misinformation in your environment.

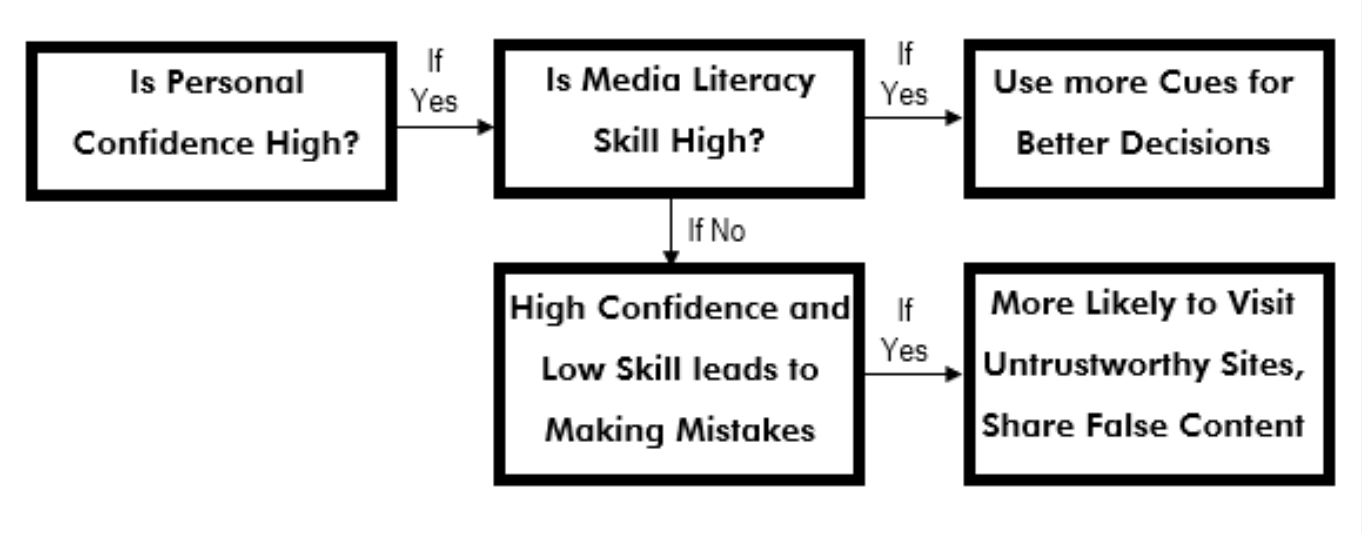
Science Media Literacy Confidence

When it comes to confidence in our own science media literacy, survey researchers have learned that:

When people are overconfident in their news judgments it can make them more susceptible to false news. In a study by Lyons et al. (2021), 3 in 4 Americans overestimated their ability to distinguish between legitimate and false news. Having high confidence and low media literacy skill can lead to problems in navigating information environments, which in turn can cause costly mistakes that hurt people we care about in our communities and beyond.

Here is what they found in their study:

Figure 4: Information Environment Navigation



Source: Lyons, Montgomery, Guess, Nyhan, & Reifler (2021)

There is also research (Austin et al., 2012) showing that those with lesser media literacy skills used fewer cues to evaluate health information and were more likely to make mistakes about their own health, but they still felt confident about their ability to gather information.

In this study, during the H1N1 flu outbreak, college students who tended to rely on their experience level, or year in school, to predict their knowledge and confidence about their information-seeking ability to make evidence-based health choices, were likely to be wrong

about diagnosing themselves.

The ones who diagnosed themselves correctly were more likely to use multiple sources of information, media literacy skills and did not depend on the most easily accessible information. Properly assessing your own media literacy ability is important to avoid being overconfident about information you find, and making sure you critically assess that information.

The challenge of keeping up with science information…

What is Science?

A variety of definitions exist. How well do these resonate with you?

- A system of acquiring knowledge. This system uses observation and experimentation to describe and explain natural phenomena (*Sciencemadesimple.com*)
- (Knowledge from) the careful study of the structure and behavior of the physical world, especially by watching, measuring, and doing experiments, and the development of theories to describe the results of these activities (*Cambridge English Dictionary*)
- An understanding of basic scientific terms, concepts, and facts; an ability to comprehend how S&T generates and assesses evidence; and a capacity to distinguish science from pseudoscience have become widely used indicators of basic science literacy (*National Science Foundation*)

Some of these definitions are static descriptions, but *science changes. Science is a process*.

That is why focusing only on facts and terms provides a very limited view. Science strives for explanations of *HOW AND WHY*.

This means that science requires the ability to manage change.

Teachers of science often are asked to measure "science literacy," and the National Science Foundation regularly releases reports about science literacy. So, then what is science literacy if science changes? What should be measured?

What is Science literacy?

- "Scientific literacy is the knowledge and understanding of scientific concepts and processes required for personal decision making, participation in civic and cultural affairs, and economic productivity." (*The National Science Education Standards*)
- "Scientific literacy means that a person can *ask, find, or determine answers to questions* derived from curiosity about everyday experiences. It means that a person can *describe, explain, and predict* natural phenomena." (*National Academies*)

To summarize: Science literacy is about *critical thinking*.

This means science is a *process,* and science knowledge therefore changes over time. It therefore requires *critical thinking,* which means science literacy requires skills to understand new information scientists make available. It does not mean everybody has to be an expert scientist!

Science Media Literacy Skills

So, what skills do we need to be a competent outsider, to interpret scientific information without getting taken advantage of by charlatans?

Fortunately for all of us, Carl T. Bergstrom, Daniel R. Pimentel, and Jonathan Osborne (2022) summarized these skills in *Scientific American* as follows:

Scientific understanding as a "competent outsider" requires:

- *Uncertainty:* Scientists deal with unsettled questions, and so one set of results from a single study is not seen as a definitive answer, but as a step to support certain hypothesized answers over others.
- *Peer Review:* Scientists review claims from other experts to determine if they are valid and rigorous enough to enter the ongoing scientific conversation through publication. This makes published answers credible but not definitive.
- *Expertise:* It is important to question how a person became a credible source for their scientific knowledge and whether their employer or sponsor may bias their findings in some way, such as by making the product they are testing.
- *Consensus:* Multiple observations and interpretations of data that have been considered and tested can lead most scientists to agree on a most likely explanation. Total agreement is rare, but scientific claims with broad support from the scientific community are considered a credible way to guide understanding of the world.
- *Deliberate creation of doubt:* It is important to unmask attempts to undermine confidence in scientific findings for political gain or profit.

You can read more about what they had to say about this in their article linked here.

Remember, confidence begins to build as skills develop, but overconfidence in your abilities can lead to mistakes. Building a realistic view of your own skill in science media literacy will help your abilities match your confidence. This will help you verify information and avoid sharing misinformation. Knowing that science is limited, but continually improving as a process, is key to understanding how it is used in media. This will help you critically assess its applications to your own decision-making, as well as how it can help your community.

Contemplation Worksheet

To think through how we deal with the dynamics of science as an Extension Professional, let us apply it to our own field of expertise. Think of a science topic in your field that has been evolving. For that area of science, fill in how scientific understanding has changed over time:

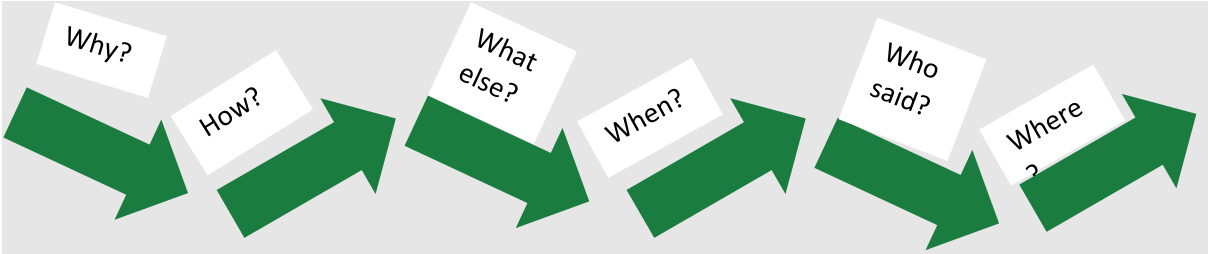
Scientific Understanding	Science topic: _____
Uncertainty	First scientific information came out saying:
Peer Review	What changes were made through peer review:
Expertise	Who were the experts in this science topic:
Consensus	When did this science topic gain some consensus:
Deliberate Creation of Doubt	How has doubt been created on this science topic:

How Can Science Media Literacy Help?

Media literacy can help us manage an uncertain and sometimes toxic information environment.

- Media literacy is the ability to access, analyze, evaluate, create, and act using media in a variety of forms.
    - News, social media, marketing, books, films, TikTok. You can think of more examples…
    - Media literacy is about asking questions, including about science!

Figure 5: Media Literacy Questioning Pattern



Below are five principles of media literacy:

- All media messages are "constructed" by people and using medium/context-specific techniques.
- Media messages are produced for particular purposes (to have goals).
- All media messages contain embedded values and points of view.
- People construct their own meanings from media messages based on their skills and experiences.
- Media and media messages can influence beliefs, attitudes, values, behaviors, and society.

What Is Science Media Literacy?

Science Media Literacy is about applying media literacy to science information. Thus, science media literacy principles can be summarized as follows:

- All media messages that contain science information are "constructed" by people and using medium/context-specific techniques.
- Media messages that contain science information are produced for particular purposes (have goals).
- All media messages that contain science information contain embedded values and points of view.
- People construct their own meanings from media messages that contain science information based on their skills and experiences.
- Media and media messages about science can influence beliefs, attitudes, values, behaviors, and society.

It is important to keep in mind that science information can be embedded in news, entertainment, marketing, social media posts, health campaigns, sports, books, everyday conversations, and all sorts of other communication vehicles. We learn from news, entertainment, games, stories, marketing, music, and so on.

Science Media Literacy Needs Assessment Scores

In a survey of approximately 1,000 U.S. Extension professionals in 2022, the Washington State University EXCITE Project Team asked a series of science media literacy questions to help assess whether a science media literacy toolkit could be of interest for helping to manage misinformation for science and health news.

The following table shares Extension Professionals' responses about science media literacy in a needs assessment conducted in 2022. The results suggest that professionals, on average, do each of these media literacy thinking and checking behaviors sometimes, and additional analysis showed that they tend to do each of these things at a similar rate compared to the other things. On average, the results showed that they had some room to improve on their skills even more, and the analysis showed that their media literacy skills associated with their comfort in handling misinformation in their communities. Specifically, they were asked, “How comfortable do you feel addressing misinformation about the COVID-19 vaccine?” On a scale of 1 (Very Uncomfortable) to 5 (Very Comfortable), the professionals responded on average at 2.86, and their level of science media literacy was associated with their misinformation comfort level even after statistically controlling for their years serving in Extension. This suggested that science media literacy was a valuable contributor to their ability to manage the misinformation environment even after having had years of experience to gain an understanding of their communities and Extension processes.

For some, simply answering the science media questions might have provided a good reminder to keep doing these thinking and checking behaviors!

Table 6: Science Media Literacy Needs Assessment, 2022 WSU EXCITE Needs Assessment

	Item	Mean (1 Never/ 6 Every Time)
SOURCE	I check whether those who create science news know about the topic	3.72
	I think about what point of view a science broadcaster or writer is trying to support.	4.12
	I look to see if those who share science news on social media have checked the accuracy of their facts.	3.65
	I think about whether sources of science news have my best interests in mind.	4.00
	I think about whether those who provide science information might be doing so to gain power or profit.	3.94
	I get science news from multiple sources to make sure I get the full story.	4.20
CONTENT	I think about how scientists can draw different conclusions from the same science facts.	3.97
	I check to see if a science fact in a news story is backed up by a credible source.	4.10
	I check to see if a picture or graph accurately matches the scientific information it represents.	3.86
	I check to see if the science news I read is up to date.	4.23
	I think about whether a news story with real science facts could still lead to a false conclusion.	3.82
	I have changed my thinking about a science topic when I received new information.	3.62

If you completed this needs assessment questionnaire, what number would you have given yourself to each question? Please record your number next to the scores above.

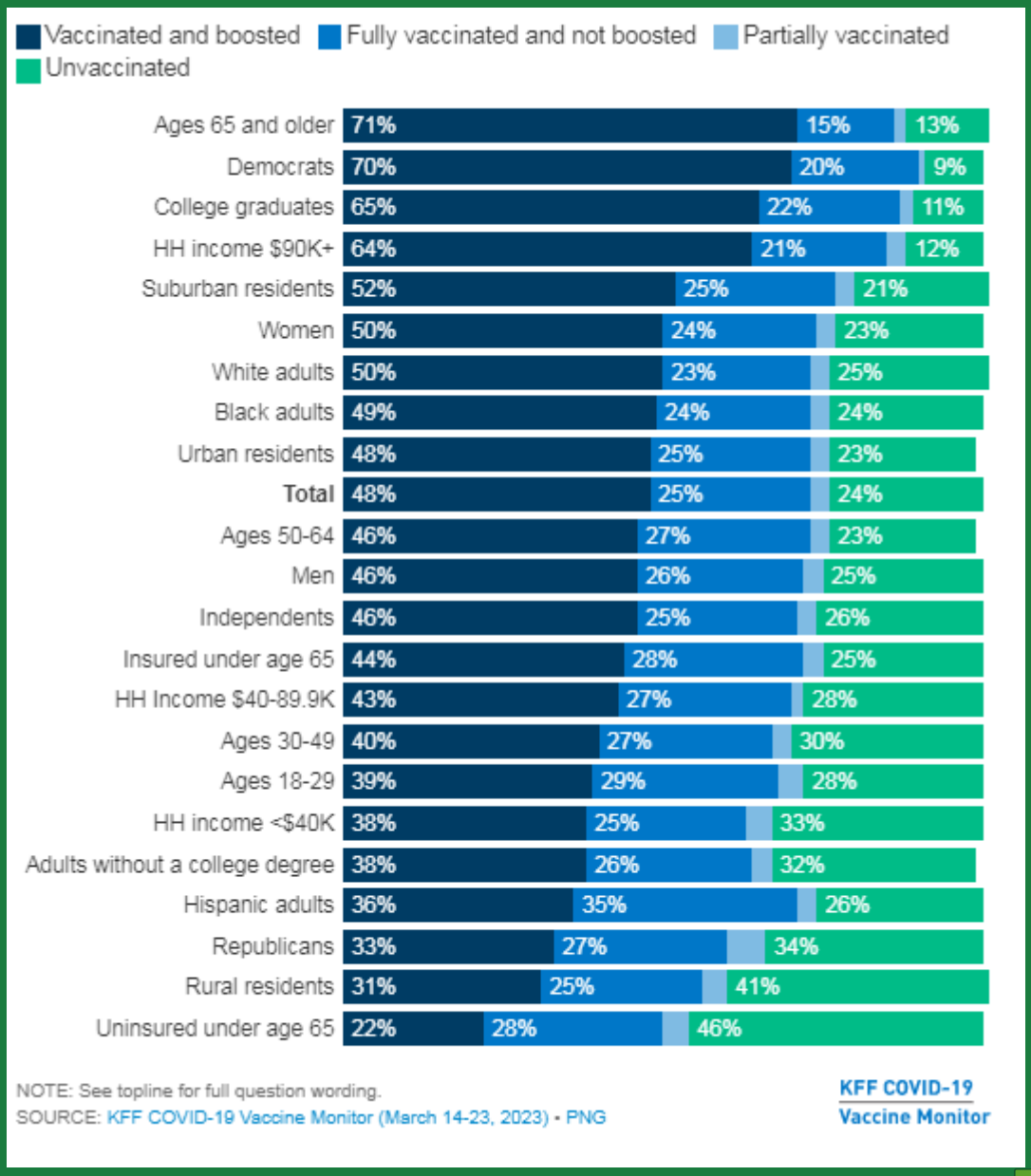
As you continue to build your science media literacy skills, think about converting these Source and Content items, from the questionnaire, into questions. Consider the questions in Figure 6 for assessing and developing science media literacy.

You can ask these as questions throughout this workbook. Is there evidence and citations for the information provided? Do the charts and graphs make sense? Is this workbook created by individuals with content expertise? Are multiple sources for principles about science media literacy provided? Can people draw different conclusions about the material? Is the material up to date? Is any of this material changing my thinking in any way?

Are we talking about literacy, or trust, or some of both?

Consider how widely vaccine trust varies: Where are people getting their information? How are they making their decisions?

Resource Box: KFF COVID-19 Demographics



monitor-dashboard/#vaccines

Trusted sources are key to public health—and to prevent misinformation. Your trusted

sources in the community can help combat misinformation on the internet (Calac et al., 2022).

Available studies on misinformation tend to not formally consider patient perceptions of healthcare providers and organizations as a mitigating or amplifying factor accounting for misinformation acceptance, per se. There is a robust literature on trust in patient and provider relationships, but the potential intersection of that work with misinformation research warrants more attention than it has received historically.

When you think about your community, what and/or whom would community members state as some trusted sources of information?

_____

_____

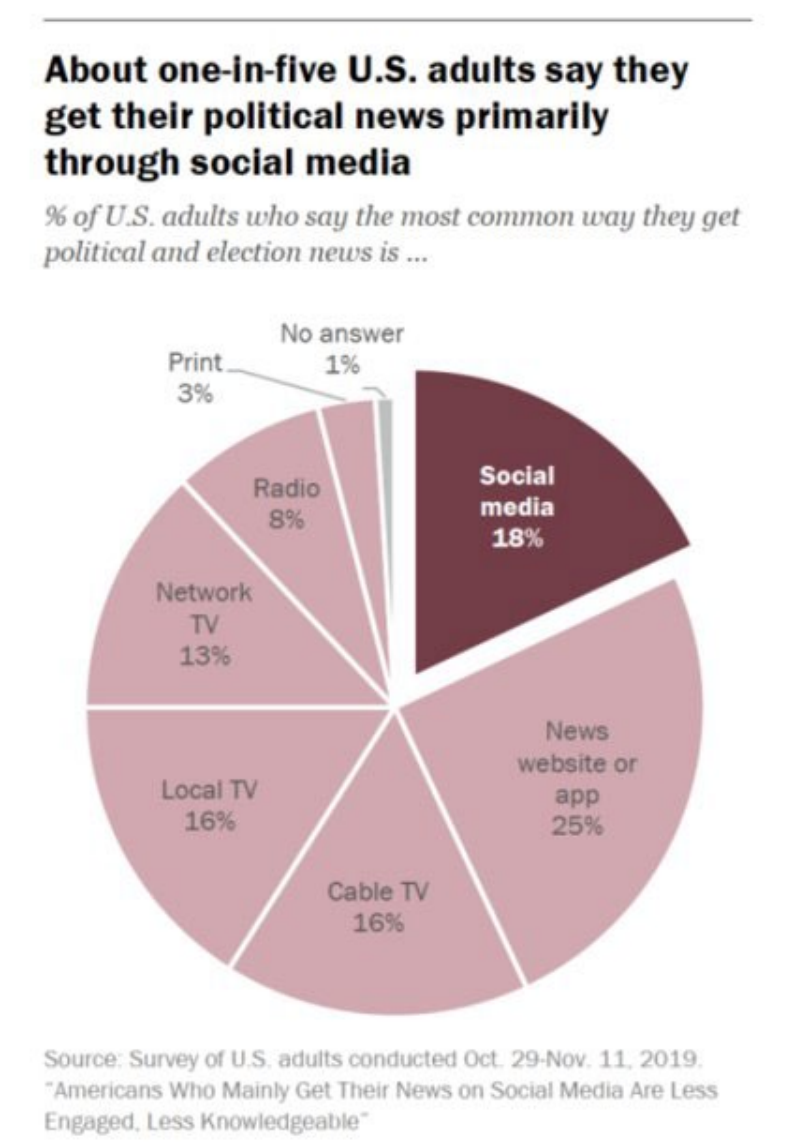
Would Extension be listed as one of those trusted sources? Why or why not?

_____

_____

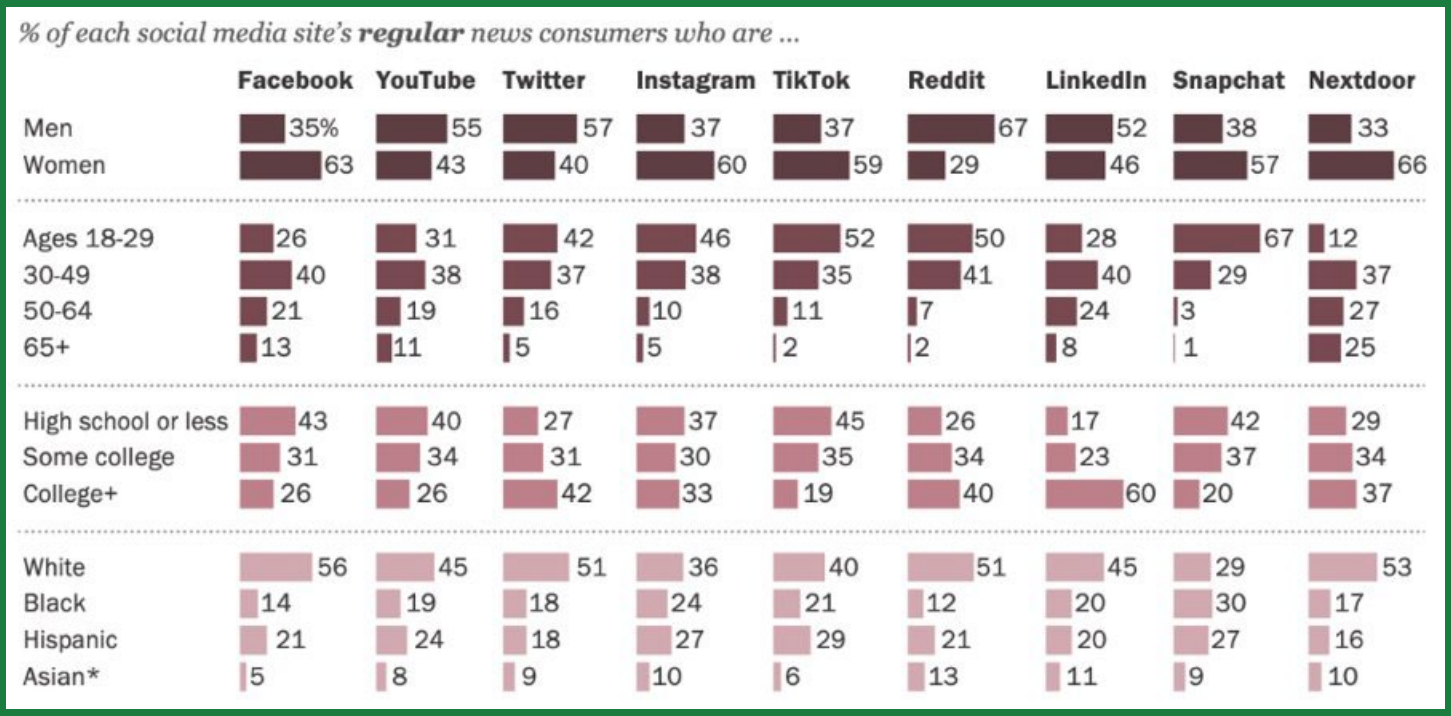
People used to use the same sources for news, but that is no longer the case:

Resource Box: Pew Research Center Report: Americans Who Mainly Get Their News on Social Media Are Less Engaged, Less Knowledgeable



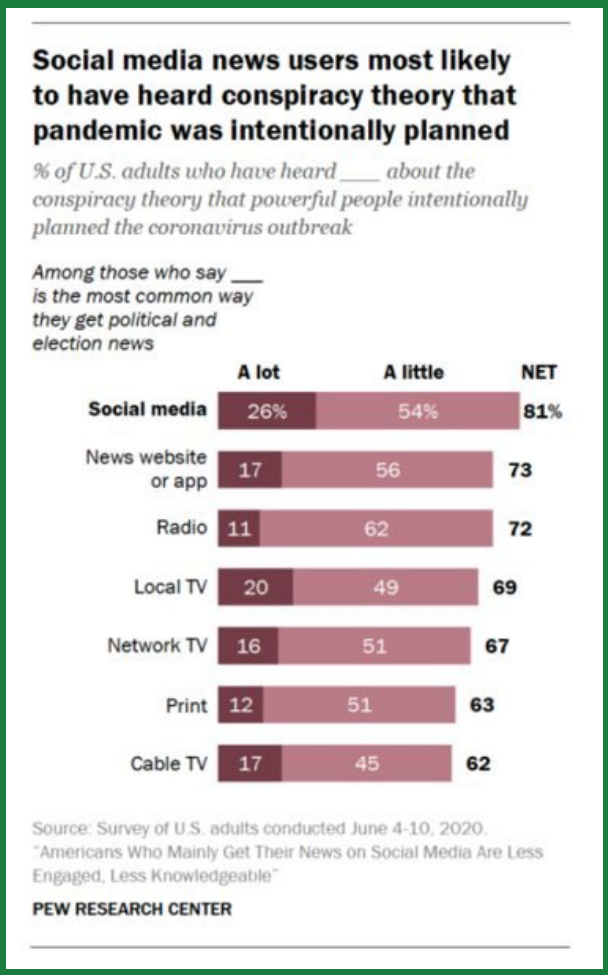
their-news-on-social-media-are-less-engaged-less-knowledgeable/

This is an example of how much variety there is in the ways people are using social media for news. Identifying a single trusted source is going to be impossible!



Source: https://www.pewresearch.org/journalism/2020/07/30/americans-who-mainly-get-their-news-on-social-media-are-less-engaged-less-knowledgeable/

On the other hand, it is easy to spread misinformation on social media, because people who use social media create echoes across their own communities.



Source: https://www.pewresearch.org/journalism/2020/07/30/americans-who-mainly-get-their-news-on-social-media-are-less-engaged-less-knowledgeable/

About a quarter of U.S. adults who get most of their news through social media (26%) say they have heard "a lot" about this conspiracy theory, and about eight-in-ten (81%) have heard at least "a little" – a higher share than among those who turn to any of the other six platforms for their political news (Mitchell et al., 2020).

Contemplation Worksheet:

Where do you go to get your information/content?

_____

_____

What sources do you trust?

_____

_____

Who in your circle of friends, colleagues, or community members do you trust?

_____

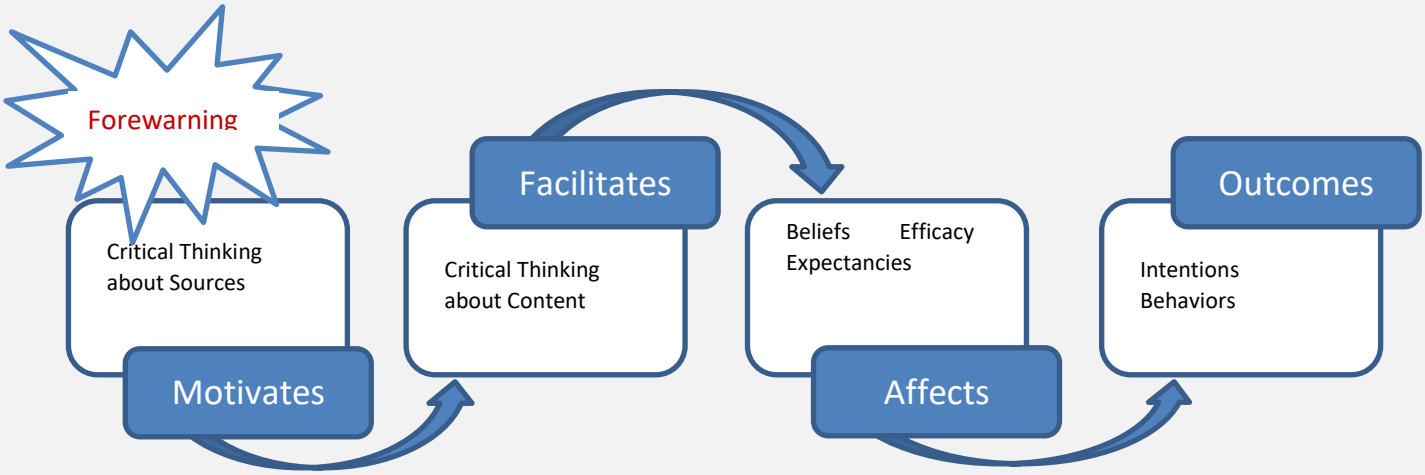
_____

_____

_____

Figure 6: Logical and Emotional Decision Making

Decision making is partly logical and partly emotional



We need our **emotions** to work for us instead of against us

The media literacy theory of change attempts to explain how we interact with and make decisions about the media we interact with in our daily lives. When we are *forewarned* that sources might not always be acting in our best interests or might not always be accurate and truthful, we tend to be critical think about message sources.

If we start to think more critically about message sources, that *motivates* critical thinking about content, which *facilitates* more critical conclusions about what is happening in the world (beliefs) , more confidence about things we can accomplish (called efficacy), and more evidence-based if-then beliefs about what will happen when we put certain behaviors into action (expectancies).

These conclusions *affect* all sorts of *outcomes,* such as what we talk about and post about on social media, what we intend to do when we have the opportunity, what behaviors we exhibit when we are in public, and when we are with our families or by ourselves, and what we actually do when faced with barriers and opportunities.

The Media Literacy Theory of Change tells us that this process is not just a logical one. Our emotions can help us, or they can get in the way. It is important to remember that our emotions are an important part of our decision-making, and we need to pay attention to them as much as we pay attention to our other thoughts. Some sources will try to take advantage of our emotions to inhibit critical thinking. The *forewarning process* is designed to help you prevent this from happening.

The Science Media Literacy Infographic:

This science media literacy infographic was created to provide a guide to help the user find accurate and credible science information to make their own better health decisions. There are 4 parts to the process, but **they do not need to be done in any specific order**.

Consider The Source

A critical part of our science media literacy skill set is to determine if the source is trustworthy and credible. What is the perspective of the source, and did they have relevant expertise? Are they trying to sell a viewpoint or product? Can you determine if other reputable organizations say that this source is trustworthy and knowledgeable? Have fact-checking databases or retraction databases called this source into question?

Examine The Content

Before quickly, trustingly repeating information, science media literacy skills encourage an examination of the content. Just in case. Just to make sure. Does the author cite their sources? Is the information current or out of date? Are there typos that indicate something might be unprofessional? Ideally you will look across multiple sources to verify if you are getting consistent information about the topic?

Check Your Emotions

Although we often may not realize it, our emotional reactions to a message can provide valuable clues about the information we absorb. How does the message make you feel? Misinformation can trigger emotions like anger and fear, including the fear of missing out on a popular trend or sale. Stop and think before sharing or believing an upsetting or tempting message. These clues can alert you that the source does not have your best interests at heart and instead may be trying to sell a product or viewpoint. You may find that checking your emotions is the FIRST step to take rather than the third step!

Ask Trusted Experts

Another aspect of determining credible and accurate information is to ask a trusted expert. If you are not sure about something or just want an additional opinion, seek out someone you trust who has the expertise needed. For example, ask your doctor or medical professional any questions about your health or your children's health. Local librarians are great resources, too, and they can help you find others.

Figure 7: Science Media Literacy Infographic

Now try critically assessing a story using the Science Media Literacy Infographic

As Extension professionals, you are translators of expert information.

From the needs assessment we know that Extension professionals have a range of science media literacy skills and confidence addressing vaccine science misinformation.

The people you are talking with also will have varying levels of media literacy skills and confidence.

This infographic can help you provide an intentional, structured forewarning strategy to help others build science media literacy skills.

Please click the link below to practice critically assessing a story using the Infographic:

Example article for exercise using the Infographic

Using the Infographic as a tool, what assessments can you make about this story from Regenerative Medicine Center from 2023?

_____

_____

Contemplation Worksheet

What resonates with you about the science media literacy infographic?

_____

_____

What information did you already know but maybe hadn't integrated into your work?

_____

_____

What are some of the ways you might utilize the infographic with groups? In individual conversations?

_____

_____

Example Of Misinformation News Cycle:

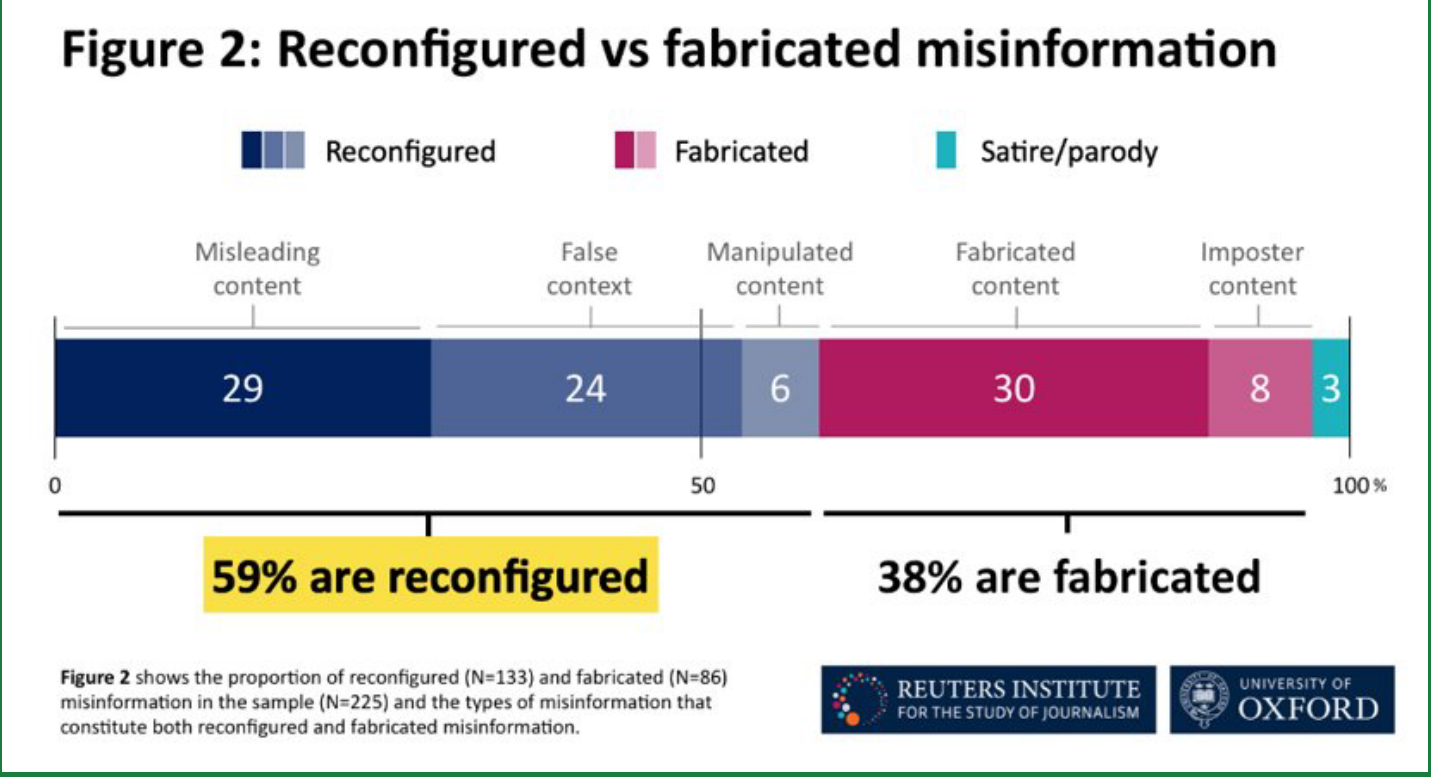
Part of becoming more astute in our science media literacy skills is understanding more about the misinformation news cycle. The following data is from a study by Simon, Howard, and Nielsen (2020) at the Reuters Institute about COVID-19 misinformation.

Misinformation tracked early in the COVID-19 pandemic:

Most misinformation is not totally made up. N=225, Jan-March 2020, Simon et al. (2020), rated false or misleading by Fact Check sites.

1. Satire or parody
2. False connection (headlines, visuals or captions do not support the content)
3. Misleading content (misleading use of information to frame an issue or individual when facts/ information is misrepresented or skewed)
4. False context (genuine content is shared with false contextual information, e.g., real images which have been taken out of context)
5. Imposter content (genuine sources, e.g., news outlets or government agencies, are impersonated)
6. Fabricated content (content is made up and 100% false; designed to deceive and do harm)
7. Manipulated content (genuine information or imagery is manipulated to deceive, e.g., deepfakes or other kinds of manipulation of audio and/or visual) (88%) from social media, 9% TV, 8% (9%), news outlets (8%), 7% websites.

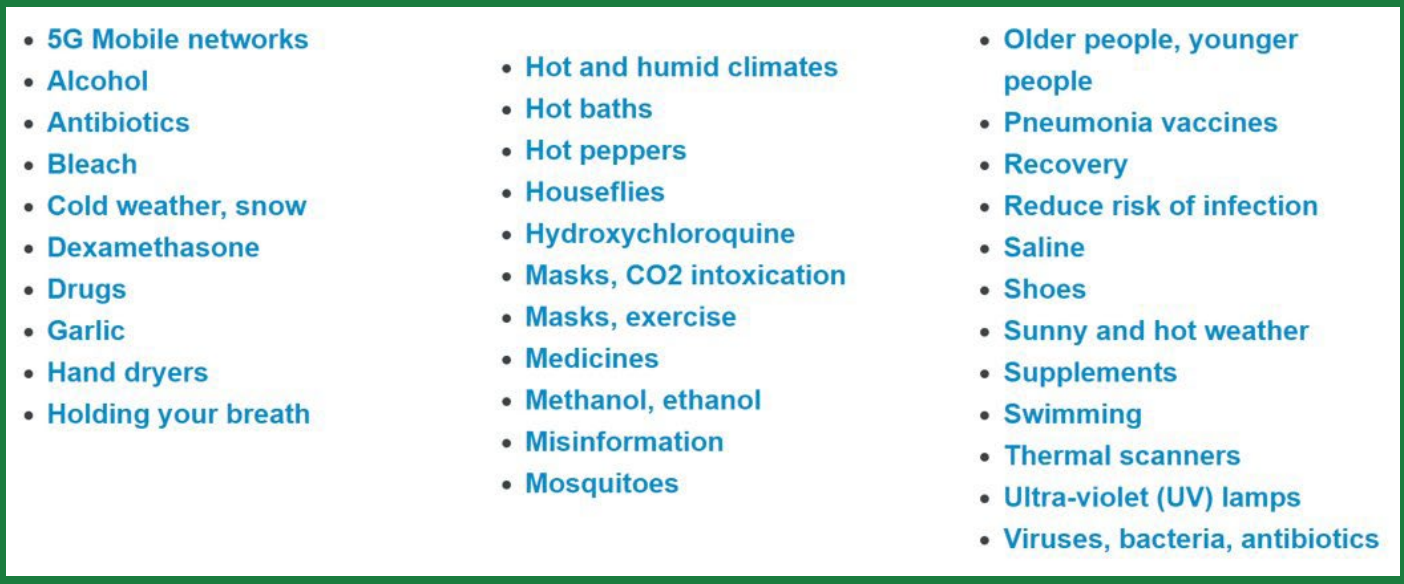
Resource Box: Types, sources, and claims of COVID-19 misinformation



(Figure below is a screenshot taken from *Reuters Institute on their site about Types, sources, and claims of COVDID-19 misinformation* in May of 2023).

For more reading on how false information is affected by social dynamics, check out the article by *Duffy, Tandoc, and Ling (2018)*.

Resource Box: World Health Organization Misinformation Tracking



- 5G Mobile networks
- Alcohol
- Antibiotics
- Bleach
- Cold weather, snow
- Dexamethasone
- Drugs
- Garlic
- Hand dryers
- Holding your breath
- Hot and humid climates
- Hot baths
- Hot peppers
- Houseflies
- Hydroxychloroquine
- Masks, CO2 intoxication
- Masks, exercise
- Medicines
- Methanol, ethanol
- Misinformation
- Mosquitoes
- Older people, younger people
- Pneumonia vaccines
- Recovery
- Reduce risk of infection
- Saline
- Shoes
- Sunny and hot weather
- Supplements
- Swimming
- Thermal scanners
- Ultra-violet (UV) lamps
- Viruses, bacteria, antibiotics

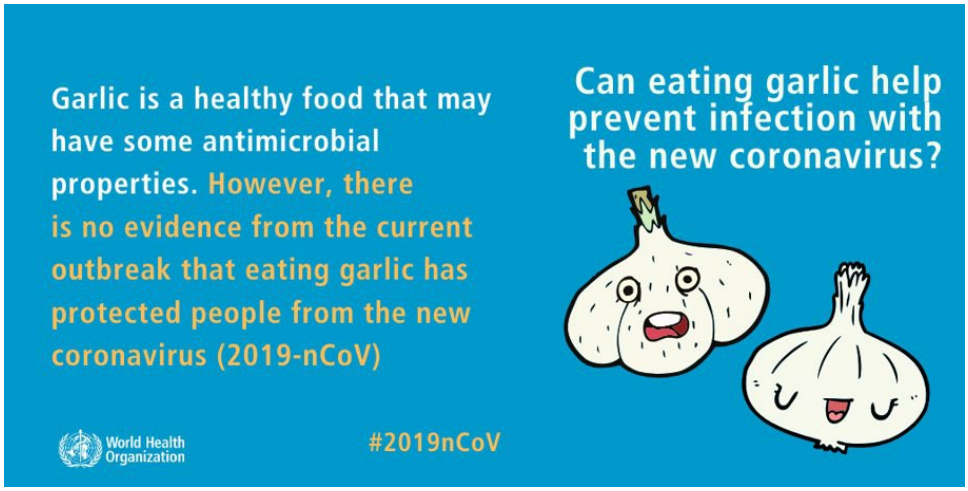
The World Health Organization (WHO) tracked the following misinformation and disinformation topics – (This page was screenshotted from WHO on March 26, 2021. *The updated link with different topics can be found here*).

Disclaimer: Because of the continuous updates made by the World Health Organization to their debunking website, some links may not work. The World Health Organization continued to update its misinformation pages and discontinued some of the topics as information was updated and some misinformation topics faded from apparent urgency.

To access these sources as they were captured in the screenshots, please visit The Way Back Machine and copy and paste the link into the search bar and go to the time referenced.

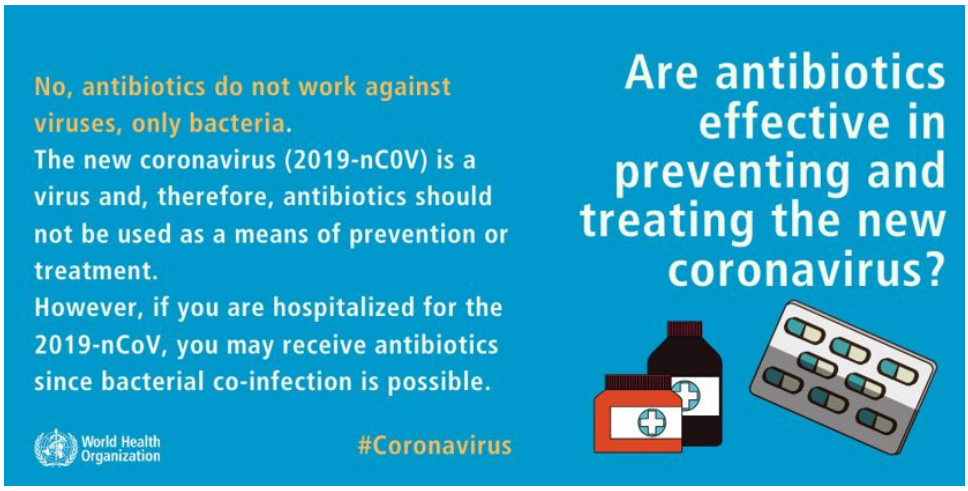
This screenshot was saved from the World Health Organization WHO (2022) early in the COVID 19 pandemic.

Misinformation: Garlic



The % of people who thought this info was correct in two U.S. national surveys our team did in 2020: April-59.3 % vs July-68.7 % (Austin et al., 2021).

Misinformation: Antibiotics



The % of people who thought this info was correct in the U.S. national surveys we did in 2020: April 49.4 % vs July 54.5 % (Austin et al., 2021).

According to a report by the Center for Countering Digital Hate (2022), the Disinformation Dozen are twelve anti-vaxxers who play leading roles in spreading digital misinformation about COVID vaccines. They were selected because they have large numbers of followers, produce high volumes of anti-vaccine content or have seen rapid growth of their social media accounts in the last two months.

Resource Box: The Disinformation Dozen

2. Analysis of a sample of anti-vaccine content that was shared or posted on Facebook and Twitter a total of 812,000 times between 1 February and 16 March 2021 shows that 65 percent of anti-vaccine content is attributable to the Disinformation Dozen.

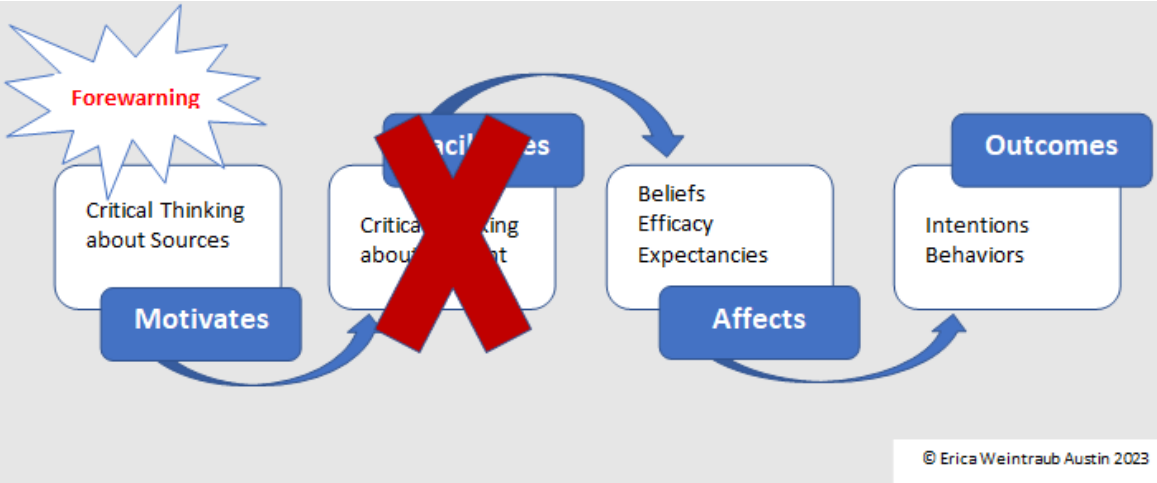
a. Research conducted by CCDH last year has shown that platforms fail to act on 95 percent of the Covid and vaccine misinformation reported to them.

b. CCDH's recent report, Malgorithm, uncovered evidence that Instagram's algorithm actively recommends similar misinformation.

Too often this happens when influencers try to mislead the public: "Like me, trust me, do what I tell you (and do not trust others)"

When we only consider the source and go right to our own beliefs, efficacy, and expectancies, we miss a crucial step in the theory of change, the step of critically thinking about the content.

Remember the Media Literacy Theory of change model we covered earlier? When emotions about a source cloud our ability to evaluate and critically think about the content of information, it can hinder our beliefs and decision-making.



We need our emotions to work for us instead of against us!

Using the Science Media Literacy Infographic and Motivational Interviewing skills, how might you respond to someone who comes to you and says:

"My friend heard on the news that young people's deaths are up, and it is because of the COVID vaccine."

_____

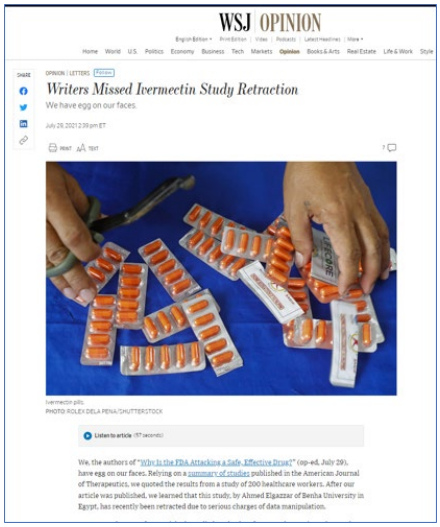
_____

It sure can be tough to keep up with fake science!

Sometimes the peer review process can allow bad science to get through and get published. Sites like those listed below, try to correct the spread of misinformation as it occurs. By recognizing retractions, correcting the use of unsupported science, and forewarning about how some scientific information is communicated in media, these efforts help push science media literacy forward.

Check out these articles for examples:

[WSJ Opinion Article (Henderson & Hooper, 2021)](#) [The Scientist (Thomasy, 2022)](#)



You can also double check if scientific articles have been retracted from their journals using [Retraction Watch (2023) website](#).

Below is an example of an article that was retracted. Energetic discussions about this article and about the value of ivermectin as a COVID-19 treatment for humans have continued to go on in the scientific literature, so it can be useful to check with experts for the latest news on this topic.

Open Forum Infectious Diseases

Open Forum Infect Dis. 2021 Nov; 8(11): ofab358.
Published online 2021 Jul 6. doi: 10.1093/ofid/ofab358

PMCID: PMC8420640
PMID: 34796244

This article has been retracted.
Retraction in: Open Forum Infect Dis. 2022 March; 9(3): ofac056 See also: PMC Retraction Policy

Retracted: Meta-analysis of Randomized Trials of Ivermectin to Treat SARS-CoV-2 Infection

Andrew Hill,[1] Anna Garratt,[2] Jacob Levi,[3] Jonathan Falconer,[4] Leah Ellis,[5] Kaitlyn McCann,[5] Victoria Pilkington,[6] Ambar Qavi,[5] Junzheng Wang,[5] and Hannah Wentzel[5]

Author information · Article notes · Copyright and License information Disclaimer

See the article "Ivermectin for the Treatment of COVID-19 Disease: Too Good to Pass Up or Too Good to Be True?" in volume 8, ofab318.
An expression of concern has been published for this article. See Open Forum Infect Dis. 2021 August; 8(8): ofab394.
This article has been retracted. See Open Forum Infect Dis. 2022 March; 9(3): ofac056.

Resources for Continued Skill Development

Additional Exercise:

META-ANALYSIS ! 

A meta-analysis is a study about studies! Meta-analysis uses statistical tools to combine and assess the results of multiple scientific studies that address a similar question. Any single scientific study will have strengths and weaknesses. So, scientists often try to combine studies that have been done on the same topic to see what has been learned about the topic overall. For example, a rigorous meta-analysis can show trends that make it possible to estimate overall effects. Like any other study, however, a meta-analysis can be imperfect, and its results require interpretation.

That is why this exercise can be a useful science media literacy challenge.

Below are links to two articles written about a recent meta-analysis (Jefferson et al., 2023) about facemasks and their ability to prevent the spread of COVID-19. In this exercise, use the infographic and your science media literacy skills to critique one of the articles or the meta-analysis itself. A summary of their findings can also be found here.

What are three or four observations you can make about the study?

_____

_____

_____

_____

The new scientific review on masks and COVID isn't what you think (Piper, 2023).

A new turn in the fight over masks (Tayag, 2023).

What are some of the limitations of the meta-analysis?

_____

What do we learn about science from the meta-analysis?

What differences do you notice when you read the original scientific source versus when you read commentaries about it in the media?

How does this meta-analysis contrast with this page from the CDC (2021)? When science is constantly being updated, what can organizations that try to maintain up-to-date resource pages do to try to keep up?

Case Study:

Case study of a worst-case scenario. what tools could you use to 1) prevent this scenario and, 2) if necessary, operate within it?

Article from The Washington Post: In a thriving Michigan county, a community goes to war with itself.

This news story about a county in western Michigan illustrates the worst-case challenges for health educators trying to operate in situation of political polarization and misinformation. As you read the news story, think about how the techniques of motivational interviewing, science media literacy and brain-friendly communication might help the health department anticipate and manage this crisis.

Here is a summary of what happened: Eight ultra-conservative, anti-vaccination members were elected to the 11-member county board of commissioners and began to fire many experienced managers they considered disloyal to their goal to "thwart tyranny" with a vision to unite county residents around America's "true history" as a "land of systemic opportunity built on the Constitution, Christianity and capitalism." This included the head of the county health department.

- ❑ First, the head tried to respond to the new board with facts. As often happens, this approach backfired.
- ❑ Then she issued a fact-based press release that was called a lie and was told to retract it.
- ❑ Then she filed a lawsuit alleging the board micromanaged the department and illegally attempted to dismiss her without cause.
- ❑ She repeatedly invited the commissioners to visit the health department, but they declined.
- ❑ Then, in her appearances before the board, she tried to explain what made the department's work meaningful. As the newspaper summarized:

She described how the department's communicable disease specialists had been the first in Michigan to spot an E. coli outbreak in 2022 that caused four deaths and sickened hundreds in six states. She talked about the department's mobile dental teams, which offer free cleanings to children whose parents could not afford care. And she showed board members a photo of the garden that the department had built as a final resting place for the cremated remains of those who were indigent and alone. "We strongly believe that every person's life matters," Hambley told them.

To Hambley, the value of county government lay in its closeness to the people it helped. She wanted Moss and the other commissioners to see her workers as neighbors and public servants, driven by a professional ethic that required them to set aside their political beliefs, suspend moral judgment and care for everyone in the community.

Here are a few questions for reflection:

- ❑ What steps could you have taken *before* the election consistent with a motivational interviewing approach?
- ❑ Once a situation is inflamed, what role can science media literacy play to help you in your work?
- ❑ What brain-friendly communication might you try *instead of a press release*
- ❑ If you are dealing with this new board as an Extension Professional, how might you utilize neuromarketing tools to share impacts or work being addressed in local communities?
- ❑ If questioned on the value of work you are doing for families, what motivational interviewing techniques would you utilize in those conversations?
- ❑ Our three-pronged approach of motivational interviewing, science media literacy, and neuromarketing are communication tools to help you with the "how" of communicating (especially on politically charged topics). Given that any of these communication tools are going to have varying levels of impact, what might be different levels of success or expectations to keep in mind when applying these communication tools?

NOTES

NEUROMARKETING

Section 4

What Is “Neuromarketing?”

Neuromarketing is a scientific approach to creating and delivering effective communication content. This approach draws on brain science to gain actionable insights for creating content that resonates and works with (as opposed to against) the way human brains uniquely process and respond to information.

The use of Neuromarketing by global corporations has exploded as an approach to optimizing all kinds of content across communication channels and technological platforms. Companies are predicted to spend a total of $3.2 billion on Neuromarketing solutions by the year 2032 (https://www.futuremarketinsights.com/reports/neuromarketing-solutions-market). The growth in Neuromarketing is due to a highly competitive business environment and the power of Neuromarketing to inform the development and delivery of content that effectively achieved communication objectives.

Neuromarketing is a unique tool that Extension professionals can also use to succeed at achieving communication objectives tied to their community outreach and engagement mission. The science underlying Neuromarketing focuses on understanding the human brain and communication involving media content delivered over media technologies. This science is not specific or exclusive to marketing or advertising.

Neuromarketing science goes beyond the intuitive principles of content design you may have learned in your professional life. Correct use of this tool by Extension professionals requires the following:

1. applying direct knowledge of how the human brain is structured and processes the information you communicate as an Extension professional
2. defining all communication content and technology from the perspective of the human brain and not traditional communication/media industry perspectives
3. generating actionable insights that guide the production and delivery of communication content so that communication efforts effectively engage, educate, and empower community members as part of the community outreach mission of Extension

Why Use “Neuromarketing” As A Communication Tool?

Neuromarketing science empowers professional communicators, like Extension professionals, to combine brain and communication science with their existing level of creative intuition and expertise to design and deliver communication content that more effectively and consistently achieves desired objectives. This occurs by mixing creativity with a scientific understanding of the human brain and how the human brain processes communication content delivered over communication technologies. A scientific understanding of the human brain is grounded in current principles of how our human mind works (covered below). A scientific understanding of how the human brain processes communication requires understanding communication from the perspective of the brain and not communication industries. This requires professional communicators to focus on the design and use of communication elements like visuals, language, size, color, motion, camera angles, tempo, emotional tone, etc.

The human brain defines communication based on the experience that the “sensory” elements of communication content evoke. The brains of the audiences for communication content do not process information based on industry definitions of communication such as flyers, public service announcements, radio ads and public service announcements, etc.

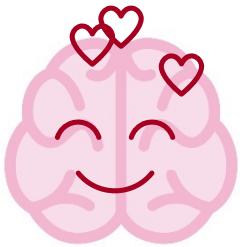
The application of Neuromarketing science gives Extension professionals a tool for developing, designing, and delivering communication content that can be said to be “brain friendly!”

Brain friendly content brings together all the “sensory” elements of communication content in a way that:

1. Effectively engages the audience by capturing and sustaining attention
2. Effectively educates the audience by structuring content to enhance memory for key “messages” in the content
3. Effectively empowers the audience through the presentation of accurate scientific information and an emotional tone that enhances attention and memory for the communication content

We want to develop “brain friendly content” not “brain unfriendly content.”

Brain Friendly Content **Not** **Brain Unfriendly Content**

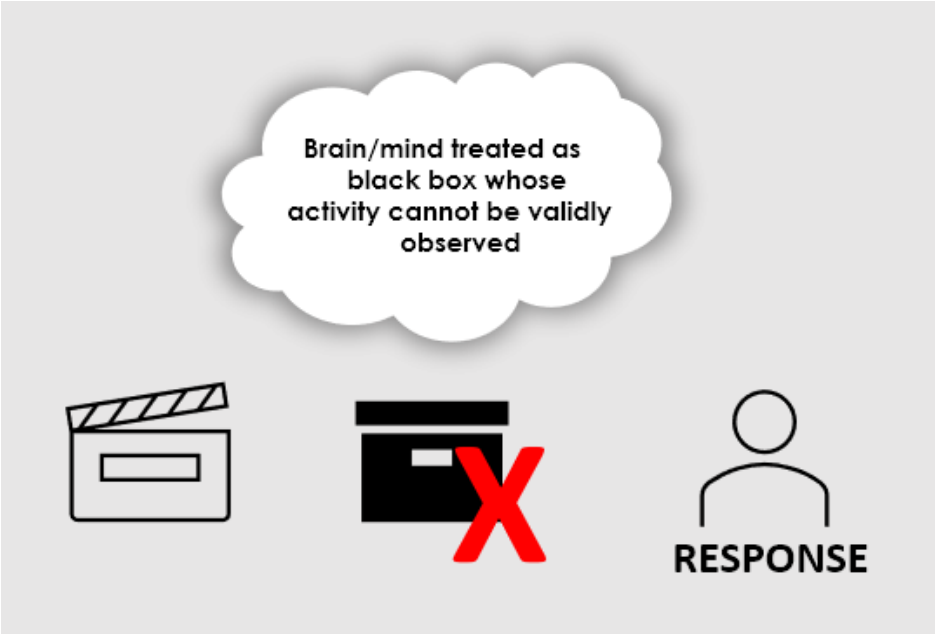


The development, design and delivery of brain friendly content begins with a basic knowledge and understanding of the human brain.

Understanding The Human Brain and Communication

Thankfully you do not need to be a brain science expert to develop, design, and deliver brain friendly content! You do need to understand some basic principles of how our human minds, that exist in the functioning of the human brain, work.

Mind Principle 1: Communication efforts can fail through "ignorance" of how the human mind processes AND responds to content:



- The human mind that is embodied in the human brain, nervous system, and body is what experiences, processes, and responds to communication content.
- Communication content can be produced based solely through creative intuition that often contains an elevated level of ignorance about the human mind or through creativity enlightened by an understanding of how the human mind works.
- Communication efforts developed without Neuromarketing science treat the brain/mind like a black box that content gets shoved into in hopes of evoking a desired response. This is relying on creative guesswork that is at best informed by creative intuition rather than science. Creative intuitions have some usefulness in the design of effective content. Effective communication in the complex, often politicized and emotional, contexts of science communication, that Extension professionals need to engage in, especially requires breaking open the "black box" and specifically producing brain friendly science communication content.
- Brain friendly communication content, informed by an understanding of how the human mind processes AND responds to content is less likely than content based

only on creative intuition to elicit defensive responses or completely fail at engaging the audience.

Mind Principle 2: We may "feel" like we know *why* we make decisions, but we really do not know!

- The human mind produces conscious experiences that offer us convenient explanations of our world and our behaviors in it.
- The human mind, embodied in the brain, unconsciously constructs reality created through communication content, and predicts what will be an effective response to any communication content. (See the following podcast featuring Dr. Lisa Feldman-Barrett, https://www.3takeaways.com/episodes/lisa-feldman-barrett-neuroscientist)
- Audience members may think they know precisely how and why they respond in certain ways to communication content, but they do not!

Mind Principle 3: Attitudes and behaviors are primarily driven by unconscious, cognitive and emotional processes.

- Observational data obtained from audience members may accurately describe attitudinal and behavioral responses to communication content but cannot explain how or why communication content leads to responses in a way that can be used to inform the effective development, design, and delivery of communication content.
- The extent to which communication content leads to desired attitudes and behaviors primarily depends on unconscious cognitive and emotional processes that are automatically engaged as audience members encounter and interact with communication content.

The human brain creates a conscious mind that makes us think that we can see why and how we respond to specific communication content, but we don't!

Most of the "work" the brain does while processing and responding to communication content occurs on an unconscious level.

The "sensory" elements of communication content that professional communicators can control first and foremost engage unconscious brain processes that determine responses to communication content.

Mind Principle 4: Brain scientists have categorized the activity of the human mind into two kinds of processes, "automatic - unconscious" and "controlled - highly conscious" processes

- Automatic, unconscious processes lay the foundation for communication effectiveness and dominate how audience members respond to communication content.
- Controlled conscious processes can help individuals purposefully increase or withdraw a degree of attention paid to communication content and slightly regulate the intensity of emotional responses to content
- The influence of motivational interviewing and increased science media literacy (covered in previous sections of this tool kit) on how individuals mentally process and respond to communication content occurs through controlled/conscious, NOT, automatic/unconscious processes
- A famous cognitive scientist Daniel Kahneman has developed a model that describes how we make decisions. This model extends the idea of automatic and controlled processes into what he has termed "system 1" and "system 2." System 1 operates in an intuitive, unconscious, and extremely fast manner. System 1 fuels most of the decisions we make, including attitudinal and behavioral responses to communication content. System 2 operates in a highly conscious, purposeful, deliberative manner. It takes significant mental effort for System 2 to have a high degree of influence on the

decisions we make. Every decision we make involves varying influences of System 1 and System 2 on attitudes and behaviors. Attitudinal and behavioral responses to communication content are never the result of only System 1 or only System 2 processes.

- The key to developing, designing, and delivering brain friendly content is knowing how to produce communication content activates BOTH System 1 and System 2 through the strategic selection and design of content elements that will effectively engage, educate, and empower community members that are the audience for specific communication efforts.

System 1 – Intuition & Instinct

- Unconscious
- Fast
- Automatic processing

System 2 – Rational thinking

- Takes effort
- Logical
- Controlled processing

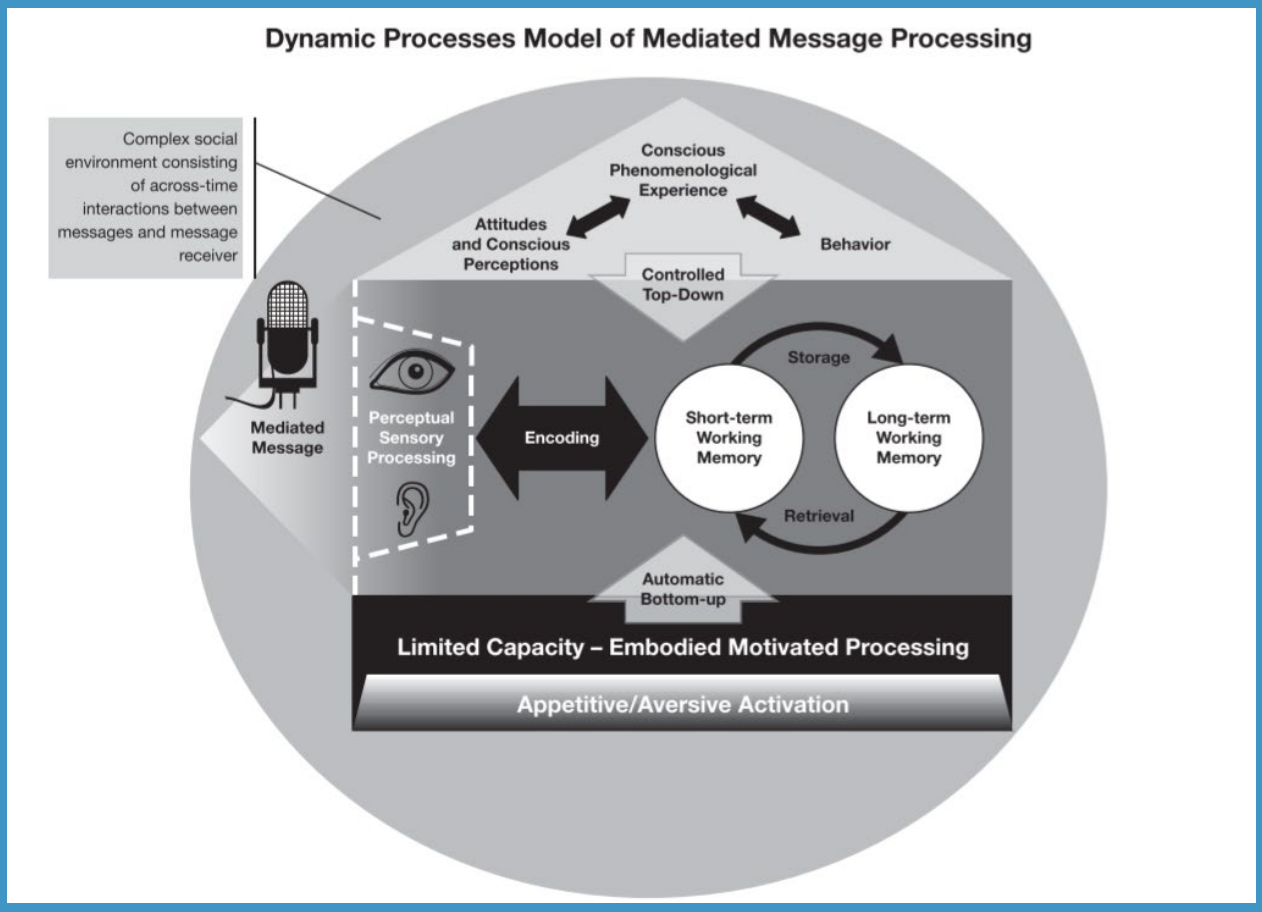
NOTE: Decision making, including audience responses to communication content involves the activity of BOTH System 1 and System 2. Brain friendly communication content will have design (e.g., color/layout) and content (e.g., copy/language) elements that are strategically used to engage both System 1 and System 2.

Mind Principle 5: The human mind does a lot of work processing communication content. Most of the work is unconscious/automatic

- Conscious phenomenological experience is what our brain consciously produces as we interact with and respond to communication content. This experience emerges from the activity of many unconscious cognitive and emotional processes.
- These unconscious cognitive and emotional processes broadly involve human attention, emotion, and memory/learning processes embodied in brain activity.
- Unconscious cognitive and emotional processes evoked by the specific "sensory elements" of communication content direct all conscious attitudinal and behavioral responses to communication content.

- This “Basic Principle” of the human mind describes what is termed the Dynamic Processes Model of Mediated Message Processing. This model describes all the mental processes involved in effectively engaging, educating, and empowering audiences through brain friendly communication content!

Figure 8: Dynamic Process Model of Mediated Message Processing (Potter and Bolls, 2012)



Potter, R. F., & Bolls, P. (2012). *Psychophysiological measurement and meaning: Cognitive and emotional processing of media*. Routledge.

Brain "Truths" for Brain Friendly Content

The "Mind Principles" listed above describe current scientific understanding of the nature of brain activity that underlies how our human mind processes information and helps us adaptively respond to it. These principles can be distilled into three valuable "Brain "Truths" for brain friendly communication content. These "Brain Truths" can be used to help guide creative choices concerning communication content as Extension professionals engage in the processes of developing, designing, and delivering content that is central to the mission of educational outreach intended for specific communities. The practical value of these "Brain Truths" comes from the fact that they are fundamental truths about the human brain. These "Brain Truths" are not restricted to any specific audience or focus of educational outreach effort. Each truth has practical implications for producing brain-friendly communication content.

Brain Truth 1

The brain is a limited capacity processor

- The overall amounts as well as number of distinct "bits" of information in communication content can overload cognitive capacity of the targeted audience causing memory for the content to suffer.
- The practical implication of this brain truth is that Extension professionals must focus on:
    - Developing content that highlights one central message with a maximum of two or three supporting messages communicated in a clear, uncluttered manner
    - Designing content to be delivered in a concise manner with as few "bits" of distinct information as possible. Bits of information are defined according to the number of distinct pieces of sensory information the brain of an audience member is expected to process. This can be viewed as the "cognitive load" that communication content places on the brain.
    - Delivering content in a way that makes it as easy as possible for audience members to cognitively process (pay attention and learn) the central, most valuable information in the communication content.

Brain Truth 2

The brain is a contextual/culture processor

- Cultural "cues" in communication content increase the motivational relevance of the content and the context in which content is delivered determines attention and memory.
- The practical implication of this brain truth is that Extension professionals must focus on:
    - Developing content that is informed by expert understanding of the cultural background, emotional triggers, values, and pre-existing attitudes of the intended audience.
    - Designing content with sensory elements (e.g., visuals, words, colors) that resonate with the cultural background of the intended audience and in a form (layout) that focuses attention on relevant cultural cues.
    - Delivering content over channels/technology platforms that are culturally relevant to the intended audience and are as uncluttered as possible.

Brain Truth 3

The brain is a motivated/emotional processor

- Raw motivations related to approach/avoid in combination with emotional responses determine how individuals will process and respond to communication content. These emotional processes determine how the brain will process and respond to communication content within milliseconds of exposure to the content. Brain friendly communication content that is intended to educate community members MUST resonate with them at an emotional/motivational level.
- The practical implication of this brain truth is that Extension professionals must focus on:
    - Developing content that strategically includes sensory elements that explicitly connect with current emotional triggers the intended audience feels toward the subject of the content.
    - Designing content that strikes the best mixture of positive and negative emotional tone based on the emotional context surrounding the topic. A rule of thumb is that most science related topics have both positive and negative emotional characteristics that should be explicitly included in communication

content.

- Delivering content over channels/technology platforms that evoke a positive user experience using sources/spokespeople that have strong, positive emotional affiliations with the intended audience.

How can Extension Professionals apply Neuromarketing Science?

Neuromarketing Science is a tool for Extension professionals to use to develop, design, and deliver brain friendly communication content which effectively engages, empowers, and educates community members they serve. A fundamental belief in the value of educational outreach is a component of the Extension Agent's Creed. Brain-friendly communication content is the core of effective educational outreach. How might Neuromarketing science tie into the discipline of Education?

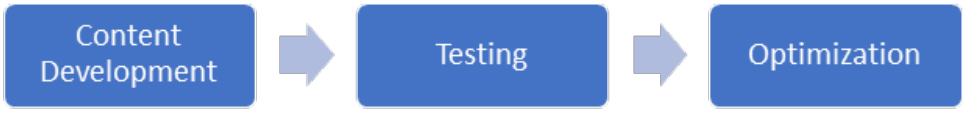
The field of Education is becoming increasingly integrated with Neuroscience to form what is termed Neuroeducation. The objective of Neuroeducation is to optimize educational experiences through knowledge of how the human brain learns information (see Kim, Si. (2012). Neuroeducational Approaches on Learning. In: Seel, N.M. (eds) Encyclopedia of the Sciences of Learning. Springer, Boston, MA. https://doi.org/10.1007/978-1-4419-1428-6_1823). Neuroeducation – applying brain science to learning – and Neuromarketing Science – applying brain science to developing brain friendly communication content – creates an ideal approach to the unique communication tasks Extension professionals must accomplish. The unique tasks involved in effectively developing, designing, and delivering content for specific educational outreach efforts that successfully engages, educates, and empowers community members.

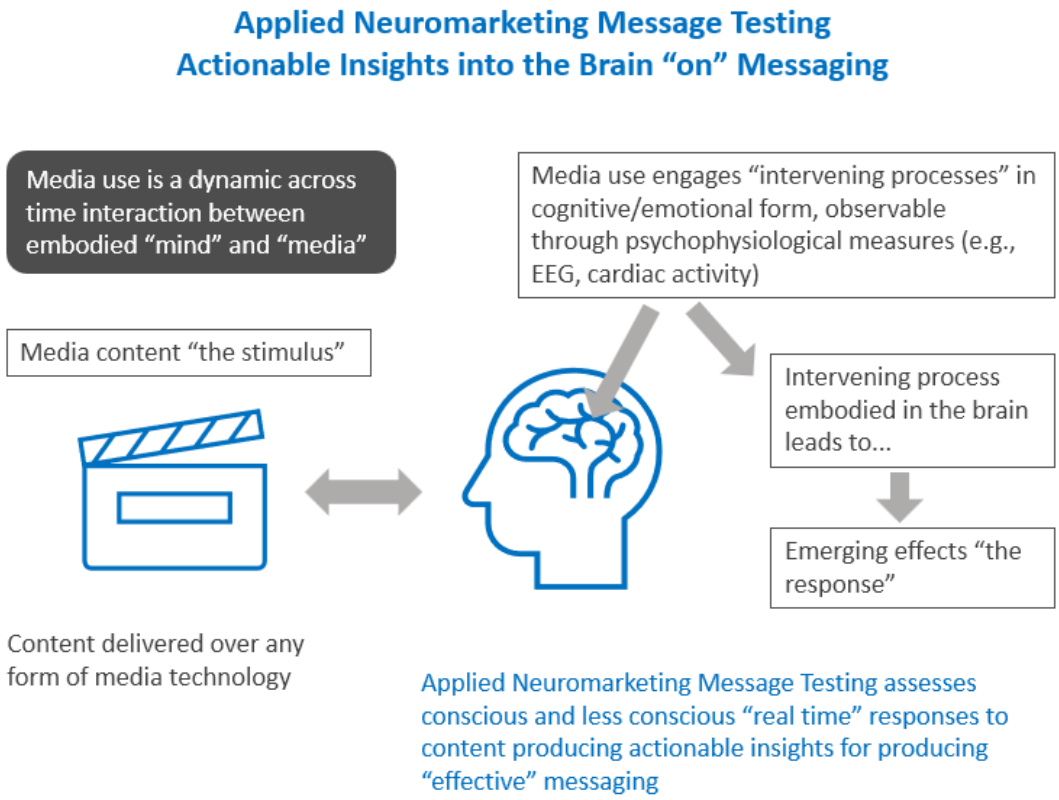
There are two ways that Extension professionals can apply Neuromarketing Science as a tool for communication content.

1. Extension professionals can apply an understanding of how the human brain/mind processes information (see "mind principles" listed above) to develop content that is strategically informed by brain science. This application can encompass the processes of content development, design, and delivery as well as evaluation and refinement of content.
2. Extension professionals can engage with a partner to conduct applied Neuromarketing Science content testing. This involves the collection of biometric measures (eye tracking, heart rate, facial muscle activity, etc.) that directly test how individuals mentally process specific characteristics of communication content. The results of content testing are translated into actionable insights that can be used to for developing, designing, and delivering content that effectively engages, educates, and empowers community members. Applied Neuromarketing Science content testing also generates insights that go beyond optimizing a current communication

effort to producing generalizable insights for the development, design, and delivery of brain friendly content across multiple communication efforts.

The Process of Using Applied Neuromarketing Science Content Testing using biometric measures of brain activity to produce actionable insights for producing brain friendly communication content:





Extension professionals can effectively use Neuromarketing Science as a tool for producing brain friendly communication content by using these two applications separately or in combination with each other. The crucial point to remember is that application one only involves application of knowledge about the brain that can be gained from sources like this toolkit. Application two requires connecting with a partner that has a prominent level of Neuromarketing expertise and the technology for conducting applied Neuro marketing testing. You can contact Dr. Paul Bolls (pbolls@wsu.edu), a co-author of this toolkit, for more information about Neuromarketing partners.

Contemplation Worksheet

What surprised you about the three brain truths?

_____

_____

_____

_____

What information did you already know but maybe hadn't integrated into your work?

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_____

Can you think of a recent experience where these brain truths were ignored? How would have applying these brain truths helped that situation?

_____

_____

_____

_____

Let us think about how the brain works and the communication content of websites. Please click and review the following websites.

https://whitmancountypublichealth.org/

https://www.healthygallatin.org/

What are some of the brain friendly elements you notice in each of these websites? What are some of the brain unfriendly elements you notice in each of these websites?

_____

_____

_____

_____

We now turn to specifically considering Neuromarketing Science as a communication content tool in the context of the issue of Covid-19 vaccination. Information presented in this section can be applied to health science topics beyond this specific issue.

Neuromarketing in the Context of Vaccine Education

Applied Neuromarketing Content Testing was performed to produce specific, generalizable, actionable insights about content elements in messaging about Covid-19 vaccination. We tested characteristics of photographs and text-based framing of the issue of Covid-19 vaccination.

Neuromarketing-based Message Testing

Extension professionals participated in two different on-site neuromarketing testing of messages. The photo shows an individual connected to the various instruments used to measure responses.

AEA (American Evaluation Association)
August 2022 Orlando, FL

NAE4-HYDP (National Association of Extension 4-H Youth Development Professionals) October 2022 Madison, WI

Photo Credit: Dr. Toby Lepley, Associate Vice-President and State Youth Development Program Leader, Louisiana State University Agricultural Center

Objective: Identify visual and text content elements that are likely to effectively engage Extension Professionals in favorably responding to Extension and Covid-19 Vaccine Messaging

Vaccine Message Content Tested

- Photos depicting "vaccination"
  Emotional tone (unpleasant) and Dominance of Vaccine Cue
- Textual framing that ties Extension to Covid-19 Vaccine education through emotional appeal and Extension values

Examples for Visuals:

Source: Appalachian Regional Healthcare System

Source: Unsplash

Examples for Textual Framing:

"Covid-19 Vaccine education fits with the mission of Extension Professionals because we believe in intellectual freedom to search for and present the truth without bias and with courteous tolerance toward the views of others."

Actionable Insights – Visual Framing

Effective vaccine education content begins with “brain friendly” visuals that:

- Capture attention and elicit a mixture of positive AND negative emotional responses
- Evoke positive attitudes that will enhance mental processing of text
    - Positive attitudes
        - Favorable
        - Desirable
        - Likable
        - Informative

Brain Friendly Visuals

Highly Effective

Brain friendly visuals that are highly effective in terms of elicit positive emotions and attitudes towards vaccination education utilizing pleasant emotional tone and avoiding high presence of vaccination cues, such as needles, vaccine bottles, or image of virus.

Moderately Effective

Brain friendly visuals that are considered to be moderately effective utilizing pleasant emotional tone with high presence of vaccination cues.

Source: ERIC SEALS/USA TODAY NETWORK/SIPA

In sum, brain friendly visuals utilizing pleasant emotional tone, and the presence of vaccination cue is less matter compared to the emotional tone.

Brain Unfriendly Visuals

Visuals to Avoid

Images with highly unpleasant tone and high presence of vaccination cue eliciting negative attitudes toward vaccination education among Extension professionals, which is not recommended to use in vaccination education.

Double Edged Sword

Visuals with unpleasant emotional tone and low presence of vaccination cue is a double-edged sword. Empirical data from both neuromarketing science method and self-report method showed that images with unpleasant emotional tone effectively attracted attention to some extent. However, it also evoked negative responses toward the content, and the content was perceived to be less desirable and favorable.

Source: Kaiser Permanente of the Northwest

Actionable Insights – Textual Framing

What is "brain friendly" textual framing?

- Engaging attention and emotion in a way that enhances memory/learning
  - Lowering negative feelings
  - Increasing self-efficacy
- Two primary "framing" strategies for Extension vaccine education
  - Emotional frames (Gratitude; Empathy, Pride)
  - Extension Value frames

Brain friendly "Emotional" framing

"Empathy for constituents" is the most brain friendly in emotional framings in terms of letting Extension professionals feel more willing and comfort for conducting vaccination education and has a positive effect on cognitive engagement. "Pride in Expertise" is the second emotional framing that is perceived to be effective and can be used as an alternative to "empathy for constituents" framing.

Empathy for Constituents

Extension Professionals who are willing to engage in Covid-19 Vaccine education with their clients/constituents can demonstrate empathy for constituents through their work. Extension Professionals can be equipped to deliver vaccine education in ways that treat individuals who are afraid of vaccination with respect and does not involve intimidation, humiliation, or even persuasion. Extension should avoid a "savior complex" especially in rural areas. Just share general information about vaccinations, how they work and how they are developed.

Pride in Expertise

Extension Professionals who are willing to engage in Covid-19 Vaccine education with their clients/constituents can feel pride in their expertise used to educate their community. Extension Professionals have tremendous ability to understand vaccines and the science behind them. Extension has a history of providing vaccine education to Livestock producers, youth, and adults. Extension has a history of providing evidence-based education. We can be proud to engage in programs that lead to more thoughtful decision making.

Brain friendly "Extension Value" framing

"Link between people and scientists" framing is highly recommended. "Believe in intellectual freedom" framing can be used on a light rotation as an alternative to the first framing.

Link between people and scientists

Covid-19 Vaccine education fits with the mission of Extension Professionals because we believe that Extension is a link between the people and the ever-changing discoveries produced by expert scientists.

Believe in intellectual freedom

Covid-19 Vaccine education fits with the mission of Extension Professionals because we believe in intellectual freedom to search for and present the truth without bias and with courteous tolerance toward the views of others.

Brain unfriendly framing

Brain unfriendly framings evoke more negative emotions and more reactance towards vaccination education.

Examples:

Covid-19 Vaccine education fits with the mission of Extension Professionals

… because education is basic in stimulating individual initiative and self-determination.

… because we believe in our own work and in the opportunity, we must make our lives and the work we do as Extension Professionals useful to humanity.

Sample Message Template Script (Creative Brief)

Communities served by Extension have a critical need for respectful science-based vaccine education. Many community members have significant concern and confusion about the benefits and risks of vaccines. Extension professionals uniquely identify with the community members we serve. We can be a critical bridge between our communities and vaccine science. We can take pride in using our expertise to understand vaccines and the science behind them to produce programs that foster thoughtful decision making and empower ourselves with scientific knowledge.

Extension professionals are dedicated to treating individuals who are concerned about the risks of vaccination with respect, without intimidation, humiliation, or even persuasion about human vaccines. Extension vaccine education is Extension expertise and empathy, bridging science and our communities.

Contemplation Worksheet

How do these actionable insights resonate with you and/or with the work you do?

_____

_____

_____

_____

What information did you already know but maybe hadn't integrated into your work?

_____

_____

_____

_____

In what other areas can you apply these actionable insights besides vaccine science content?

_____

_____

_____

_____

Application of Neuromarketing Science as a "TOOL" for brain-friendly vaccine science education content:

Neuromarketing Science & Vaccine Science Content

- Neuromarketing Science has a valuable role to play in producing and delivering effective vaccine science content by:
    - Guiding production of "brain friendly" content
    - Providing new "data based" actionable insights
- "Effective" "brain friendly" vaccine science content will engage, educate, and empower individuals to make evidence-based health decisions

The Problem: "Three brain truths" in "overdrive"

The "Brain Truths" previously presented in this toolkit can be used to develop, design, and deliver brain friendly communication content about vaccine science. Extension professionals MUST remember, however, that these human brain characteristics ALWAYS impact how community members mentally process and attitudinally and behaviorally respond to all information. The highly politicized and potentially emotionally explosive communication context that can still surround Covid-19, and vaccine science in general, makes processes described by the "Brain Truths" even more influential in shaping community responses to related communication content.

Here is how:

The Brain is a Motivational Emotional processor

Vaccine Science information/misinformation is extremely emotional/political, priming "aversive/defensive" responses

The Brain is a Limited Capacity processor

Vaccine Science information contains a lot of "bits" of changing information tied to the evolving science

The Brain is a Cultural/Contextual processor

Cultural background and experiences creating disparities and distrust shape the communication context and filter how Vaccine Science is interpreted and responded to

The Solution: Respect the "Three brain truths" and follow the practical advice given in the previous section about brain truths!

Contemplation Worksheet

The Brain is a Motivational Emotional processor.

Brain Unfriendly

Brain friendly

Campaign Materials for Vaccinate T&T, Ministry of Health, Government of the Republic of Trinidad and Tobago & AdTechCares

Note the reasons why one ad is brain unfriendly, and the other ad is brain friendly:

_____

_____

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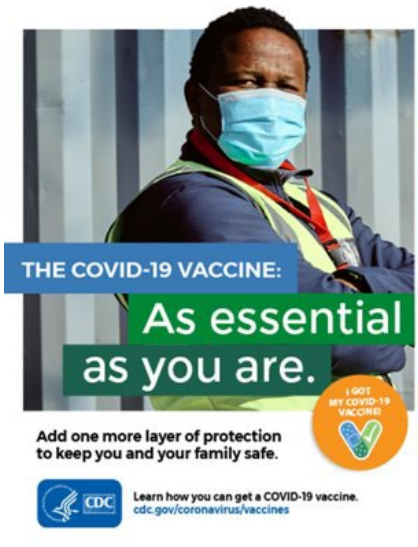
_____

The Brain is a Limited Capacity processor:

Brain Unfriendly

Brain friendly



From the U.S. Department of Health and Human Services Website, COVID-19 Public Education Campaign

Note the reasons why one ad is brain unfriendly, and the other ad is brain friendly:

_____

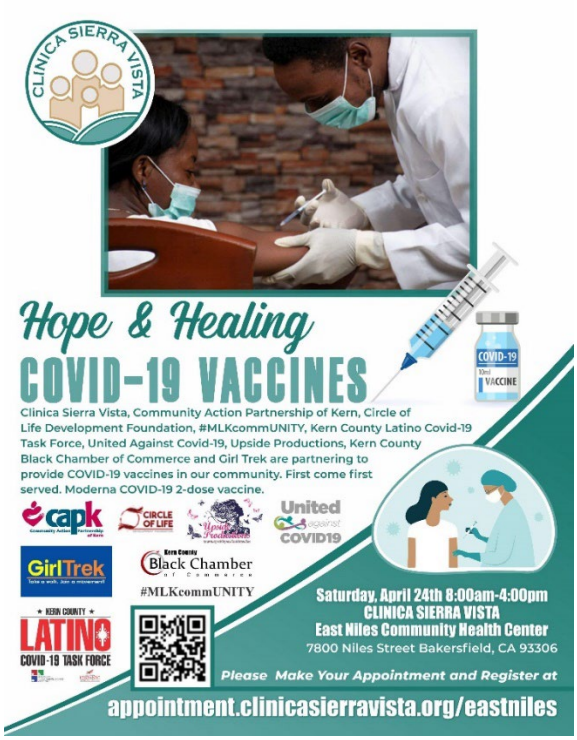
_____

_____

_____

The Brain is a Cultural/Contextual processor:

Brain Unfriendly



Brain friendly

Source: Clinica Sierra Vista & The Ad Council

Note the reasons why one ad is brain unfriendly, and the other ad is brain friendly

_____

_____

_____

_____

Practical Advice for Developing "Brain Friendly" Vaccine Science Content

Brain Friendly vaccine education content will include content that engages BOTH "Intuitive" AND "Rational" thinking

Use production features to engage System 1

- Camera angle and shot length
- Color Schemes
- Font size
- Production pacing and "effects"

Use copy/content to engage System 2

- Write copy/content to highlight key points
- Write copy/content to empower
- Write copy/content to evoke feelings

❖ Brain Friendly vaccine education content for "vaccine hesitant" communities MUST reduce defensiveness and emotionally resonate to motivate individuals to consider and act on information

Brain Friendly vaccine science content needs to "tame the Elephant" meaning highly negative emotional and defensive responses that have been primed by the politicized and emotional communication environment that surrounds vaccine science.

- Feature "relatable" real humans
- Feature positive emotional content (hope)
- Acknowledge risks (negative affect)
- Use calming color schemes
- Use inclusive language "we"
- Avoid highlighting "vaccine" cues
- Avoid unintended politicized cues
- Avoid "red" or similar color schemes
- Avoid "directive" or "loss-frame" content

Utilize the Bite-snack-meal for content design

When developing content, consider the amount of content people can absorb in the communication content format. Thinking about this food analogy helps with making the decisions about the right amount of content to include.

Source: https://martech.health/articles/how-to-market-to-physicians-is-medical-jargon-the-answer

Contemplation Worksheet

Think about some content that you are currently working on. With the Bite-Snack-Meal strategy in mind, record what content you might share in each situation.

Consider each of the Right Sizes	Content Topic: _____
Bite size	
Snack size	
Meal size	

Video Resource Box: Brain friendly vaccine video

Whitman County's COVID-19 Vaccine Journey - Linda's Story

What evidence is there for this to be a good example of a brain friendly vaccine video?

_____

_____

_____

_____

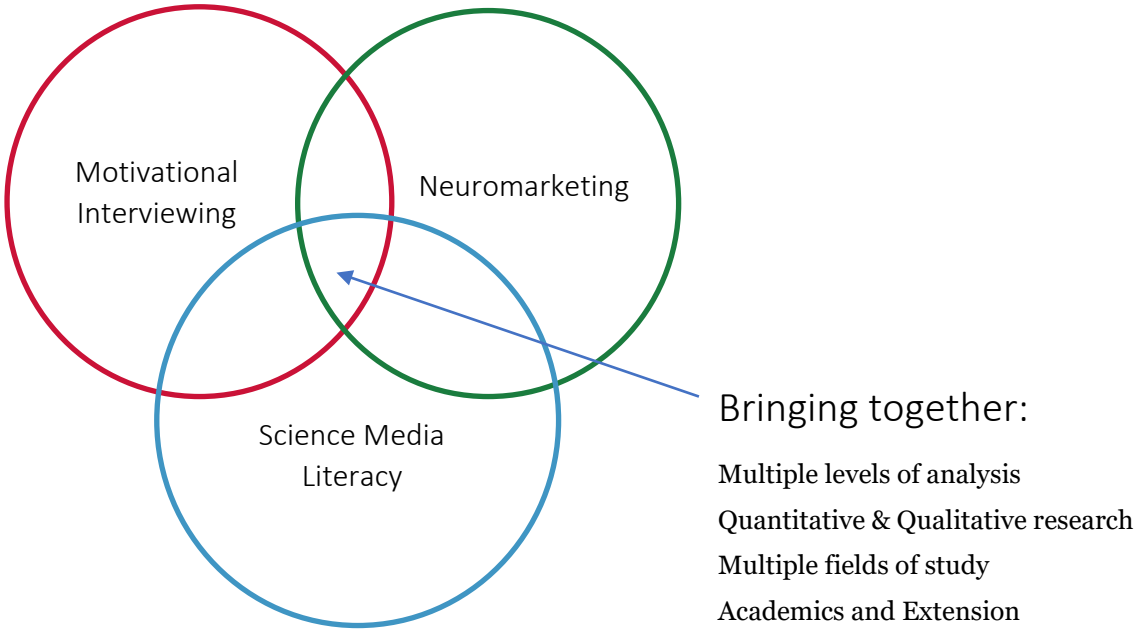
NOTES

CONCLUSION

Section 5

Integrating Neuromarketing Science, Motivational Interviewing, and Science Media Literacy in Mental Processing of Vaccine Science Content

Returning to Figure 1:



Neuromarketing Science, Motivational Interviewing, and Science Media Literacy provide insight into distinct but related processes in how individuals mentally process and respond to vaccine science content. These three tools can be used by Extension Professionals to develop communication tactics for effectively "engaging" with community members. Motivational interviewing and Science Media Literacy are primarily tools that can help you gain a deeper understanding of specific community members. Neuromarketing Science is a tool for using knowledge about the human brain to produce and deliver effective communication content.

Contemplation Worksheet:

What overlaps do you see between neuromarketing science, science media literacy, and motivational interviewing?

_____

_____

_____

_____

How do emotions (your emotions as well as the emotions of those you interact with) play into your communication strategies?

_____

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_____

_____

What value do these tools bring to your interactions with other Extension Professionals, partners, and community members?

_____

_____

_____

_____

What takeaways will you now build into your work because of learning about these three tools?

_____

_____

_____

_____

REFERENCES

Section 6

Appendix: Figures and Tables & Additional Handouts

Figures

Tables

Motivational Interviewing Handout

Vaccine Readiness Conversation Practice

Instructions:

- Read through the following exchange between a Community Member and an Extension Professional.
- You will have 5 minutes to complete this worksheet individually. After 5 minutes, you will have 10 minutes to discuss your answers as a group.
- You will have 15 minutes for the whole exercise.

Extension Professional: *On a scale from 1 to 10, where 1 means not ready at all and 10 means very ready, how are ready are you to ask your daughter's pediatrician about what vaccines your child may need?*

Community Member: *Oh geez. I don't know. Um. A 4?*

PROMPT Write an example of a reflection that you can offer this Community Member. *Remember, reflection is a statement that reflects what the person said. It could be a simple restatement, or a reflection of underlying feeling or meaning.*

_____
_____
_____
_____

Community Member: *Sounds about right.*

Extension Professional: *What makes it as high as a 4 and not a 2?*

Community Member: *Well, I know that if my daughter has vaccines, she could stay healthier. And keep all of us healthier, too. But what if there are side effects that I don't know about…*

PROMPT Write down what change talk you are hearing in the Community Member's Statement. Remember, change talk are statements of: *desire, ability, reasons, need, commitment, activation, or taking steps towards change.*

_____

_____
_____
_____

PROMPT Write down an affirmation that you could offer this Community Member. Remember, an affirmation *is a statement that reflects person's strengths, values, or goals.*

_____
_____
_____
_____

Extension Professional: *What would need to happen for you to feel a little more ready, like a 5 or a 6?*

Community Member: *I think writing down some of the questions that I have for my daughter's pediatrician so I don't forget to ask them, that would make me feel more prepared.*

PROMPT Write down a question you could ask this Community Member to move the conversation forward:

_____
_____
_____
_____

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