THE INSTITUTE FOR
HIGH CONCERN
COMMUNICATION

Risk Communication: Linking Science with Society

International Experts' Meeting on Radiation Protection after the Fukushima Daiichi Accident: Promoting Confidence and Understanding

Keynote Presenter:

Dr. Vincent T. Covello

Director, Center for Risk Communication

Director, Institute for High Concern Communication

New York City

Tel. 1-917-270-5280

Email: vincentcovello@yahoo.com

2011 IAEA Action Plan on Nuclear Safety

- Identified 12 Major Areas to Strengthen Nuclear Safety Worldwide

- One of the 12 Major Areas:

"Communication and Information Dissemination"

- Goal: "Enhance transparency and effectiveness of communication."

Presentation Goals

- Evaluate communication performance of TEPCO at Fukushima against other major crises
- Briefly review best practices for crisis communication
- Briefly review challenges for radiological crisis communication

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Science Based Criteria for Evaluating Best Practices in Crisis Communication (Selected Sources)

"Effective Media Communication During Public Health Emergencies: A World Health Organization Handbook." World Health Organization: Geneva, Switzerland (2007) http://www.who.int/csr/resources/publications/WHO%20MEDIA %20HANDBOOK.pdf?ua=1

"Guidance on Developing Effective Radiological Risk Communication Messages." NUREG/CR-7033. Washington, DC: Nuclear Regulatory Commission. (2011)

http://pbadupws.nrc.gov/docs/ML1104/ML110490120.pdf

"Developing an Emergency Risk Communication/Joint Information Center Plan for a Radiological Emergency." NUREG/CR-7032. Washington, DC: Nuclear Regulatory Commission (2011)

http://pbadupws.nrc.gov/docs/ML1104/ML110490119.pdf

Science Based Criteria for Evaluating Best Practices in Crisis Communication (Selected Sources)

- V. Covello, "Risk Communication, Radiation, and Radiological Emergencies: Strategies, Tools, and Techniques," *Health Physics,* November, Vol. 101, Issue 5: 511-530 (2011)
- IAEA Documents on Risk and Crisis Communication
- WHO Documents on Risk and Crisis Communication

Science Based Criteria for Evaluating Best Practices in Crisis Communication

Crisis Communication Templates

- CCO Template

  (Compassion, Conviction, Optimism)
- 27/9/3 Template

  (27 Words, 9 Seconds, 3 Messages)
- Primacy/Recency Template

  (Most Important Messages, First and Last)

-- AGL-4

(Average Grade Level Minus Four)

-- 1N = 3P Template

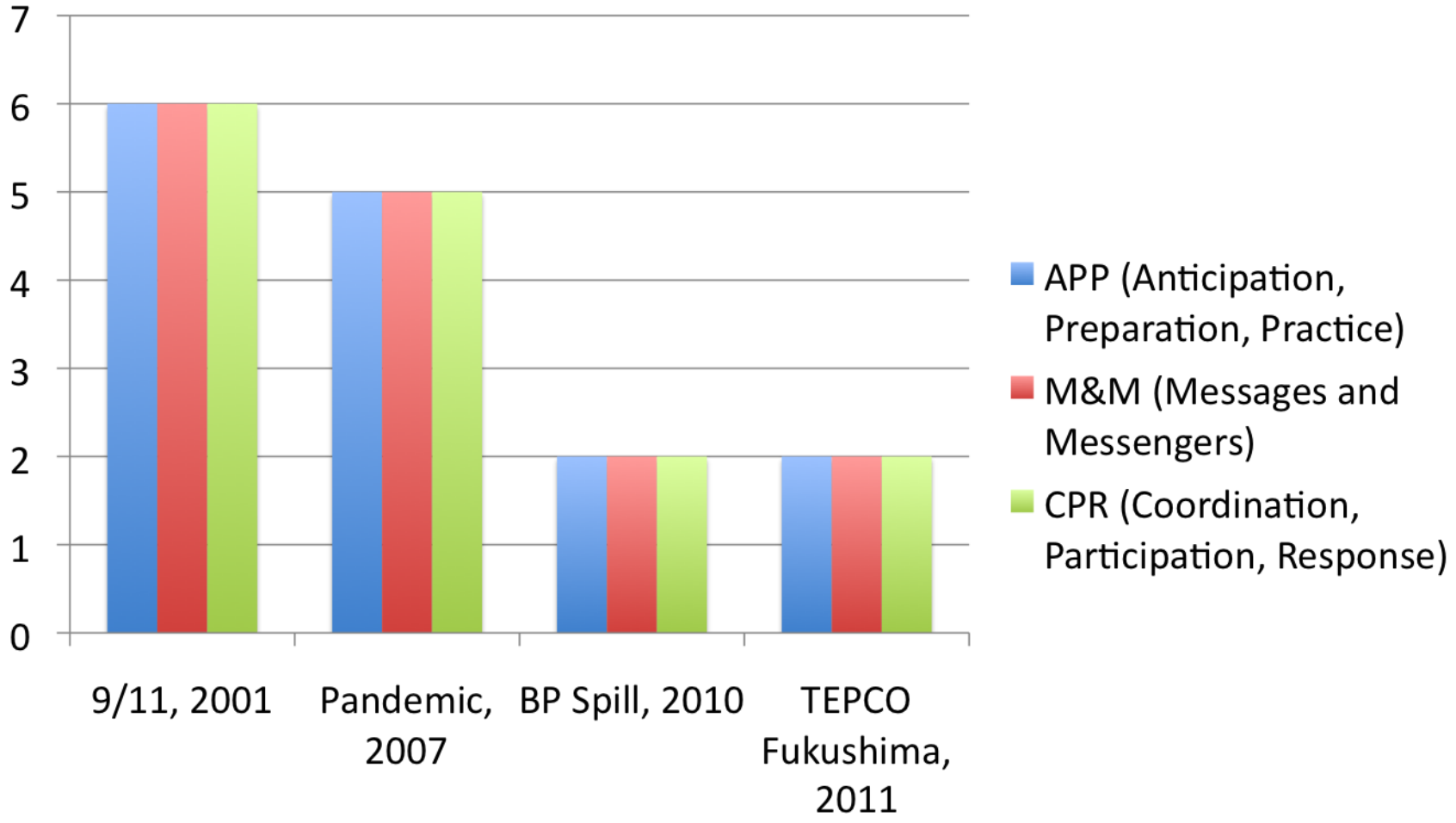
(One Negatives Equals Three Positives)

Crisis Communication Templates*

- CCO Template
  - When people are stressed or upset, they want to know that you care before they care what you know
- 27/9/3 Template
  - When people are stressed or upset, they have difficulty processing information. Therefore, KISS (Keep it Simple and Short)
- Primacy/Recency Template
  - When people are stressed or upset, they focus most on beginnings and ends.
- AGL-4 Template
  - When people are stressed or upset, they process information at below their educational level
- 1N = 3P Template
  - When people are stressed or upset, negative information receives much greater weight and attention than positive information

* Holding constant other variables

Score Card:
Best Practices in Crisis Communication



TEPCO Fukushima

Positive:

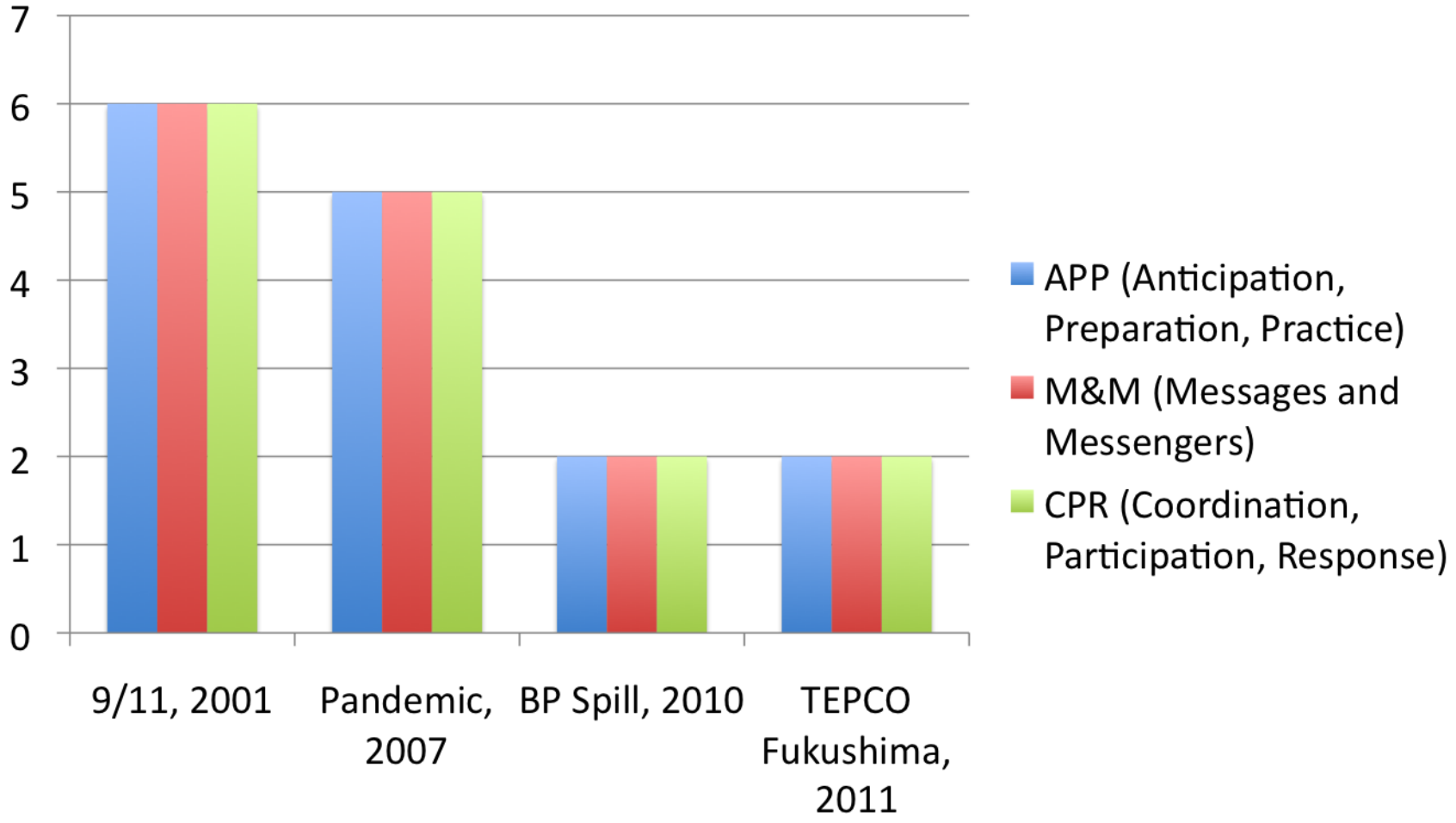
- Tremendous efforts to help affected populations in an extremely difficult situation (earthquake, tsunami, nuclear power plant accident).

Negative: Huge deficiencies in communications.

Examples:

- Population in evacuation zone given:
  - vastly different evacuation instructions
  - confusing evacuation instructions
  - little warning, preparation, or knowledge related to the evacuation
- Spokespersons with limited crisis and media communication skills (see WHO Handbook)
- Changing regulatory standards

Score Card:
Best Practices in Crisis Communication



Case Study
BP Oil Spill (2010)

Case Study:

British Petroleum Oil Spill (2010)

BP CEO

Tony Hayward


OIL SPILL DISASTER
BP TO TRY NEW CONTAINMENT PLAN
TODAY
TODAYSHOW.COM

Case Study:

BP Oil Spill (2010)

BP CEO

Tony Hayward

"I'm sorry. We're sorry for the massive disruption it has caused their lives. And there is no one who wants this over more than I do. I'd like my life back."

(May 30, 2010)

BP Oil Spill (2010):
BP CEO Tony Hayward

"I'm sorry. We're sorry for the massive disruption it has caused their lives. And there is no one who wants this over more than I do. I'd like my life back." (May 30, 2010)

Case Study:

9/11 (2001)


CNN
Rope
NEW SERIES OF 'UP CLOSE' REPORTS ON CNN MONDAY, 8P

Mayor Giuliani, 9/11

"The number of casualties is more than any of us can bear ultimately."

Mayor Giuliani, 9/11

- “The number of casualties is more than any of us can bear ultimately.
- And I believe we will become stronger.
- Stronger economically, politically, and most importantly, emotionally.”

Case Study:
Pandemic Influenza

Pandemic Influenza: Expressing Concern

"First I want to recognize that people are concerned about this situation.

We hear from the public and from others about their concern.

We are concerned as well."

Dr. Richard Besser, CDC Acting Director
H1N1 News Conference, April 24, 2009

Pandemic Influenza: Acknowledging Uncertainty

"I want to acknowledge the importance of uncertainty."

"At the early stages of an outbreak, there's much uncertainty."

"Our guidelines and advice are subject to change as we learn more."

Dr. Richard Besser, CDC Acting Director
H1N1 Press Conference, April 23, 2009

Case Study
Fukushima (2011)

Fukushima (2011)

Massive Confusion Caused by The Use of Numbers, Notation, and Different Units to Describe Radiation Levels

US system		International System
Rem	=	**0.01 sievert***
Rad	=	**0.01 gray**
Curie	=	**3.7 x 10 10 becquerel**
Roentgen	=	**2.5 x 10 -4 coulombs/kilogram**

* Additional technical terms: millisiverts, microsiverts, micrograys, beta radiation, gamma radiation, alpha radiation, Bq/m3, Bq/cm3, joules per kilogram, etc., etc., etc.

Presumed Rationale: Desire by radiation scientists for precision and accuracy when describing radiation interactions and energy

Case Study:

Anthrax (2001)


LIVE
ANTHRAX SCARE
NEW CASE OF INHALATION
ANTHRAX CONFIRMED IN N.Y.
CNN
E SALES FELL LAST WEEK
CNN
FAA BANS PRIVATE PLANE

Concentration Comparisons

one part per billion (1 ppb) equals:

- 1 second in 32 years
- 1 drop in an Olympic type pool
- 1 inch in 16,000 miles

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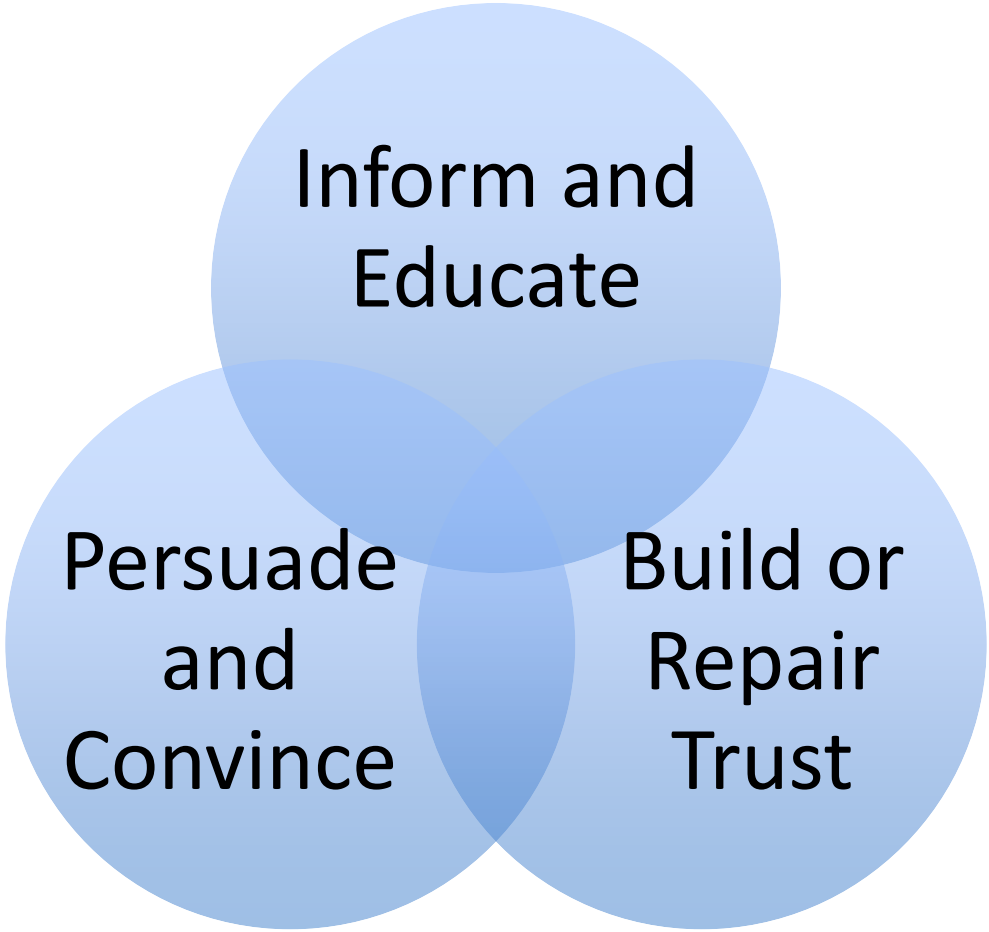
Best Practices

Crisis Communication Goals



Tool:

Crisis Communication Strategy:

1. Identify potential crisis scenarios
2. Identify key stakeholders (audiences)
3. Identify stakeholder questions and concerns
4. Develop key messages
5. Develop supporting information
6. Coordinate and test messages with stakeholders and partners
7. Plan for delivery

"Most of the concerns and questions of upset or concerned people can be predicted in advance."

Mayor Rudolf Giuliani, 1995

Crisis and Risk Communication Literature

- 8000 Articles in Peer Reviewed Scientific Journals
- 2000 Books
- Reviews of the Literature by Major Scientific Organizations
  - US, National Academy of Sciences: "Improving Risk Communication" (1989)
  - UK, Royal Society:

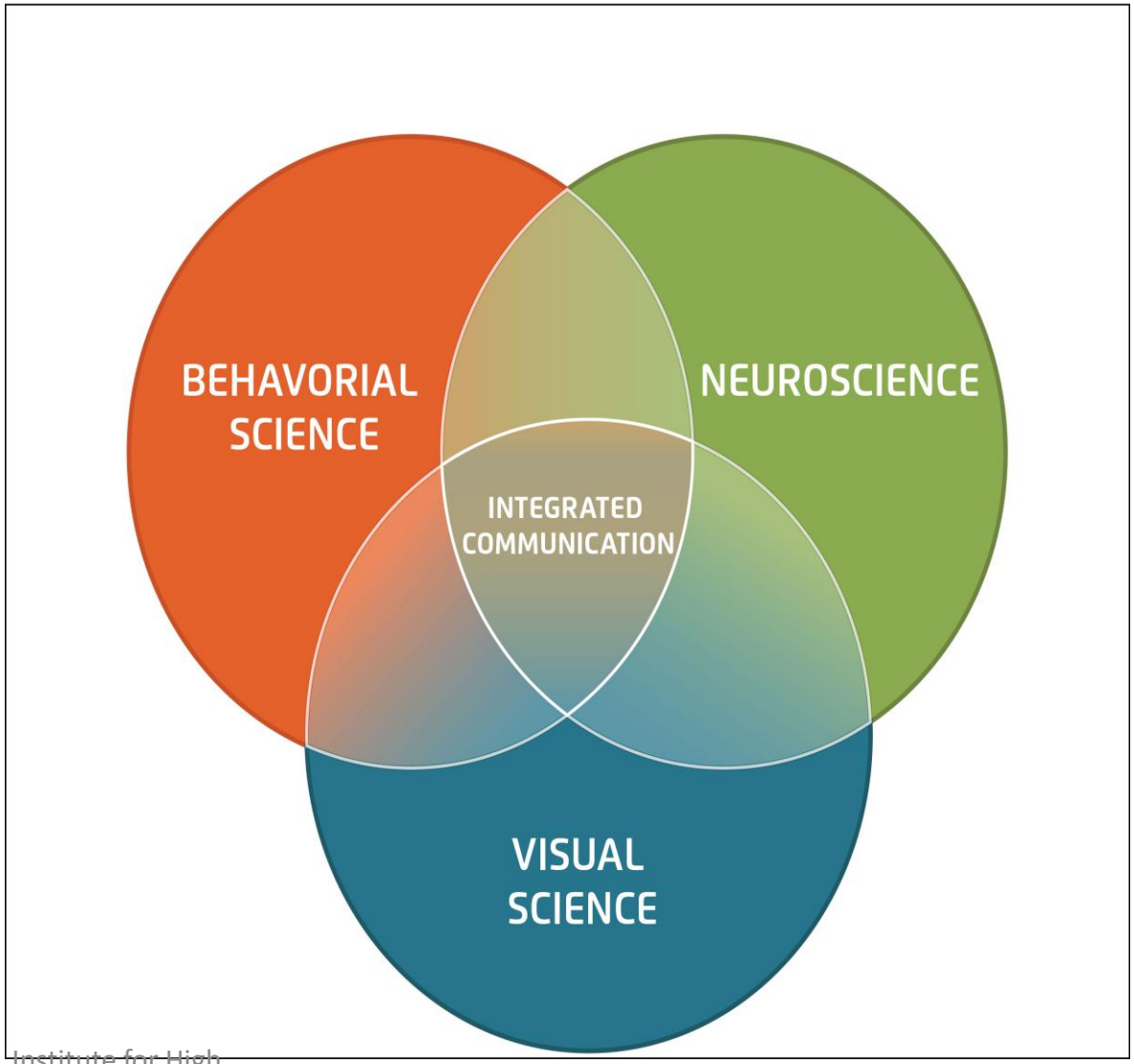
    "Risk: Analysis, Perception and Management (1992)

Crisis Communication Literature

Marriage and Integration of Science Based Literature from:

- Behavioral and Social Sciences
- Neuroscience
- Visual Science

CONVERGENCE OF THREE SCIENCES



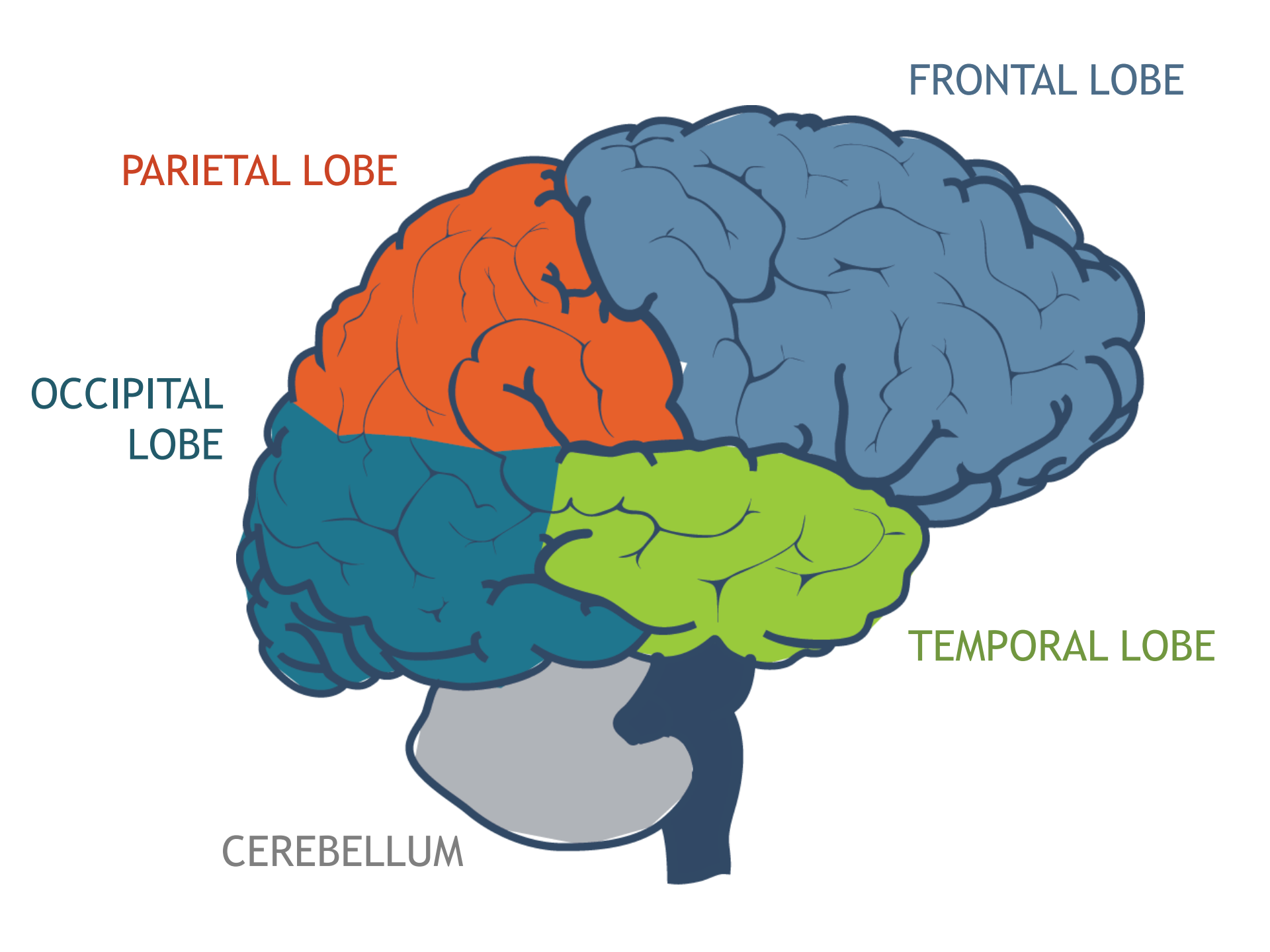
Science Based Crisis Communication Literature

Dr. Randall Hyer
and
Dr. Vincent Covello

"Effective Media Communication During Public Health Emergencies:
A World Health Organization Handbook" (2007)

Media Communication Skills

www.amazon.com, www.who.int/bookorders, or click on Google: "Effective Media Communication"


FRONTAL LOBE
PARIETAL LOBE
OCCIPITAL LOBE
TEMPORAL LOBE
CEREBELLUM

Risk and Crisis Communication Literature:

Example

- "The Magic Number Seven, Plus or Minus Two: Some Limits on Our Capacity for Processing Information"

Professor George A. Miller (Department of Psychology, Princeton University)

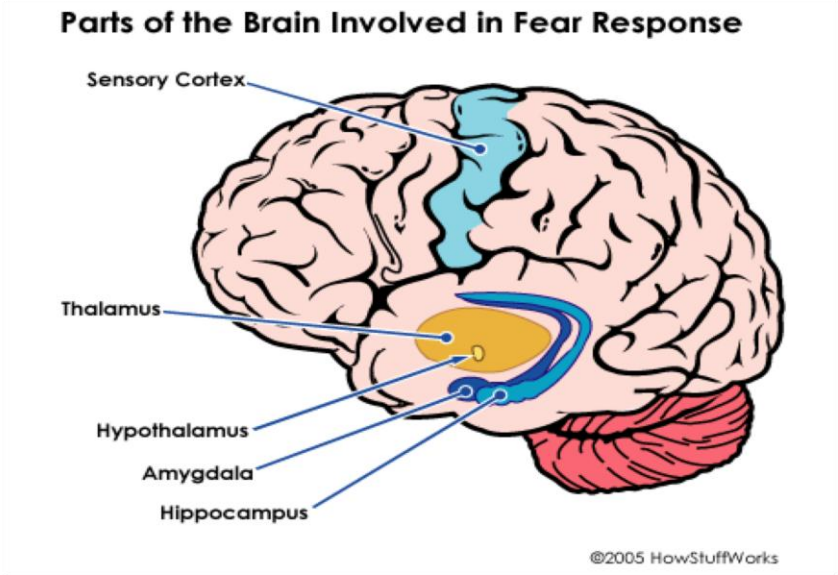
  – The Psychological Review, 1956, vol. 63, pp. 81-97

Brain Research

- Rational thinking response (primarily frontal lobe)
- Emotional response (many parts of the brain)
- Fear response (primarily amygdala and hypothalamus)

d

Parts of the Brain Involved in Fear Response



Amygdala

Hypothalamus

Crisis and Risk Communication Research Literature: Examples

- Professor Daniel Kahneman, "Thinking Fast and Slow"

  Verbal Communication Skills
- Professor Edward Tufte, "Visual Explanations"

  Visual Communication Skills
- Professor Paul Ekman, "Telling Lies: Clues to Deceit" (Also, "Emotions Revealed")

  Non-Verbal Communication Skills

Crisis Communication Skills: Application Areas

Crises, Emergencies, and Disasters

- Radiological emergencies and crises (e.g., Fukushima)
- Natural Hazards
- Industrial and Other Accidents

Internal High Concern/High Risk Situations

- Organizational Change
- Migrating/Merging/Downsizing/Growth
- Changes in Leadership
- Changes in Policy or Strategic Objectives

External High Concern/High Risk Situations

- Disruptions in Customer Service
- Health, Safety, and Environmental Risk Communication
- Governance and Leadership Issues

- Marital Crisis Communication

Marital Crisis Communication Exercise

According to research, there are seven major topics of marital and family arguments. The seven are:

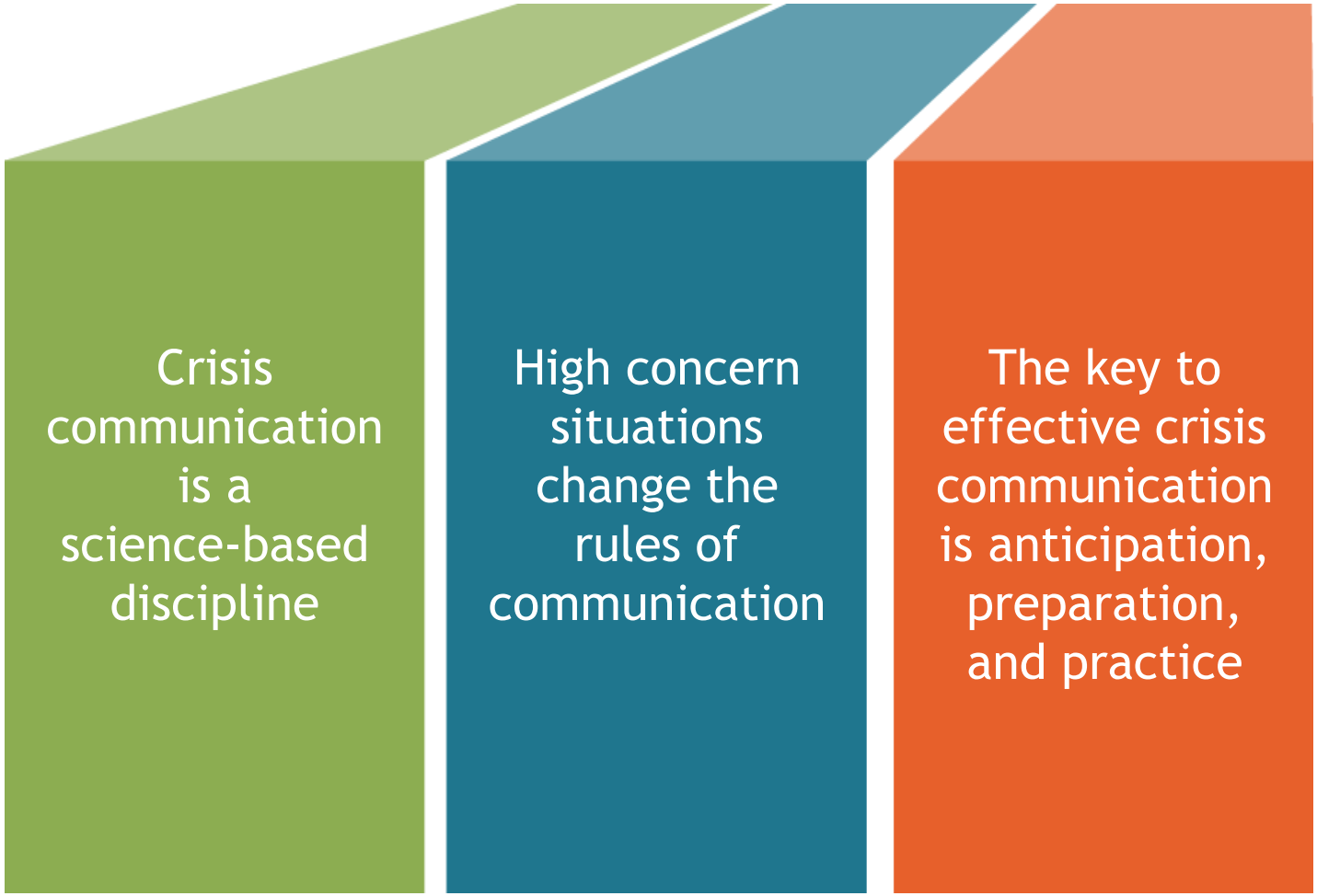
1.
2.
3.
4.
5.
6.
7.

Marital Crisis Communication Exercise

The seven major topics of marital and family argument or dispute are:

1. Money
2. Children
3. Work versus Family
4. In-laws
5. Division of Labor at Home
6. Intimacy/Sex
7. Communication

Crisis Communication Best Practices: Three Key Messages



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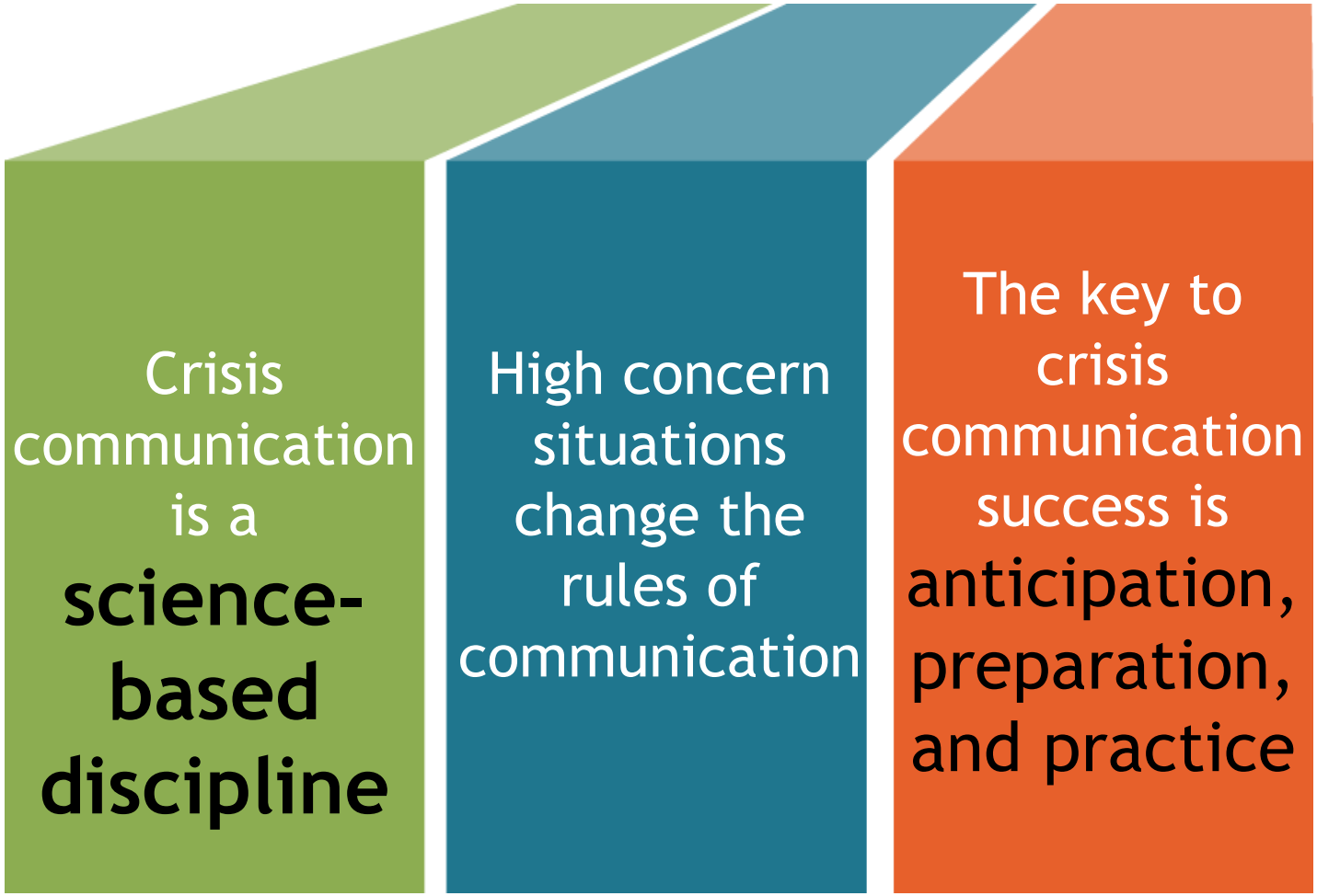

Anticipate, Prepare, Practice (APP)

- **Anticipate** events, stakeholders, questions and concerns
- **Prepare** responses to anticipated questions and concerns
- **Practice** and evaluate message delivery to anticipated questions and concerns

Examples of Lists of Frequently Asked Questions

- "77 Most Frequently Asked Questions During a Disaster"
- "101 Most Frequently Asked Questions at a Radiological Clean-Up Site (US EPA)
- "65 Most Frequently Asked Questions in a Public Health Emergency (Google: "pandemicflu.gov, message maps")
- "420 Most Frequently Asked Questions Following a Major Radiological Event"

  Covello, V., (2012), "Guidance on Developing Effective Radiological Risk Communication Messages." US Nuclear Regulatory Agency

  – http://pbadupws.nrc.gov/docs/ML1104/ML110490120.pdf

Anticipating Questions and Concerns

- Informational Questions and Concerns
- Challenge Questions and Concerns
- Strange and Bizarre Questions and Concerns

Bob Newhart

Crisis Communication Research

Speed at Which Risk and Crisis Information Flows Through the Media

Case Study:

Boston Marathon (2013)

London Olympics: 2012

Fukushima (2011)

Frequently Asked Questions

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Speed at Which Risk and Crisis Information Flows Through the Media

20 YEARS AGO

24 HOURS

10 YEARS AGO

4 HOURS

TODAY

4 MINUTES

Communication Challenge:

Challenge: Speed at Which Risk and Crisis Information Flows Through the Media

- 20 years ago: 24 hours
- 10 years ago: 4 hours
- Today (2014): 4 minutes

Implications?

Implications

- Anticipate (events, stakeholders, questions and concerns
- Prepare (messages, messengers, means)
- Practice (role plays, drills, simulations)

Message Development

Message Map

Stakeholder:

Question or Concern:

Key Message 1	Key Message 2	Key Message 3
9 words on average	9 words on average	9 words on average

West Nile Virus Map:
Question: What can people do to protect themselves from West Nile Virus?

Message Map: Haiti, 2011

Key Message "Remove Standing Water"		Key Message "Wear Protective Clothing"		Key Message "Use Insect Repellent"	
1.1	Puddles	**2.1**	Long Sleeves	**3.1**	DEET
1.2	Flower Pots/Bird Baths	**2.2**	Long Pants	**3.2**	23%
1.3	Cup of Water	**2.3**	Dusk and Dawn	**3.3**	Medical Research

Message Map:

Pandemic Influenza

Stakeholder: Public/Media
Question or Concern: What should people do to prevent spread of the disease?

Key Message 1	Key Message 2	Key Message 3
Wash your hands.	Stay home if you are sick.	Cover your cough or sneeze.
Use soap and hot water		
Wash for at least 20 seconds		
Use hand sanitizer if soap and water are not available.		

Pandemic Influenza Message Maps

- 65 Questions
- 65 Message Mapped Answers (3 key messages in 27 words with supporting facts)
- For all 65 maps, Google: “pandemicflu.gov, message maps”

See also: V. Covello, “Risk Communication and Message Mapping: A New Tool for Communicating Effectively in Public Health Emergencies and Disasters,” *Journal of Emergency Management* Vol. 4, No. 3, May/June: 25-40 (2006)

Presentation Goals

- Evaluate communication performance of TEPCO at Fukushima against other major crises
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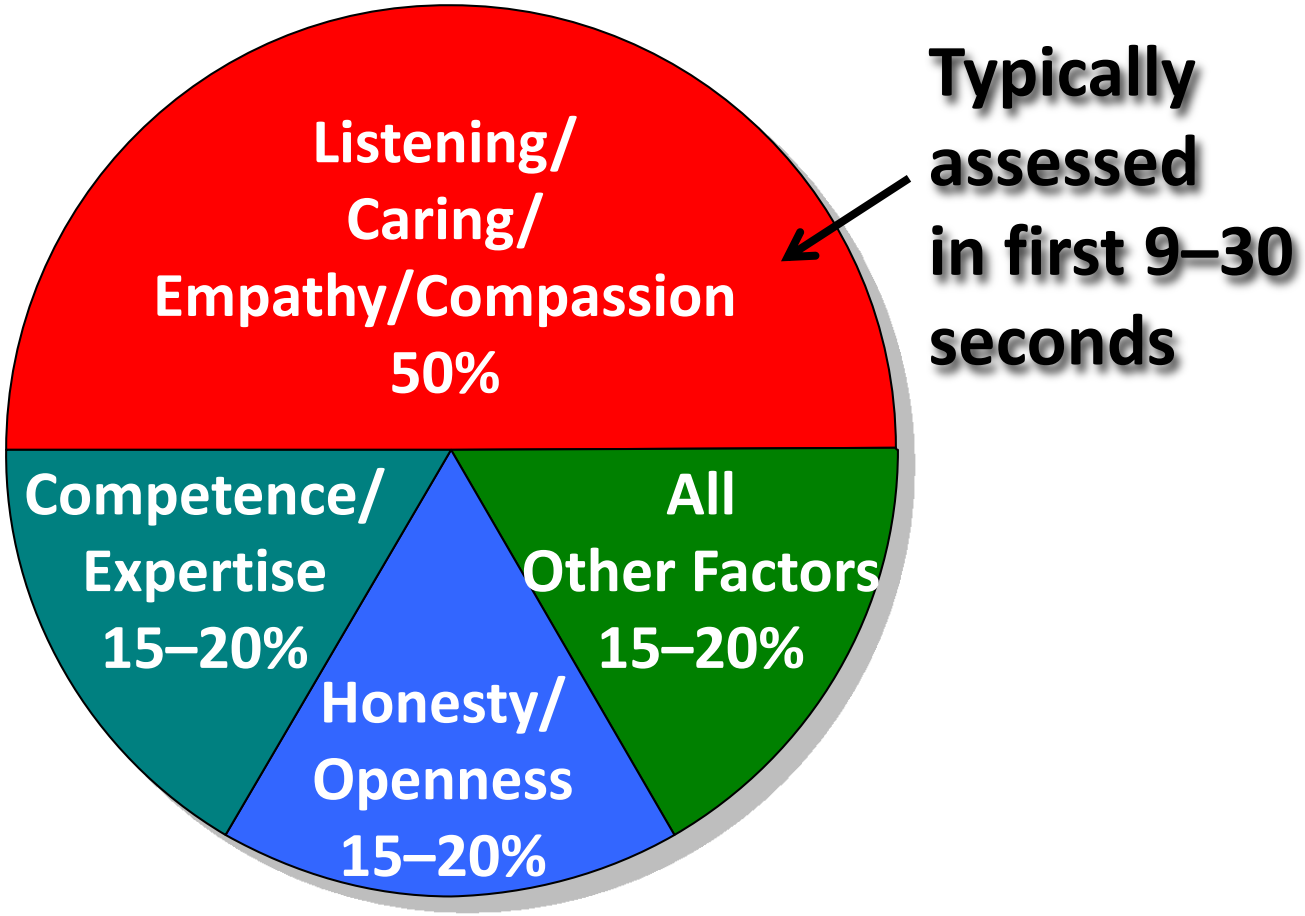
Three Communication Challenges

- ❑ Building and Repairing Trust
- ❑ Radiological Messaging
- ❑ Cultural Diversity

Three Challenges

- ❑ Building and Repairing Trust
- ❑ Radiological Messaging
- ❑ Cultural Diversity

Trust Determination



Building and Repairing Trust: Crisis Communication Principles

- ❑ People want to know that you care before they care what you know.
- ❑ Active listening is a critical critical communication skill (Note: we have two ears and one mouth)
- ❑ Facts do not address emotions

Case Study:

Silicone Breast Implants (1996)

CEO, Dow Corning

Richard Hazelton

Case Study:

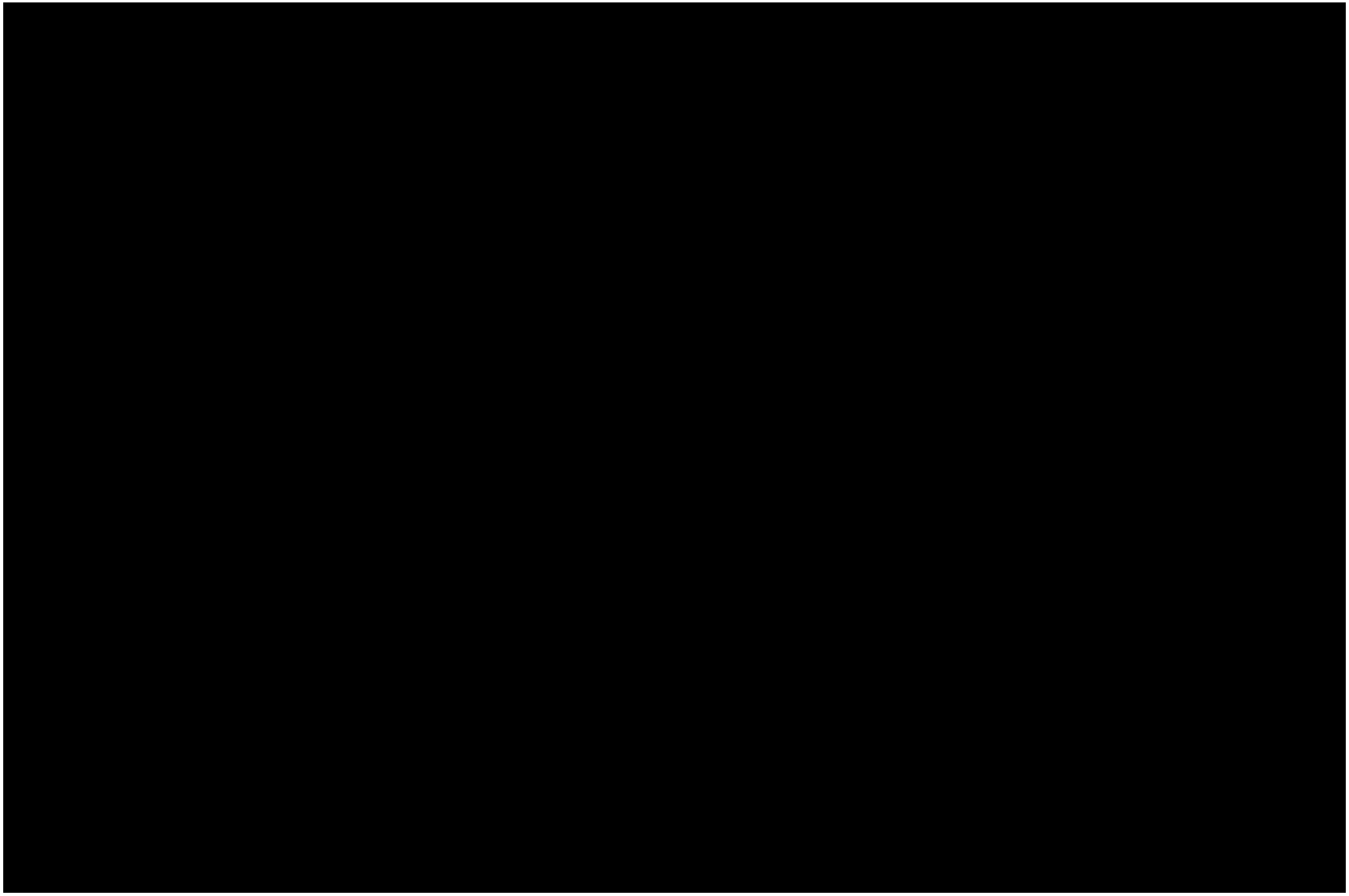
Silicone Breast Implants (1996)

CEO, Dow Corning

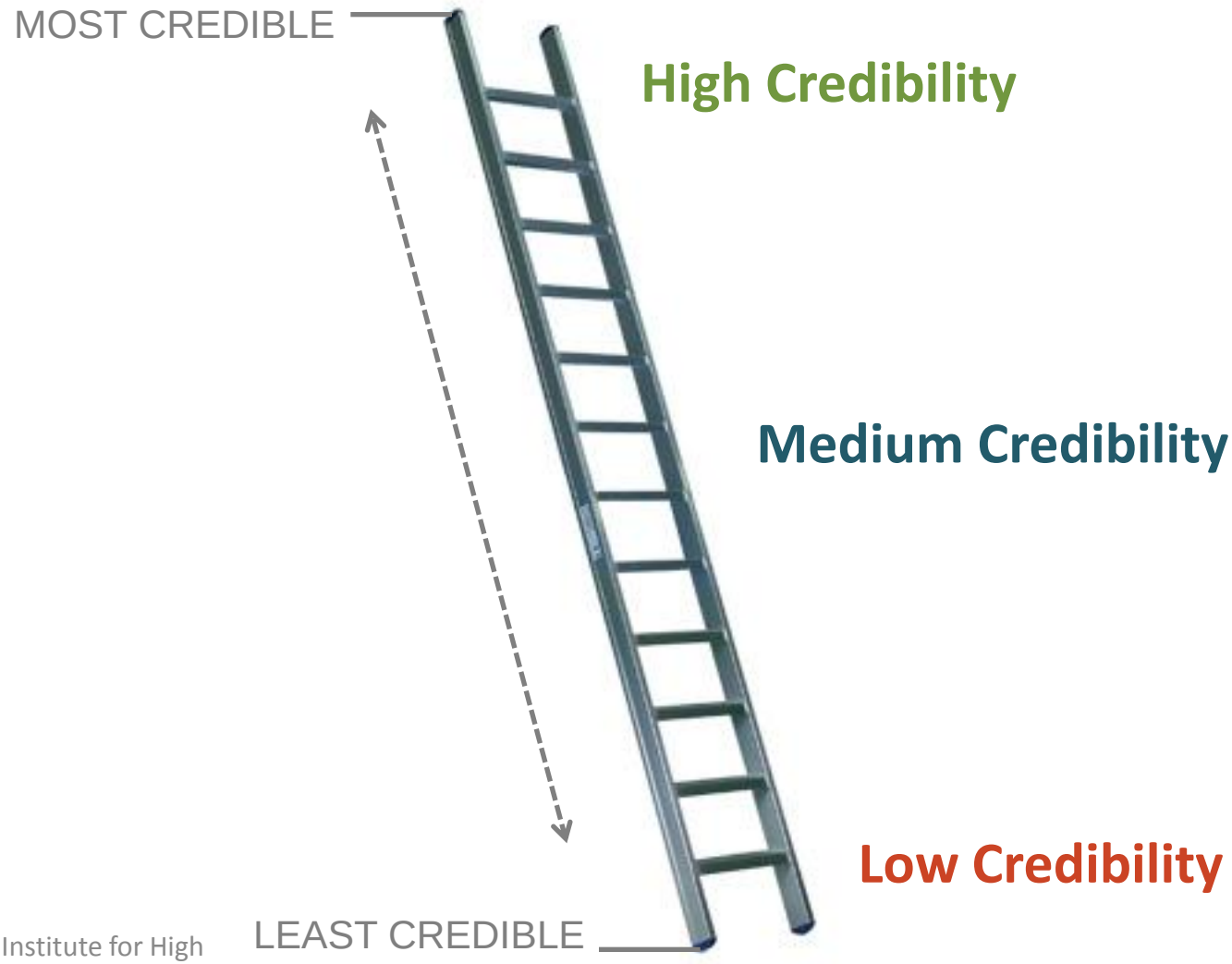
Richard Hazelton

“72, 92, whatever.”

Cool Hand Luke



Building and Repairing Trust: Credibility Ladders



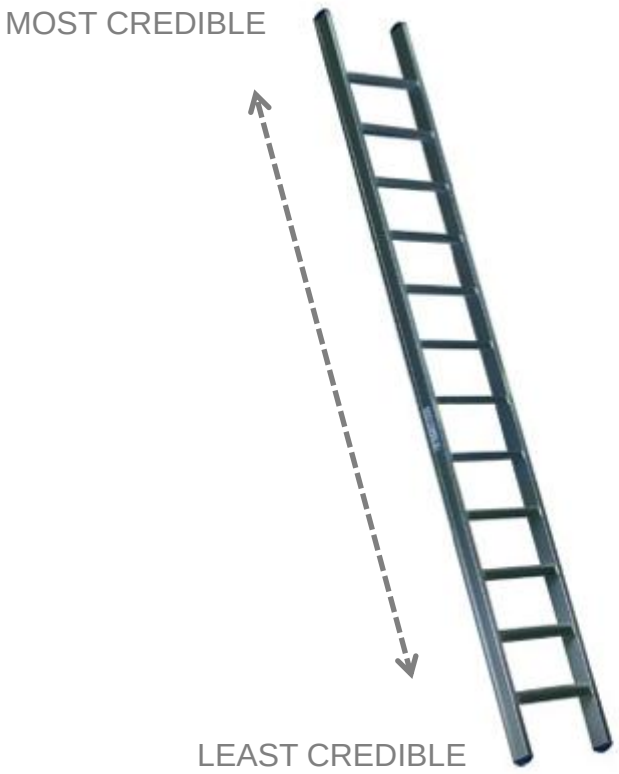
Credibility Ladders

Credibility Ladders: Principles

- Credibility Transference*
  - -- A lower credibility source on a credibility ladder takes on the credibility of the highest credible source on a credibility ladder that agrees with its messages
- Credibility Reversal*
  - -- A lower credibility source on a credibility ladder that attacks the credibility of a higher credible source loses further credibility

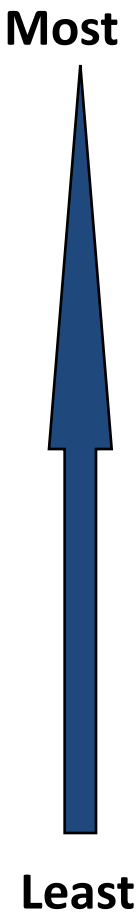
* Holding constant over variables

Credibility Ladder:
Drug Safety (e.g., potassium iodide)
(USA, 2013)



- Pharmacists
- Professors (medical research)
- Physicians/Nurses/PhDs
- Health Officials
- Friend/Family members (with personal experience)
- Middle level managers (drug manufacturer)
- Hired experts/consultants
- Company executives (pharmaceutical)

Credibility Ladder (US): Environmental Health (2014)



- Citizen or stakeholder advisory panels
- Nurses, physicians, other health professionals
- Safety/emergency response professionals (e.g., fire chief)
- Professors / Educators
- Professional societies
- Government officials
- Media
- Industry Officials
- Consultants from “for-profit” Firms

Critical Need For*:

- Independent testing
- Testing results made publically available
- Vetting of locally produced radiation data

  (see, for example, Fukushima reports by

  IAEA and UNSCEAR)

* see Conference Poster Presentation by Neville, Napier, Caffrey, and Higley, "Transparency and Clarity in Post Accident Communications"

Three Challenges

- ❑ Enhanced Trust
- ❑ Enhanced Messaging
- ❑ Enhanced Respect for Cultural Diversity

Messaging:

Improved methods for communicating radiation information

Example: Risk comparisons

- Best: Comparisons to Regulatory Standards (e.g., health, water, soil, air, and food safety standards)*
- Second Best:

  Temporal Comparisons (Before and After the Event);

  Geographical Comparisons (Comparisons to Other Geographical Locations)
- Third Best: Comparisons to Other Sources of Exposures to Radiation (e.g., dental x rays; cosmic radiation; airplane flying)
- Least Effective: Comparisons to Bananas or Brazil Nuts

=====

* Substantially less effective when there are disagreements

Risk and Crisis Communication

- “Be first”
- “Be accurate”
- “Be credible”

Challenge: Everybody is talking. Everybody is listening.

Twitter Messaging (230 million active users; average of 500 million Tweets every day)

Maximum: 140 characters

- Common Language
- Short cuts (e.g., “u” instead of “you”)
- Limited use of polysyllabic words

Example: “…… is a serious concern to us. We will continue to work with ….. …….. …….. ……. ……. in this regard. We are confident of success.”

(27 words/9 seconds/3 messages: less than 140 characters)

Three Challenges

- ❑ Enhanced Trust
- ❑ Enhanced Messaging
- ❑ Enhanced Respect for Cultural Diversity

Risk Perception Theory:

Fear/Outrage Factors (short list)

Lower Fear

- Trustworthy sources
  (competent? honest? caring?)
- Large benefits (maximize rewards/ minimize threats)
- Under one's control
- Voluntary
- Fair
- Natural origin
- Children not victims

Higher Fear

- Untrustworthy sources
- Few or unclear benefits
- Controlled by others
- Involuntary
- Unfair
- Human origin
- Children as victims

Japanese Cultural Values

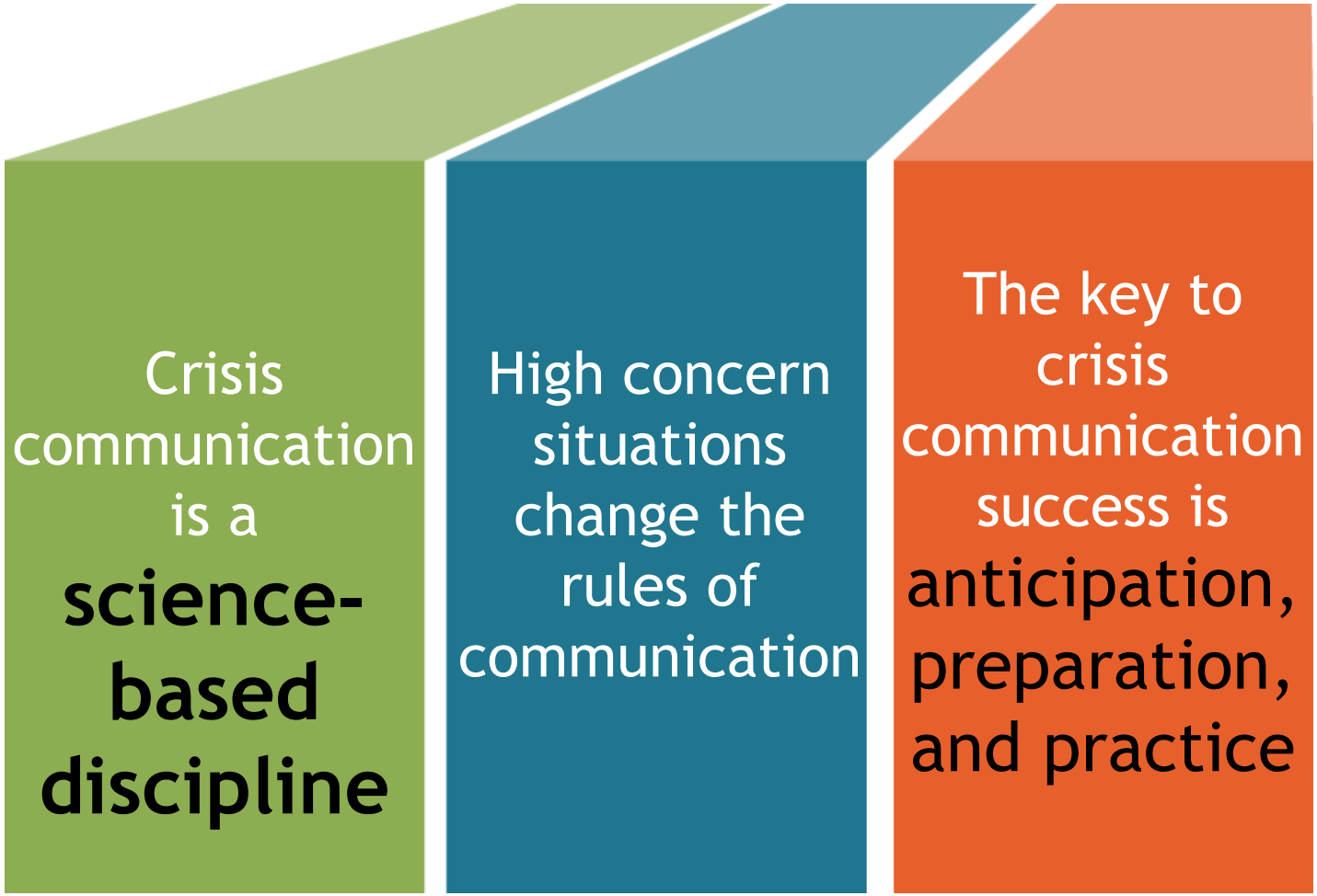
- Teamwork
- Politeness/Respect for Others
- Courage/Bravery
- Hard Work
- ….
- ….
- ….

CONCLUSION/ SUMMARY

Takeaways

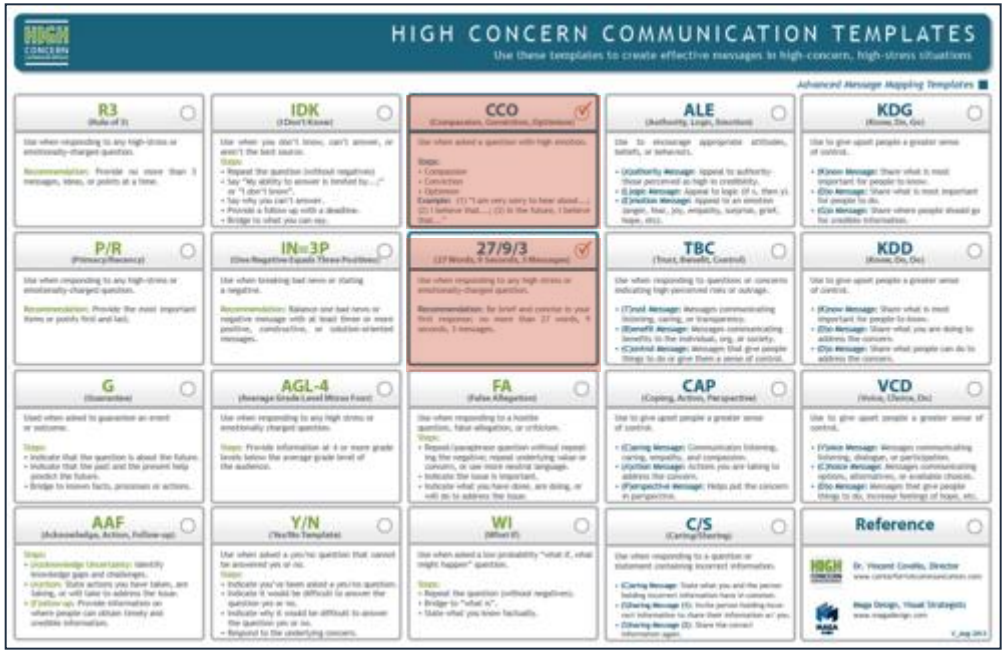
- **Three Takeaway Messages**
- **Three Takeaway Tools**
- **Three Takeaway Inspirational Quotes**

Three Takeaway Messages



Three Takeaway Tools

- 27/9/3 Template
- CCO Template
- 1N=3P Template



Three Takeaway Quotes

- “95 percent of all crisis communication work should be done in advance”
  - Mayor Giuliani (1995)

- “If I had all day to cut a large tree, I would spend most of the day sharpening my axe.”
  - Abraham Lincoln

- “It takes me an average of two weeks to prepare an impromptu speech.”
  - Mark Twain