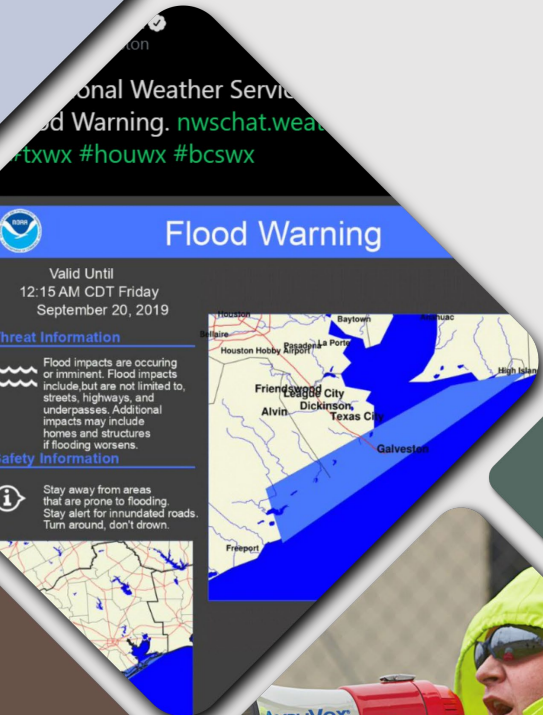


# Designing for Disaster: Warning Messages that Make a Difference

*Jeannette Sutton, PhD*

*Associate Professor, Department of Communication*

*Risk and Disaster Communication Center*



# Goal of a warning message

How do we get from this...



To this?



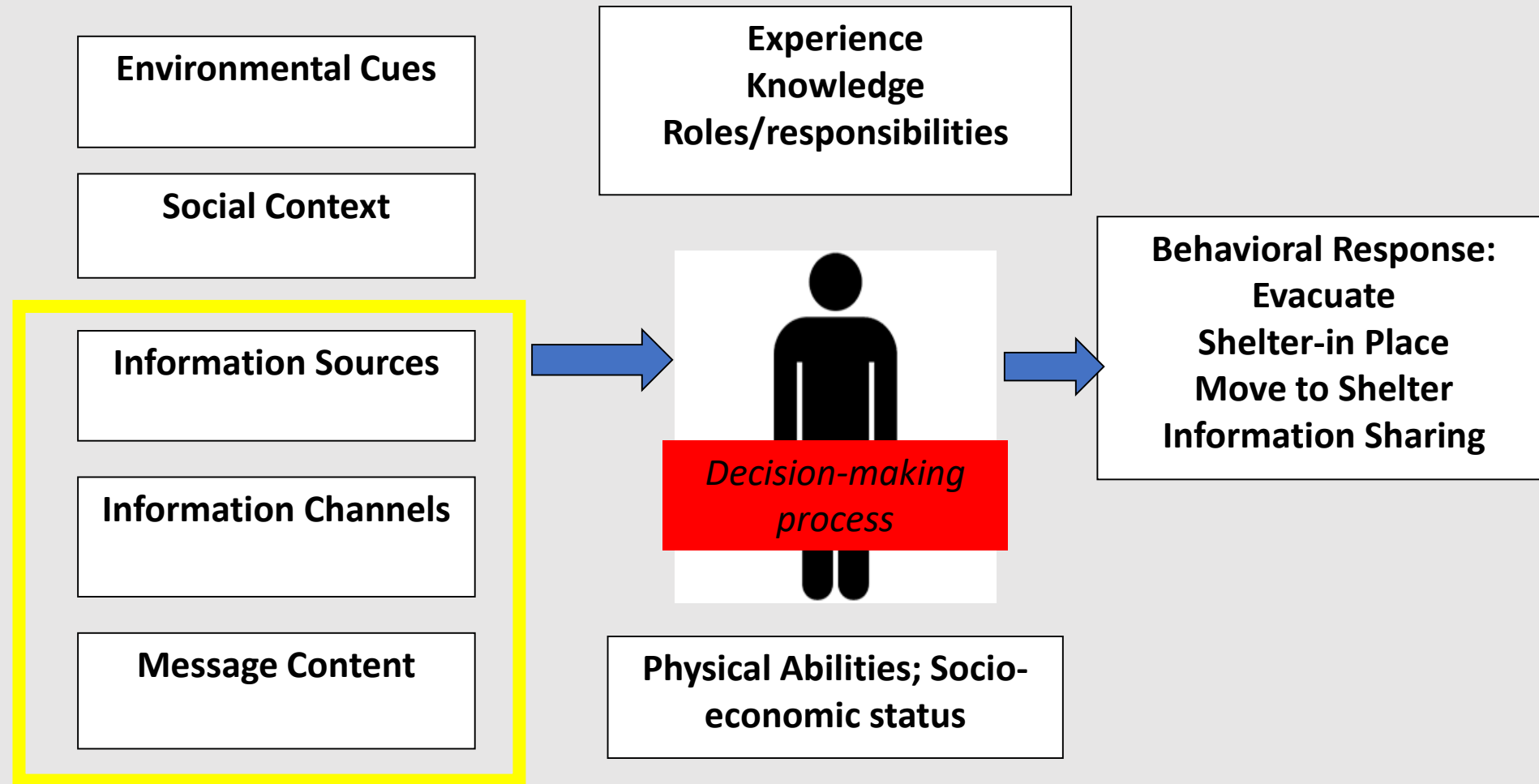


# **Start from theory about human behavior in disaster.**

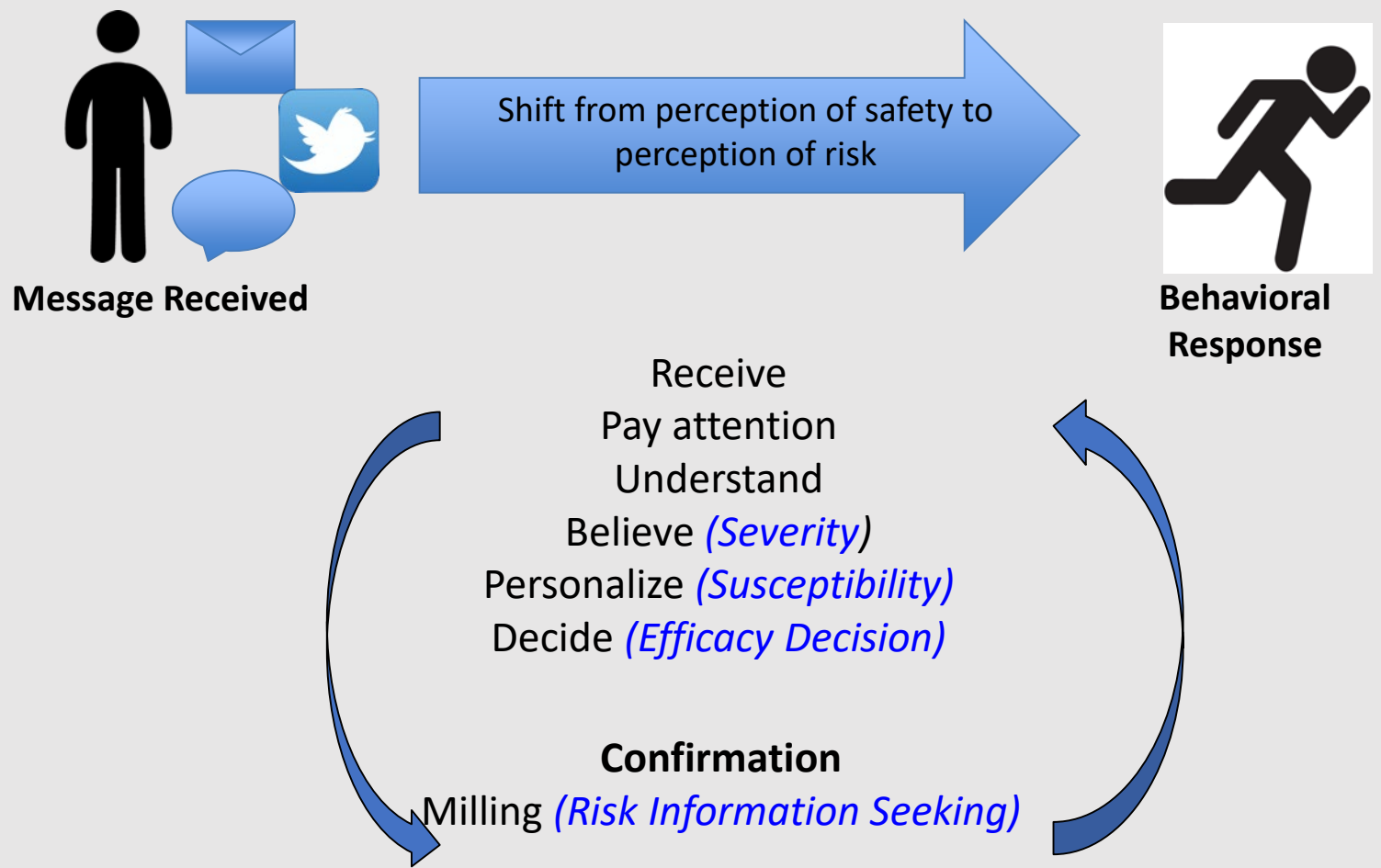
Protective Action Decision Model

Warning Response Model

# Protective Action Decision Model



# Warning-Response Model

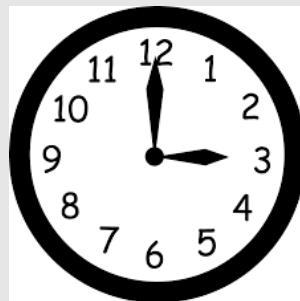


# Message Content that Matters



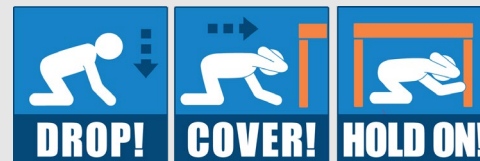
## Hazard

Risk information about: What it is, what are the consequences, its severity



## Time

To complete action; to get an update



## Guidance

Efficacy information: What to do; how; why



## Source

Credibility and context



## Location

Risk information about: Population that is susceptible

# Do these messages meet the standards?



**HOMELAND SECURITY  
ADVISORY SYSTEM**

- SEVERE**  
SEVERE RISK OF  
TERRORIST ATTACKS
- HIGH**  
HIGH RISK OF  
TERRORIST ATTACKS
- ELEVATED**  
SIGNIFICANT RISK OF  
TERRORIST ATTACKS
- GUARDED**  
GENERAL RISK OF  
TERRORIST ATTACKS
- LOW**  
LOW RISK OF  
TERRORIST ATTACKS



**NWS Albany** @NWSAlbany

Severe Thunderstorm Warning continues for  
Mechanicville NY, Hoosick Falls NY, Cambridge NY until  
8:15 PM EDT

**Severe Thunderstorm Warning**

Valid Until  
8:15 PM EDT Monday  
September 23, 2019

**Threat Information**

- WIND**  
Up to 60 MPH
- HAIL**  
Penny Sized Possible

**Potential Exposure**

- Population: 114,666
- Schools: 32
- Hospitals: 0



I just sent it, thanks  
Andrew

**CMAS Alert**  
Civil Emergency in this area until  
1:24 PM EST Take Shelter Now  
U.S. Govern

Dismiss





# Messages are getting longer...

Tweets are no longer 140 characters (now 280)

WEAs are no longer limited to 90 characters (now 360)

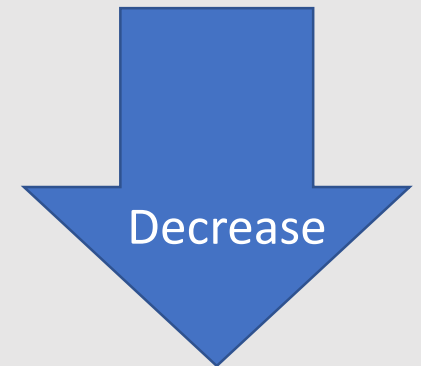


# *What can be done to improve behavioral response to short messages?*



Understanding  
Believing  
Personalizing  
Deciding

Information  
seeking



*Information seeking  
delays action.*

Natural Hazards Review / Volume 20 Issue 2 - May 2019

Technical Papers

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## **Alerts and Warnings on Short Messaging Channels: Guidance from an Expert Panel Process**

[Jeannette Sutton, Ph.D.](#); and [Erica D. Kuligowski, Ph.D.](#)



# We can improve message design by drawing from research

Design matters: it can affect message attention

Contents matter: they affect message perceptions and behavioral intent

# Message design that affects Attention/Saliency

## Include images

To capture reader attention (in addition to text)

Images may promote perception of risk; increase understanding of threat and protective actions; increase awareness of location

## The use of color:

To identify ordinal levels of risk (green, yellow, red)

Red is perceived as having the highest risk

## The use of text style:

ALL CAPS (to 'yell' at message readers)

Different fonts

## The inclusion of icons/symbols

Can be cues to action; require interpretation from message receiver

# Message Content that Affects Understanding

Avoid abbreviations and acronyms:

*US DHS, CDC, CAL OES, USFS, or PDT/MDT*

Clearly identify the threat:

*what is the threat?*

*what is the potential impact?*

Provide specific information about populations at risk/ locations of impact:

*Avoid broad, nonspecific geographic areas, e.g., “Denver,”*

*“Washington DC”, or “this area”*

*Not all message receivers will understand the dissemination methods of the technology*

Maps accompany clearly stated location information:

*should be clear, readable, and understandable to the population at risk*

# Message Content that Affects Believing

Send messages from *a known and trusted source*.

Clearly identify the source name:  
*avoid abbreviations or acronyms if possible*

Send imminent threat messages sparingly:  
*use WEA under conditions that warrant immediate population knowledge and action.*

Ensure messages accurately reflect:  
*The seriousness of the event*  
*The time of the event*

# Message Content that Affects Personalizing

Clearly indicate the seriousness of the event

*Imminent danger, immediate evacuation, urgent, critical, and now*

Action words indicate the need to take protective action

*Go, run, take cover*

Use unambiguous action words and phrases:

*For example: use “close all doors and windows” in place of “shelter in place”. Or “leave the coast immediately” in place of “evacuate”*

Include specific and detailed location information:

*local, familiar landmarks that are easily identifiable*

# Message Content that Affects Deciding and Milling

Messages that are clear, specific, and certain.

Messages that are complete, unambiguous, and give specific actionable instruction



Reduce time spent looking for more information to:

- confirm threat
- actions to take
- actions being taken by others.



# Well Designed Messages



# 360-character WEA



**Can you identify:**

Design features

Source

Hazard

Location

Protective Action

Time

**What is missing?**

**What can be improved?**

# 280-character Tweet

Can you identify:

Design features

Source

Hazard

Location

Protective Action

Time

What is missing?

What can be improved?



NWS Houston  
@NWSHouston

Significant Weather Advisory: Line Of Strong Thunderstorms Continues To March Eastward.

[nwschat.weather.gov/p.php?pid=2020...](https://nwschat.weather.gov/p.php?pid=2020...) #txwx #houwx #bcswx

**Significant Weather Advisory**

Valid Until  
11:00 PM CST Friday  
January 10, 2020

**Threat Information**

- WIND  
In excess of 40 MPH
- Strong thunderstorms

**Safety Information**

- Secure light weight objects  
When thunder roars,  
go indoors

weather.gov/hgx  
Issued at: 1019 PM CST Fri Jan 10 2020  
@NWSHouston



# 280-character tweet



**Can you identify:**

Design features

Source

Hazard

Location

Protective Action

Time

**What is missing?**

**What can be improved?**

# 280-character tweet



**Can you identify:**

Design features

Source

Hazard

Location

Protective Action

Time

**What is missing?**

**What can be improved?**

# 280-character tweet



NWS Miami  
@NWSMiami

Jan 21 - This isn't something we usually forecast, but don't be surprised if you see Iguanas falling from the trees tonight as lows drop into the 30s and 40s. Brrrr! #flwx #miami

Tuesday, January 21, 2020



## Falling Iguanas Possible Tonight

Iguanas are cold blooded. They slow down or become immobile when temps drop into the 40s. They may fall from trees, but they are not dead.

South Florida Low Temps Tonight:

Metro Miami/Fort Lauderdale: low to mid 40s

Palm Beach Metro: around 40

Interior/Gulf Coast: 30s

National Weather Service | Miami



1:42 PM · Jan 21, 2020 · Twitter Web App

Can you identify:

Design features

Source

Hazard

Location

Protective Action

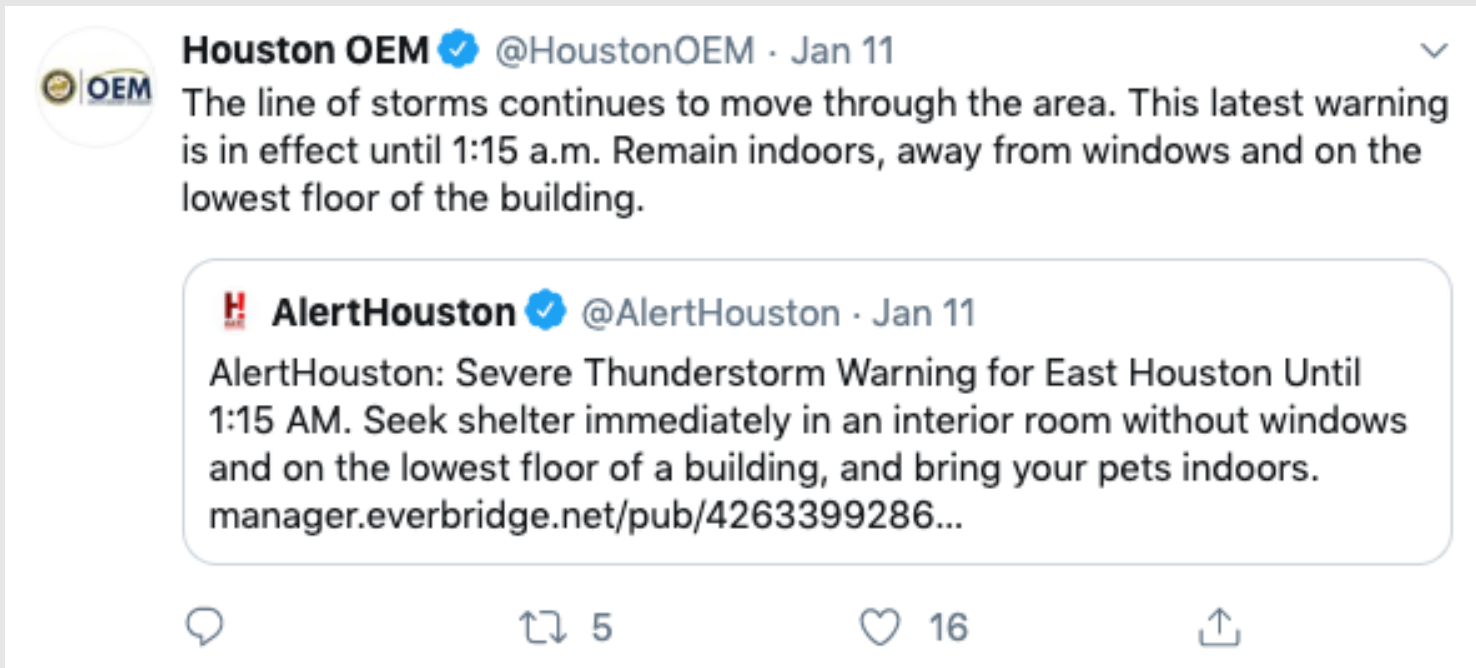
Time

What is missing?

What can be improved?



# 280-character tweet



Can you identify:

Design features

Source

Hazard

Location

Protective Action

Time

What is missing?

What can be improved?

# A few suggestions for honing your craft...

- Identify your threats
- Develop message templates for each threat (potential impacts, likely severity, and protective actions)
- *Practice* writing under limited time conditions
- Watch twitter to see if you can identify good messages

# Jeannette Sutton, PhD

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*For more warning message resources, go to my website:*

*[www.Jeannettesutton.com](http://www.Jeannettesutton.com)*

