CONTAGION OF VIOLENCE

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Discovery

Infectious diseases (ID)
Discovery

Infectious diseases (ID)
Microscope
Discovery

Infectious diseases (ID)
Microscope
Microorganisms
Discovery

Infectious diseases (ID)
Microscope
Microorganisms

Causation
Discovery

Infectious diseases (ID)       Violence (ViD)
Microscope
Microorganisms

Causation
Discovery

Infectious diseases (ID)  Violence (ViD)
Microscope             Social psych, fMRI/brain scans
Microorganisms

Causation
Discovery

Infectious diseases (ID)  Violence (ViD)
Microscope  Social psych; fMRI/brain scans
Microorganisms  Social learning, Brain mechanisms

Causation
Discovery

Infectious diseases (ID)
Microscope
Microorganisms
Causation

Violence (ViD)
Social psych; fMRI/brain scans
Social learning, Brain mechanisms
Causation
**Discovery**

**Infectious diseases (ID)**  
Microscope  
Microorganisms  
*Causation*

**Violence (ViD)**  
Social psych; fMRI/brain scans  
Social learning, Brain mechanisms  
*Causation*

**STRATEGY**
**Discovery**

**Infectious diseases (ID)**
- Microscope
- Microorganisms

*Causation*

**Violence (ViD)**
- Social psych; fMRI/brain scans
- Social learning, Brain mechanisms

*Causation*

**STRATEGY**
Discovery

Infectious diseases (ID)
Microscope
Microorganisms
*Causation*

**STRATEGY**

Violence (ViD)
Social psych; fMRI/brain scans
Social learning, Brain mechanisms
*Causation*

**STRATEGY**
SCIENTIFIC UNDERSTANDING
SCIENTIFIC UNDERSTANDING

SCIENTIFIC APPROACH
CONTAGION
INFECTION AND DISEASE
FRAMEWORK
Characteristics of infectious diseases in populations
Characteristics of infectious diseases in

- populations

- individuals
Characteristics of infectious disease in populations

1. Clustering

2. Spread

3. Transmission
Characteristics of infectious disease in populations

1. Clustering
EPIDEMIC VIOLENCE
Characteristics of infectious disease in populations

2. Spread
Characteristics of infectious disease in populations

2. Spread - non-linear, waves, consist of smaller waves
Epidemic of Killings in U.S.
Characteristics of infectious disease in populations

2. Spread - geographic, temporal, escalation
CHOLERA – Gannet, Somalia
Spread of Violence: UK Riots
August 4, 2011
Spread of Violence: UK Riots
August 4-6, 2011
Spread of Violence: UK Riots
August 4-7, 2011
Spread of Violence: UK Riots
August 4-9, 2011
Spread of Violence: UK Riots
August 4-10, 2011
Spread of Violence: World War 1

June 28, 1913

Assassination of Archduke Franz Ferdinand in Sarajevo, Bosnia
Spread of Violence: World War 1

July 28, 1914

Austria-Hungary declares war on Serbia
Spread of Violence: World War 1
July 29, 1914
Russia enters war to aid Serbia and assert influence in the region
Spread of Violence: World War 1

August 1, 1914

Germany declares war on Russia and France mobilizes its troops
Spread of Violence: World War 1

August 4, 1914

Britain declares war on Germany
Spread of Violence: World War 1

October 29, 1914

Turkey enters war in aid of Germany
Spread of Violence: World War 1

April 15, 1915

Romania enters the war
Spread of Violence: World War 1

May 23, 1915

Italy enters the war
Spread of Violence: World War 1
June 28, 1914 – November 11, 1918

Countries directly involved

- France
- British Empire
- Russia
- Italy
- German Empire
- Austria-Hungary
- Ottoman Empire
- Romania
- Serbia
- Bulgaria
- Greece
- Portugal
- United States
- Canada
- Japan
- Brazil
- Australia
- India
- South Africa
- Brazil
- Australia
- India
- South Africa
- United States
- Canada
- Japan
- Brazil
- Australia
- India
- South Africa
Spread of Violence: World War 1
June 28, 1914 – November 11, 1918

15 – 20 million dead (4 years)
Characteristics of infectious disease in populations

Clustering

Spread

Transmission
Transmission of Violence

Mullins et al. 2004; Devries et al. 2011
Transmission of Violence
(some, but not everything transmits)

- Influenza
  Colds
  TB
  Violence

Mullins et al. 2004; Devries et al. 2011
Characteristics of infectious disease in populations

- Clustering
- Spread
- Transmission
Concepts in infectious diseases in **individuals**

Susceptibility (vs. immunity, resistance)
Exposure, Infectivity, transmission
Incubation, latency
Pathogenesis
Inapparent/subclinical
Carriers
Clinical spectrum (mild, severe, acute, intermittent, chronic)
Cure, Relapse
Concepts in infectious diseases in *individuals*

- Susceptibility (vs. immunity, resistance)
- Exposure, Infectivity, transmission
- Incubation, latency
- Pathogenesis
- Inapparent/subclinical
- Carriers
- Clinical spectrum (mild, severe, acute, intermittent, chronic)
- Cure, Relapse
FRAMEWORK
Natural History of an Infectious Disease

↑ Clinical
↓ Pre or sub clinical

Exposure / Infection

Susceptibility
Natural History of an Infectious Disease

- Exposure / Infection
- Susceptibility
- Latency
- Incubation
- Death
- Chronic
- Relapse
- Intermittent
- Cure

- Clinical
- Pre or sub clinical
Natural History of an Infectious Disease

- Clinical
- Pre or sub clinical

Exposure / Infection

Susceptibility
Natural History of an Infectious Disease

Exposure / Infection

Susceptibility

Possible clinical courses

Clinical

Pre or sub clinical
Natural History of an Infectious Disease

- Exposure / Infection
- Susceptibility
- Pre or sub clinical
- Clinical
- Possible clinical courses
- Signs and symptoms
Any deviation from or interruption of the normal structure or function of a part organ or system of the body, a manifested by characteristic symptoms and signs; the etiology, pathology, and prognosis maybe known or unknown.
Contagious
(Dorland’s medical dictionary, 2011)

Capable of being transmitted from one individual to another; communicable.
Transmission of Violence (Contagious)

Exposure
Violence

Violence

Mullins et al. 2004; Devries et al. 2011
Means (routes) of transmission
Violence
Different means of transmission

Exposure
Community Violence

P

Community Violence

Mullins et al. 2004; Devries et al. 2011
Violence
Different means of transmission

Exposure
Community Violence

O
P
Community Violence

Mullins et al. 2004; Devries et al. 2011
Different Syndromes
Transmission across syndromes (same disease)
Transmission of Violence

Mullins et al. 2004; Devries et al. 2011
Transmission of Violence

Community Violence

\[ V \]

\[ P \]

Community Violence

\[ P/V \]

Suicide

Mullins et al. 2004; Devries et al. 2011
Transmission of Violence

Community Violence → O → P.V. (O) → Community Violence

V. (O) → Family Violence (IPV and child)

Note: Perpetration for males and females, higher risk for males;

Barkin et al. 2001; Hanson et al. 2006
Transmission of Violence

Ethnic/political violence (war)

O, V,(P)

\[ \text{P} \rightarrow \text{Community Violence} \]

\[ \text{P} \rightarrow \text{Intimate Partner Violence} \]

\[ \text{P} \rightarrow \text{Child Abuse Violence} \]

\[ \text{V} \rightarrow \text{Intimate partner violence} \]

Note: Studies included analysis of post WWI, Vietnam War, and religio-political violence (Israel/Palestine)

Transmission of Violence

Inter-parental Violence

O (as child)

P

Child Abuse

P

Spouse Abuse

(O)

Community violence

Notes: Findings for males and females; also 6 times risk of exposure to community violence

Hamby et al. 2010; Appel & Holden 1998; Herrenkohl et al. 2008; Hanson et al. 2006; Ehrensaft et al. 2003
Transmission of Violence

Notes: Perpetration for males and females, higher risk for males
Victimization for males and females, higher risk for females
Community violence can include beatings, shootings, stabbings and other.

Widom 1989; Crooks, Scott, Wolfe, Chido, & Killip 2007; Roberts et al. 2010; Ehrensaft et al. 2003; Whitfield, Anda, Dube, & Felitti 2003; Oliver 1993; Cold et al. 2001; Dodge et al. 1989; Glasser et al. 2001; Heyman et al. 2002
Transmission of Violence

Intimate partner violence

V

P/V

Suicide

Devries et al. 2011; Cavanaugh 2011
Transmission of Violence

Gould 2001
Transmission of Violence

- Media Violence
- Community Violence
- Spouse Abuse

Huesmann 2003
Transmission of Violence

Video Game Violence

O, T

P

(Aggression)

Huesmann 2010
Contagious
(Dorland’s medical dictionary, 2011)

Capable of being transmitted from one individual to another; communicable.
Transmission across syndromes
(same disease)
Transmission and processing
Transmission and Processing

GiD
Oral gastroenteritis transmission

Intake
Transmission and Processing

GiD
Oral gastroenteritis
Transmission

Means: **Food, water, hands**
Route: **Oral**
Transmission and Processing

GiD
Oral gastroenteritis
Transmission
Means: **Food, water, hands**
Route: **Oral**

Intake → Processing → Disease
Transmission and Processing

GiD
Oral gastroenteritis
Transmission

Means: **Food, water, hands**
Route: **Oral**

Intake ➔ **Processing** ➔ Disease

*Modulating factors*: age, prior immunity, type of exposure, dose, context, other
Transmission and Processing

Violence (ViD) transmission

Intake
Transmission and Processing

ViD
Violence transmission
Observation
Trauma

Intake
Transmission and Processing

ViD
Visual violence
Transmission

Means: observation
Route: visual

Intake → Brain Processing → Disease
Transmission and Processing

ViD
Visual violence
Transmission
Means: observation
Route: visual

Means: observation
Route: visual

Intake → Brain Processing → Disease

Modulating factors: age, prior immunity, type of exposure, dose, context, other
Mechanisms
Mechanisms (Mediators)

Gi Inf: GI PROCESSING

Violence: BRAIN PROCESSING
Mechanisms (Mediators)

Gi Inf: GI PROCESSING
Achlorhydria
Toxic effect on Na – K pump

Violence: BRAIN PROCESSING
Observational/copying/mirror circuits (modeling)
Limbic system dysregulation
Other brain pathways (peer pressure/?dopamine system)
SCIENTIFIC APPROACH
TO CONTAGION OF VIOLENCE
BEHAVIOR

EPIDEMICS
BEHAVIOR
BEHAVIOR

How are behaviors formed?
Peer expectations

Escalation
Peer expectations
Multiple Violent Events

Exposure

Community

Outcome

Multiple Violent Events
BEHAVIOR

EPIDEMICS
EPIDEMICS
KILLINGS - Kibuye, Rwanda
EPIDEMICS OF KILLING
VIOLENCE BEHAVES EXACTLY LIKE A CONTAGIOUS DISEASE

Killings in U.S.

Killings in Colombia

Killings in Rwanda

Killings in Brazil
REDEFINING THE PROBLEM

HOW ARE EPIDEMICS REVERSED?
HOW TO STOP EPIDEMICS.

1. Interrupt transmission

2. Identify and change potential transmitters

3. Change underlying susceptibility (group norms)
REDEFINING THE PROBLEM

INTERRUPT TRANSMISSION
IDENTIFY AND CHANGE THE THINKING OF HIGHEST POTENTIAL TRANSMITTERS

Finding those most likely to shoot or be shot
REDEFINING THE PROBLEM

CHANGE
GROUP NORMS

Creating a new normal where violence is no longer expected or acceptable.
1. INTERRUPT ION
INTERRUPTION

DETECTION

PERSUASION

Photograph by Ed Kashi
2. IDENTIFY AND CHANGE THINKING
IDENTIFY AND CHANGE THINKING

Credible messenger
In your interest
Information (situations, petty, social pressure, not everyone)
Skills, practice
Positive peer reactions (avoiding neg.)
Feels right
Overcome barriers
IDENTIFY AND CHANGE THINKING
3. CHANGE GROUP NORMS
3. CHANGE GROUP NORMS

- Interveners:
  - Street Outreach
  - Clergy
  - Community
  - Materials
  - Police

- The 3 Variables:
  - Norms
  - Risk
  - Alternatives

- Behavioral Outcome: No Shooting
CHANGE GROUP NORMS

If you think that a SHOOTING might take place, Be the ONE to stop it! Call 1-866-TO-CEASE or 773-491-8887

DON'T SHOOT. I want to grow up.

Call anytime

CHANGE GROUP NORMS
Diffusion of Innovation

Change agents to the tipping point
LOGAN SQUARE
(shootings/month before and after CF)
PROOF AND VALIDATION

RESULTS: FIRST 6 CEASEFIRE COMMUNITIES, 2000–2004

6 CEASEFIRE ZONES

COMPARISON*

NEIGHBORING*

CHICAGO*

* These results are all statistically significant with p<0.01
W. Garfield, W. Humboldt, Logan Square, SW Chicago, Auburn Gresham, Rogers Park
PROOF AND VALIDATION

RESULTS: 8 NEW COMMUNITIES, 2005–2006

* These results are all statistically significant with p<.01
* * Results are significant with p<.05
Communities = Englewood, Brighton Park, E. Garfield, Albany Park, Little Village, Austin, Grand Boulevard, Woodlawn
ENGLEWOOD

Before CeaseFire

After CeaseFire
ROGERS PARK

Before CeaseFire

After CeaseFire
DOJ - EXTERNAL EVALUATION (2008)

- shootings and killings
- shooting density
- retaliation murders

DEMONSTRATED EFFECTIVE TO REDUCE SHOOTINGS AND KILLINGS
## Johns Hopkins/CDC evaluation
### Baltimore Replication

<table>
<thead>
<tr>
<th>Program Site</th>
<th>Significant Outcomes</th>
<th>Program Implementation per Month</th>
<th>Implementation Issues</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Homicide</td>
<td>Shootings</td>
<td>Mediations</td>
</tr>
<tr>
<td>McElderry Park</td>
<td>-53%*</td>
<td>None</td>
<td>4.0</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Elwood Park</td>
<td>None</td>
<td>-34%</td>
<td>1.4</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Madison-Eastend</td>
<td>None</td>
<td>-44%</td>
<td>1.2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cherry Hill</td>
<td>-56%</td>
<td>-34%</td>
<td>3.2</td>
</tr>
</tbody>
</table>

More interruptions – less killings
Reductions spread to neighboring communities
Norms changing, even among non-clients
Herd Immunity

Potential Host → Infection → Transmission & Spread → Herd Immunity
Epidemic control model

Demonstrated effective by independent studies

Less lethal events
CeaseFire International Replication Partners
March 2012

Map showing locations including Canada, Mexico, Jamaica, Tobago, Trinidad, Brazil, England, Israel/Palestine, Egypt, Iraq, Yemen, Dem. Republic of Congo, Kenya, South Africa.
BASRA, IRAQ

Training in mosque
IRAQ >100 CONFLICTS MEDIATED
(December 2008 – May 2009)

* Maps show the first 40 of 75 conflicts mediated
### Basrah and Baghdad, Iraq

#### 331 Conflicts Mediated

(4/11 - 3/12)

<table>
<thead>
<tr>
<th>Conflict type</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interpersonal</td>
<td>54</td>
</tr>
<tr>
<td>Youth/Familial</td>
<td>12</td>
</tr>
<tr>
<td>Commercial</td>
<td>10</td>
</tr>
<tr>
<td>Community</td>
<td>8</td>
</tr>
<tr>
<td>Sexual Harassment</td>
<td>6</td>
</tr>
<tr>
<td>Tribal</td>
<td>5</td>
</tr>
<tr>
<td>Domestic Violence</td>
<td>3</td>
</tr>
<tr>
<td>Services/Utilities</td>
<td>0.9</td>
</tr>
<tr>
<td>Religious</td>
<td>0.6</td>
</tr>
<tr>
<td>Political</td>
<td>0.6</td>
</tr>
<tr>
<td>Sectarian</td>
<td>0.3</td>
</tr>
</tbody>
</table>
## OLD VIEW

<table>
<thead>
<tr>
<th>BAD PEOPLE ENEMIES</th>
<th>Modern view (health)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Contagious behavior</td>
</tr>
<tr>
<td>PUNISHMENT</td>
<td>Interrupt transmission</td>
</tr>
<tr>
<td></td>
<td>Detect and interrupt events</td>
</tr>
<tr>
<td></td>
<td>Prevent progression</td>
</tr>
<tr>
<td></td>
<td>Change behavior</td>
</tr>
<tr>
<td></td>
<td>Reduce susceptibility</td>
</tr>
<tr>
<td></td>
<td>Change norms</td>
</tr>
</tbody>
</table>
Violence

Period of discovery and transition

Contagious disease

Population and individual characteristics of infectious disease

Routes of transmission; modulators, mediators being discovered

Treatment as an epidemic contagious disease appears effective
THANK YOU!
Modulating factors are the factors that facilitate and dampen the effect of the exposure to violence on infectivity. Modulating factors can play roles before infection, during latency, and after onset of disease.

Facilitating factors
- Community norms that encourage retaliation
- Fear/Anxiety/Depression

Dampening factors
- Cognitive therapy
- Resilience
- Help from friends/family

Factors that can facilitate or dampen
- Dose (number of exposures)
- Dose (level of violence)
- Norms
- Characteristics of host (age, health, etc.)
- Characteristics of location
FRAMEWORK

↑ Clinical
↓ Pre or sub clinical

Exposure / Infection

Susceptibility
FRAMEWORK

Exposure / Infection

Susceptibility

Mechanisms

Clinical

Pre or sub clinical
### INTERRUPTION

100% drop in retaliations

<table>
<thead>
<tr>
<th>Location</th>
<th>CEASEFIRE</th>
<th>CONTROL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auburn Gresham</td>
<td>-100%</td>
<td>-25%</td>
</tr>
<tr>
<td>Englewood</td>
<td>-100%</td>
<td>-100%</td>
</tr>
<tr>
<td>Logan Square</td>
<td>-100%</td>
<td>+100%</td>
</tr>
<tr>
<td>Rogers Park</td>
<td>no change</td>
<td>n/a</td>
</tr>
<tr>
<td>Southwest</td>
<td>-100%</td>
<td>no change</td>
</tr>
<tr>
<td>West Garfield Park</td>
<td>-46%</td>
<td>+41%</td>
</tr>
<tr>
<td>West Humboldt Park</td>
<td>-50%</td>
<td>-57%</td>
</tr>
<tr>
<td>East Garfield Park</td>
<td>-100%</td>
<td>+60%</td>
</tr>
</tbody>
</table>