Managing Factors that Influence Behavior

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Presentation Objectives

1. Review general crowd behavior principles

2. Present research findings
   - Identify most common crowd violence triggers
   - Relate findings to popular principles

3. Discuss strategies to neutralize triggers

4. Future directions
John Fruin (1985) – Chaotic and dangerous crowd movements

- Swarming
- Crushing
- Trampling
- Injury/Death

Space
Energy
Time
Information
John Fruin (2002) – FIST Model
Chaotic and dangerous crowd movements

Force

Information

Swarming
Crushing
Trampling
Injury/Death

Space

Time
FIST Model of Crowd Disasters

<table>
<thead>
<tr>
<th>Element</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Force</td>
<td>Crowd pressure</td>
</tr>
<tr>
<td>Information</td>
<td>What is believed to be true</td>
</tr>
<tr>
<td>Space</td>
<td>Physical design</td>
</tr>
<tr>
<td>Time</td>
<td>Duration of event or incident</td>
</tr>
</tbody>
</table>
Crowd Violence Risk Factors

“Triggers”

Force

Information

Time

Space
Force

What you don’t do can be a destructive force

~ Eleanor Roosevelt
Participant Decision-Making

Five Principles

1. Crowds consist of individuals
2. Individuals make independent decisions
3. People are goal driven
4. People function and move in groups
5. People react to their environment
Exit-Seeking Behaviors

• Low excitement (normal conditions)
  – Design-driven
• High excitement (panic)
  – Distance-driven
• If exit cannot be seen
  – Follow larger crowds

Zainuddin & Shuaib 2011
Density Impacts Force

- High density crowds – 5 per meter$^2$
  - Trampling
- Very high density crowds – 10 per meter$^2$
  - Crushing

Distribution of Risk

- Factors influencing tolerable force
  - High vs. Low Barriers
  - Age/Gender
  - Duration

Lee & Hughes 2005, 2006
Detecting Critical Density Levels

• High Densities Crowds
  – Fluid lines become stop and go waves

• Critical Crowd Conditions (> 10 per m²)
  – Random movement in all directions
  – People no longer move voluntarily
    • “Crowd turbulence”

Johansson & Helbing 2008
Who is in your venue?

• Highly identified fans
  – Experience weakened social restraints
    Dimmock & Grove 2005
  – View verbal aggression as appropriate
    Donahue & Wann 2009

• Demographics
  – Young, male, single
    Russell 1995

• Peacemakers
  – Large stature, older, less impulsive, favor law and order
    Russell & Arms 2001
Winners Take All…

• Winning = Higher levels of aggression = Greater alcohol consumption
  Moore et al. 2007

• Assaults, stabbings, and shootings of women increase in Washington, D.C. when Washington Capitals NHL team wins
  White et al. 1992
Case Study: Ten Cent Beer Night

Ten 10oz Beers for $1

• June 4, 1974
• Cleveland Indians versus Texas Rangers
• Season high attendance: 25,134 fans
  – 65,000 beers consumed
Inappropriate Intervention

- Crowd manager actions interpreted as illegitimate will unite the crowd against them.

  Drury & Reicher 2009

- Failure to immediately remove threats (i.e., violent individuals) allows negative behavior to influence the decision-making of others.

  Pattern & Arboldea-Florez 2004
Immediate Motivation

- Emergencies
- Initial Goals
- Personality
- Event Results
- Intergroup Dynamics

Information
Information

Business today consists in persuading crowds

~T.S. Eliot
Visual Cues

- Crowd participants’ behavior changes about 8 seconds away from a target
  
  Paris et al. 2007

- Non-graded security strategies; View/use of “offensive” weapons (tear-gas, water cannons)
  
  Frosdick 2005; Saari 2009

- Physical containment increases hostility
  
  Bond 2009
Social Cues

• Treating crowds as homogenous entities will incite negative behavior
  Drury & Reicher 2009

• Non-personalized interactions
• Misunderstanding intentions/purpose
  White 2006; Sousa & Madensen, 2010

• Stereotypes become a self-fulfilling prophecy
  Spears et al. 2004
Group Norms

• Participants
  – Reactions from other group members
  – Feelings of anonymity permit aggressiveness

• Managers
  – Accountability (both external and internal) drives desires to intervene in harmful ways

Cronin & Reicher 2006
Time

Space

Force

Information
Space

When you give him space and time, he’s going to hurt you

~Jacques Martin
<table>
<thead>
<tr>
<th>Space</th>
<th>Physical</th>
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<tbody>
<tr>
<td>Restrictions to Pedestrian Flow</td>
<td></td>
</tr>
<tr>
<td>• Bottlenecks</td>
<td>Graat et al. 1999</td>
</tr>
<tr>
<td>• Columns/barriers</td>
<td>Zhang et al. 2009</td>
</tr>
<tr>
<td>• Corners</td>
<td>Lee &amp; Hughes 2006</td>
</tr>
<tr>
<td>• Inadequate entry/exit points</td>
<td>Mathias 1991</td>
</tr>
<tr>
<td>• Non-tapered theater seating</td>
<td>Helbing et al. 2005</td>
</tr>
<tr>
<td>• Stairs</td>
<td>Furin 2002</td>
</tr>
<tr>
<td>• Small passageways</td>
<td>Zhang et al. 2007, 2009</td>
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<td>• “Sticking” points</td>
<td>Zhang et al. 2007</td>
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Other “Space” Design Elements

• Case Study: Hillsborough Stadium Disaster
  – How space is used impacts “force” and “information”

  ...Open air toilets, food cooked and consumed in the open, no pre-match entertainment, no shelter from the elements, and standing on sloping concrete terraces...

  ...All contributed to the lowering of self-esteem, responsibility, and the abandonment of social norms

Mathias 1991
Poorly designed spaces can create dangerous crowd densities

Directly impact the force element of the FIST model
Crowd Violence
Risk Factors

“Triggers”

Force
- Physical
  - Crowd movement
- Psychological
  - Personalities
  - Event outcomes
  - Intergroup dynamics
  - Motivation

Information
- Communication
  - Visual Cues
  - Social Cues

  Interpretations
  - Group norms
  - Participants
  - Managers

Duration of…
- Negative Force
  - X
- Misinformation
  - X
- Unsafe Space
  = Violence

Time

Space
- Physical
  - Obstacles/barriers
  - Static design
  - Elements
  - Conditions
- Crowd Densities
  - Body zones
Violence is not random
Response

FIST – Separating Personalities

Family Zones

Photo Courtesy of Bethel Woods Center for the Arts
Response
FIST – Group Norms

Establishing Rules
Acceptable Behavior

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<th>NFL Club Fan Codes of Conduct</th>
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<td><em>Seattle Seahawks</em></td>
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Miller 2010
Response

FIST – Group Norms

Facilitating Early Intervention

Miller 2010
Mini parade

“Move it! Shake it! Celebrate it!”

• Draws guests into less populated lands

Barnes 2010
Future Directions

Crowd Management Research Council

- Collect systematic information on strategies used in venues throughout the world
- Assess strategy/intervention effectiveness
- Distribute information among members
Research Council Members

- No cost
- Asked for advice, interviews, information
- Help to coordinate visits (when possible)
- Sign-up! E-mail contact information to:

  Tamara.Madensen@unlv.edu

(Name, Title, Affiliation, Address, E-mail, Phone)