Does design make a difference?

Utilizing Affect Control Theory to understand the situational influence of physical design on staff-detainee interaction in juvenile detention centres

Rohan Lulham (Senior Research Officer, NSW Bureau of Crime Statistics & Research)  
Supervisors (Simon Hayman, Gary Moore, Terry Purcell and Richard Lamb)
Physical Design of JDC facilities

Common Design Attributes

- Configuration, space and control room
- Safety and Security
- Normative value and scale
- Division of space
- Colour and finishes
- Furnishings
- Natural lighting

Design varies greatly, with a tendency for a mix of ‘normalized’ and ‘security’ design philosophies.

Policy often accused as being based on ideology rather than evidence.

Lack of theory about how design has an influence in correctional setting.

Absence of robust evidence of the independent influence of design.
Aim: Develop a theoretical framework for understanding how design influences the functioning of correctional units

Aim: Provide architects and administrators with knowledge relevant to the design of correctional facilities

Aim: Contribute to the evidence base on the design of correctional facilities

Aim: Use a robust methodology to identify the independent influences of physical design
Overview of study

**Theory**
Affect Control Theory developed to investigate the influence of physical design on social interaction in JDCs

**Administration**
Administered a questionnaire to groups of detainee and staff participants in actual JDC facilities

**Method**
Assessed participants affective ratings, expectations and perceptions in a simulated JDC unit

**Questionnaire**
Participants responded to one of three simulated JDC units that varied in physical design
Affect Control Theory (ACT) provides a framework for understanding how people’s affective meanings and affective experience of objects (i.e. people, behaviors and settings) guide social interaction and behaviour.

Three affective constructs are relevant in this research:

- **Fundamental sentiments** are the affective meanings we attribute to people, behaviours and settings (i.e. objects) based on past experience.
- **Impressions** are our affective experience of objects within situations.
- **Design context sentiments**, a concept developed in this research, are our sentiments for objects in the context of physically designed settings.

Alternatively, ACT proposes that we **behave** and expect others to behave so that our fundamental sentiments will be confirmed in situations.
Measuring Affective Sentiments

- Affective sentiments relate to how **good, powerful and active** a person, behaviour or setting is perceived to be.
- As such, affect is conceptualized as having three dimensions and is assessed for fundamental, impressions and design context sentiments using three semantic differential scales.

<table>
<thead>
<tr>
<th>Evaluation Dimension</th>
<th>Bad</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Good</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Extremely</td>
<td>Not Bad or Good</td>
<td>Extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Potency Dimension</th>
<th>Soft</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Hard</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Extremely</td>
<td>Not Soft or Hard</td>
<td>Extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Activity Dimension</th>
<th>Boring</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>Full On</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Extremely</td>
<td>Not Boring or Full On</td>
<td>Extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Sketching out the ACT framework

Fundamental sentiments for:
- Staff members
- Detainees
- Residential Units
- Themselves

A situation or event

Staff Member

Behaviour: yells at

Detainee

Residential Unit

Impressions & expectations of events

The detainee observer

A staff member yells at a detainee in a residential unit
Sketching Out Design Context Sentiments

Fundamental sentiments for:
- Staff members
- Detainees
- Residential Units
- Themselves

Objects in the context of unit with a particular physical design

Design Context Sentiments for:
- Staff Member
- Detainee
- Residential Unit
- Themselves

The detainee observer

Staff members  Detainees
Residential unit
Sketching Out Design Context Sentiments

Fundamental sentiments for:
- Staff members
- Detainees
- Residential Units
- Themselves

Design Context Sentiments for:
- Staff Member
- Detainee
- Residential Unit
- Themselves

Objects in the context of unit with a particular physical design

The detainee observer

Staff members  Detainees
Residential unit
Sketching Out Behaviour Likelihood

Fundamental sentiments for:
- Staff members
- Detainees
- Residential Units
- Themselves

Objects and events in the context of unit with a particular physical design

How likely is it that a staff member yells at a detainee in this unit?

The detainee observer

Design Context Sentiments for
- Staff Member
- Detainee
- Residential Unit
- Themselves
Sketching Out Behaviour Likelihood

Fundamental sentiments for:
- Staff members
- Detainees
- Residential Units
- Themselves

Objects in the context of unit with a particular physical design

How likely is it that a staff member yells at a detainee in this unit?

The detainee observer
Research Question

Exploratory Questions

What are detainee participants fundamental sentiments for staff, detainees, residential units and themselves in JDC facilities?

Do detainee’s design context sentiments for staff, detainees, the unit and themselves vary for units differing in design?

Do detainee’s expectations for behaviours vary in units differing in design?

A Hypothesis

Affectively good JDC residential units will ‘constrain deviance’ (Smith-Lovin, 1987), with negative behaviour expected as less likely to occur
**IIE Simulations of JDC Residential Units**

**Unit 1: Institutional and High Security JDC Residential Unit**
- Normalized: Very Low
- Hard security: Very High
- Lighting: Very Low
- Visual security: Very High
- Familiar: Very Low
- Staff Control Room: Very High

**Unit 2: Normalized and Secure JDC Residential Unit**
- Normalized: High
- Hard security: Moderate
- Lighting: High
- Visual security: Moderate
- Familiar: Moderate
- Staff Control Room: Very High

**Unit 3: Part-Normalized and Secure JDC Residential Unit**
- Normalized: Moderate
- Hard security: High
- Lighting: Moderate
- Visual security: Moderate
- Familiar: Moderate
- Staff Control Room: Very Low
Questionnaire
Fundamental sentiments

QUESTION 1.
What do you reckon most **staff** are like in juvenile justice centres?

**Staff** are ............

---

**Bad**
1 2 3 4 5 6 7 8 9
Extremely Not Bad or Good Extremely

**Soft**
1 2 3 4 5 6 7 8 9
Extremely Not Soft or Hard Extremely

**Boring**
1 2 3 4 5 6 7 8 9
Extremely Not Boring or Full On Extremely

**Good**
**Hard**
**Full On**
QUESTION 2.

What do you reckon most **detainees** are like in juvenile justice centres?

**Detainees** are ..........
QUESTION 3.

What do you reckon the inside of most units in juvenile justice centres are like?

**Inside the units** are ........

![Rating Scale Diagram]

- **Bad** (1-9) Extremely to Not Bad or Good
- **Soft** (1-9) Extremely to Not Soft or Hard
- **Boring** (1-9) Extremely to Not Boring or Full On
- **Good** (1-9) Extremely
- **Hard** (1-9) Extremely
- **Full On** (1-9) Extremely
QUESTION 4.

What do you reckon **you** are usually like in juvenile justice centres?

**You** are ..........
**QUESTION 5.**

In this unit, what do you reckon **staff** are like?

**Staff** are ........

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bad</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Soft</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hard</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Boring</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full On</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Questionnaire

Behaviour likelihood sentiments

QUESTION 12.

How likely is it that a staff member ignores a detainee in this unit?

This is ........

Extremely Likely ___________________________ Not At All Likely

1 2 3 4 5 6 7
## Research Design and Sample

<table>
<thead>
<tr>
<th>ROLE</th>
<th>Unit 1</th>
<th>Unit 2</th>
<th>Unit 3</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detainee</td>
<td>30(4)*</td>
<td>31(9)</td>
<td>31(8)</td>
<td>92(21)</td>
</tr>
<tr>
<td>Staff</td>
<td>20(3)</td>
<td>19(4)</td>
<td>17(4)</td>
<td>56(11)</td>
</tr>
<tr>
<td>Totals</td>
<td>50</td>
<td>50</td>
<td>48</td>
<td>148</td>
</tr>
</tbody>
</table>

* Included after propensity score method (excluded)
Reversing Experiments
The Propensity Score Approach

Adjusted differences on pre-test items between the treatment conditions: means and 95% CIs
## Results: Fundamental Sentiments

What are detainee participants’ fundamental sentiments for different objects in JDC facilities?

<table>
<thead>
<tr>
<th>Objects</th>
<th>Evaluation</th>
<th>Potency</th>
<th>Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Staff-Objects</strong></td>
<td>Neither good or bad</td>
<td>hard</td>
<td>neither full-on or boring</td>
</tr>
<tr>
<td><strong>Detainee-Objects</strong></td>
<td>bad</td>
<td>hard</td>
<td>full-on</td>
</tr>
<tr>
<td><strong>Unit-Objects</strong></td>
<td>bad</td>
<td>neither hard or soft</td>
<td>boring</td>
</tr>
<tr>
<td><strong>You-Objects</strong></td>
<td>good</td>
<td>hard</td>
<td>full-on</td>
</tr>
</tbody>
</table>

**Diagram:**

- **Evaluation:**
  - **Staff:** 0.82
  - **Detainee:** -0.84
  - **Unit:** -0.82
  - **You:** 0.82

- **Potency:**
  - **Staff:** 1.02
  - **Detainee:** 1.45
  - **Unit:** 0.42
  - **You:** 0.75

- **Activity:**
  - **Staff:** 1.07
  - **Detainee:** 1.17
  - **Unit:** -0.94
  - **You:** -0.94

**Dimensions:**

- Evaluation
- Potency
- Activity

**Legend:**

- Orange: Evaluation
- Blue: Potency
- Green: Activity
- Gray: 95% Up
- Gray: EM Mean
- Gray: 95% Low

**Data Display:**

- **Staff**
- **Detainee**
- **Unit**
- **You**
## Results: Design Context Sentiments

<table>
<thead>
<tr>
<th>Objects</th>
<th>Dimensions</th>
<th>Unit 1 – Unit 2</th>
<th>Unit 1 – Unit 3</th>
<th>Unit 2 – Unit 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Staff Objects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td>Worse</td>
<td>Worse</td>
<td>Better</td>
<td></td>
</tr>
<tr>
<td>Potency</td>
<td>Harder</td>
<td>Harder</td>
<td>Softer</td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>More Boring</td>
<td>More Boring</td>
<td>Same</td>
<td></td>
</tr>
<tr>
<td><strong>Detainee Objects</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td>Worse</td>
<td>Worse</td>
<td>Better</td>
<td></td>
</tr>
<tr>
<td>Potency</td>
<td>Harder</td>
<td>Harder</td>
<td>Same</td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>More boring</td>
<td>More boring</td>
<td>Same</td>
<td></td>
</tr>
<tr>
<td><strong>Unit Object</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td>Worse</td>
<td>Worse</td>
<td>Better</td>
<td></td>
</tr>
<tr>
<td>Potency</td>
<td>Harder</td>
<td>Harder</td>
<td>Softer</td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>More boring</td>
<td>More boring</td>
<td>Same</td>
<td></td>
</tr>
<tr>
<td><strong>You Object</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation</td>
<td>Worse</td>
<td>Worse</td>
<td>Better</td>
<td></td>
</tr>
<tr>
<td>Potency</td>
<td>Harder</td>
<td>Harder</td>
<td>Same</td>
<td></td>
</tr>
<tr>
<td>Activity</td>
<td>More Boring</td>
<td>Same</td>
<td>More full-On</td>
<td></td>
</tr>
</tbody>
</table>

**Same**
- EM mean difference less than +/- 0.5 scale units

**Better - Harder - More full-on**
- EM mean difference of comparison is more than 0.5 scale units and p > .05

**Worse - Softer - More boring**
- EM mean difference of comparison is less than - 0.5 scale units and p > .05

**Better - Harder - More full-on**
- EM mean difference of comparison is positive and significant at p < .05

**Worse - Softer - More boring**
- EM mean difference of comparison is negative and significant at p < .05
Results: Design Context Sentiments

- **Treatments**:
  - Unit 1
  - Unit 2
  - Unit 3

- **Sentiments**:
  - Good
  - Hard
  - Full-On
  - Neutral
  - Bad
  - Soft
  - Boring

- **Graphs**:
  - **STAFF**
  - **DETAINEE**
  - **UNIT**
  - **YOU**

- **Evaluation Potency Activity**
- **EM Mean**
- **CI High CI Low**
- **p > .05**
Results: Behaviour Likelihoods

A detainee [insert behavior] a staff member in this unit.
A staff member [insert behavior] a detainee in this unit.

Positive

Multivariate test across the four negative behaviour items
Pillai’s Trace value = .115, F (4, 78) = 2.534, p = .047, partial $\eta^2 = .115$
Exploring Affective Control

Affect Control Theory predicts that when a behaviour would result in people’s experience confirming their fundamental sentiments, a behaviour is more likely to occur.

Event: a detainee abuses a staff member in this unit

Evaluation sentiments for the residential unit

<table>
<thead>
<tr>
<th>Sentiments</th>
<th>Fundamental sentiments</th>
<th>Design context sentiments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>Green line</td>
<td>Yellow line</td>
</tr>
<tr>
<td>Bad</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Very Likely | Very Unlikely

Graph showing evaluation sentiments for the residential unit with a scale from Very Likely to Very Unlikely.
Discussion and Conclusions

Fundamental Sentiments

- Detainee’s fundamental sentiments indicated detainee viewed all objects as bad and hard, except themselves.

Influence of design on sentiments

- Design context sentiments varied most substantially on the evaluation and potency dimensions between the high security, institutional unit and the other two units.
- Detainees’ evaluative sentiments for staff and themselves also varied between normalized, secure and part-normalized, secure units.

Influence of Design on Expectations

- A consistent normalized design approach has a positive, yet modest, influence on expectations, with other design approaches resulting in relatively similar expectations.
- Positive, affectively ‘good’ design did appear to constrain detainee participants’ expectations of negative behaviour.
Does design make a difference?

Contribution to answering this question:

- A strong quasi-experiment design was used to establish the independent effects of design on staff and detainees’ perceptions and expectations.
- The mechanisms by which design may make a difference in correctional facilities was closely investigated utilizing a theoretical framework of social interaction.
- The results indicated that to influence detainee expectations of negative behaviour, a design needs to be consistently normalized.
Thank you!

Contact Info:
Rohan_lulham@agd.nsw.gov.au
**Questionnaire**

**QUESTION 5.**

In this unit, what do you reckon **detainees** are like?

**Detainees** are ........

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Bad</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Extreme</td>
<td>Not Bad</td>
<td>on Good</td>
<td>Extremely</td>
<td></td>
</tr>
<tr>
<td><strong>Soft</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Extreme</td>
<td>Not Soft</td>
<td>on Hard</td>
<td>Extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Boring</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Extremely</td>
<td>Not Boring</td>
<td>on Full On</td>
<td>Extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Good</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Hard</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Full On</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Page 14
EPA Measurement

**Bad**

1 2 3 4 5 6 7 8 9

- Extremely
- Not Bad or Good

**Good**

- Extremely

**Soft**

1 2 3 4 5 6 7 8 9

- Extremely
- Not Soft or Hard

**Hard**

- Extremely

**Boring**

1 2 3 4 5 6 7 8 9

- Extremely
- Not Boring or Full On

**Full On**

- Extremely
ACT Conceptual Architecture (Lulham, 2006)
ACT Conceptual Architecture (Lulham, 2006) applied to staff-detainee interaction in JDC facilities
Figure: Example of completed design attributes task sheet

Things You May Have Noticed
Either circle two of the things in list below or name something else that you noticed about the unit.

A. the layout of the unit  F. size of the unit
B. locks, bars and security fixtures  G. furniture
C. decorations, pictures, etc  H. windows, amount of light
D. walls, carpets, ceilings etc  I. other ....................
E. the staff area/office  J. other .........................

There are no right or wrong answers, just identify two things you notice.

<table>
<thead>
<tr>
<th>Thing You Noticed</th>
<th>Thing You Noticed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. A</td>
<td>2. I</td>
</tr>
<tr>
<td>(Draw Arrow)</td>
<td>(Draw Arrow)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bad/Good</td>
<td>Bad/Good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Extremely</td>
<td>Extremely</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not Bad or Good</td>
<td>Not Bad or Good</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

37
Linking practice, research and theory

**Practice** (Roush et al, 1996)
- What factors are critical to the effective functioning of residential units in correctional facilities?

**Research** (Wener)
- Does physical design influence the functioning of residential units in correctional facilities?

**Theory**
- How does physical design influence the functioning of residential units in correctional facilities?