

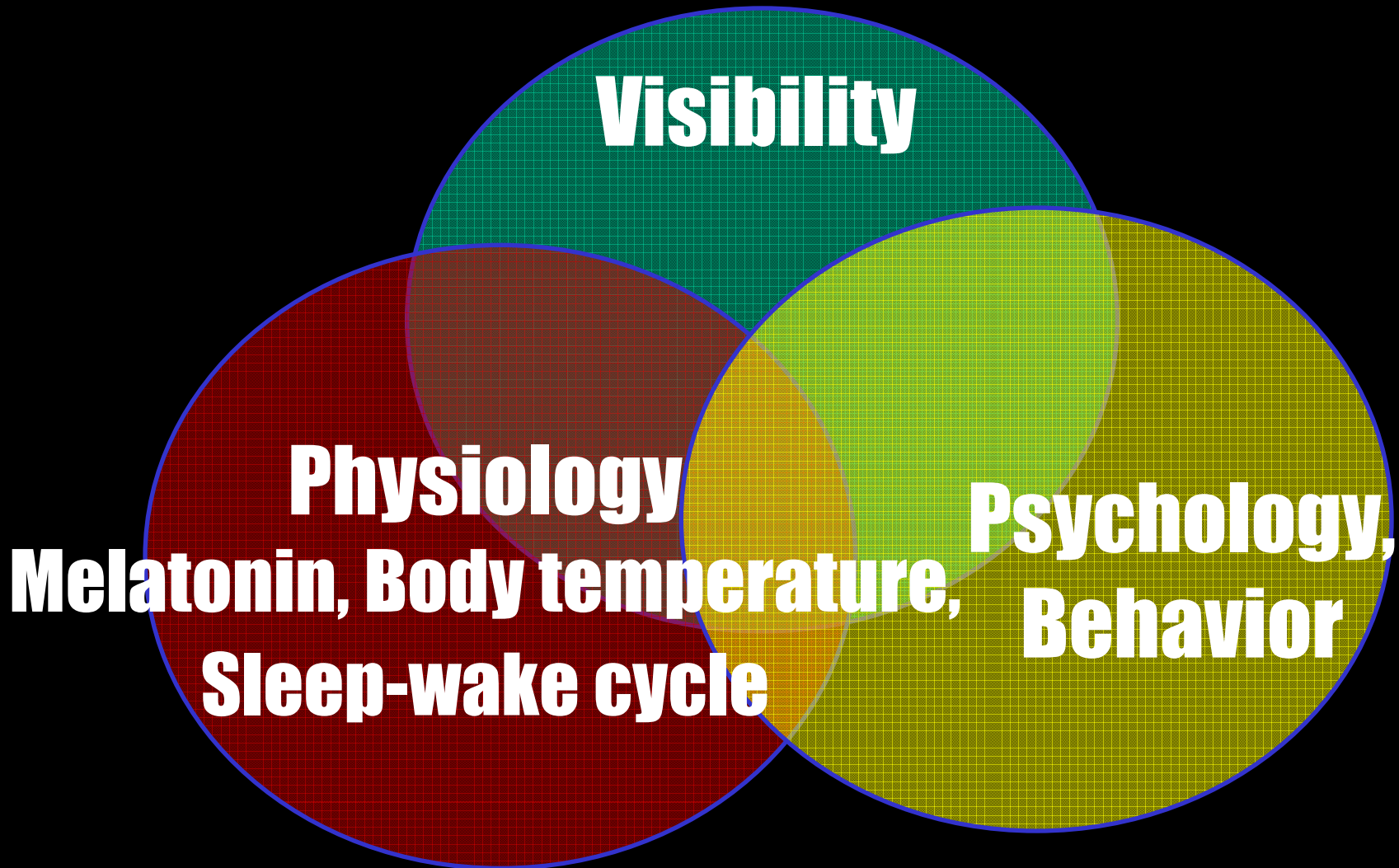
A photograph of a traditional Japanese restaurant interior. The room is dimly lit with warm, yellowish light. Several people are seated at tables, some facing away from the camera. The tables are covered with dark red cloths. In the foreground, a white cup and saucer are visible on a table. The background shows wooden walls and shelves with various items.

Lighting Effects on Interpersonal Communication

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Lighting Effects on Human Beings



Light and circadian system



- **Light can alleviate seasonal depression**
- **Light can increase the length and quality of sleep**
- **Light can improve performance of night-shift workers**
- **Light can consolidate sleep/activity patterns in Alzheimer's Disease patients**
- **Light can improve weight gain in premature infants**
- **Light regulates melatonin**
- **Light has a direct impact on cortical brain activity**

Light therapy room



☑睡眠障害には、光療法（高照度光照射装置による光照射）がきわめて有効です。

☑しかし、起床後の最も忙しい、朝の早い時間帯に、据置型のSun Box（サンボックス）の前に1～2時間留まっていられない人達が多いのも事実。そんな人達に朗報です！

☑Poesieは、この度、この光照射装置をサンバイザーに取り込み、行動の自由を確保することができる新製品Light Visor（ライトバイザー）を新たにゲットしました。ご紹介しますね。

☑このLight Visor（ライトバイザー）は、頭部に装着するので、自由に行動ができます。

☑これで朝の忙しい時間帯でも簡単に光照射が出来るようになりました。

☑またとてもコンパクトなので、航空機内や旅先など、いつでも必要な時に光照射が可能となりました。



☑【商品の概要】

- 名称：ライトバイザー 米国Bio-Brite社製
- 型式：SLV
- 光源：ミニクリプトン球
- 電源：バッテリー：
 - 充電式ニッケルカドミウム電池
 - 充電回数 約450回
 - バッテリーケース付き
- 電源プラグ：ACアダプター（JIS規格C-8303）
- ☑照度：約4センチ間隔で100～2500ルクス
付属ミニドライバで調整できます。
- ☑照射時間：最大照度で約1時間
／12～16時間充電
- ☑タイマー：60分までのタイマー設定可能
付属ミニドライバで調整できます。

●サイズ：W20cm×D22cm×H5cm（写真参照）

●重量：本体：250g バッテリー：150g

☑【商品構成】

- ☑ライトバイザー
- ☑ACアダプター
- ☑ミニドライバ
- ☑高照度照射時間数調整
- ☑バッテリーバック
- ☑バッテリーケース
- ☑携帯用バッグ
（W26cm×H20cm×D7cm）



800\$!!

Deluxe Bio-brite Light Visor

\$279.00 (reg. \$299)



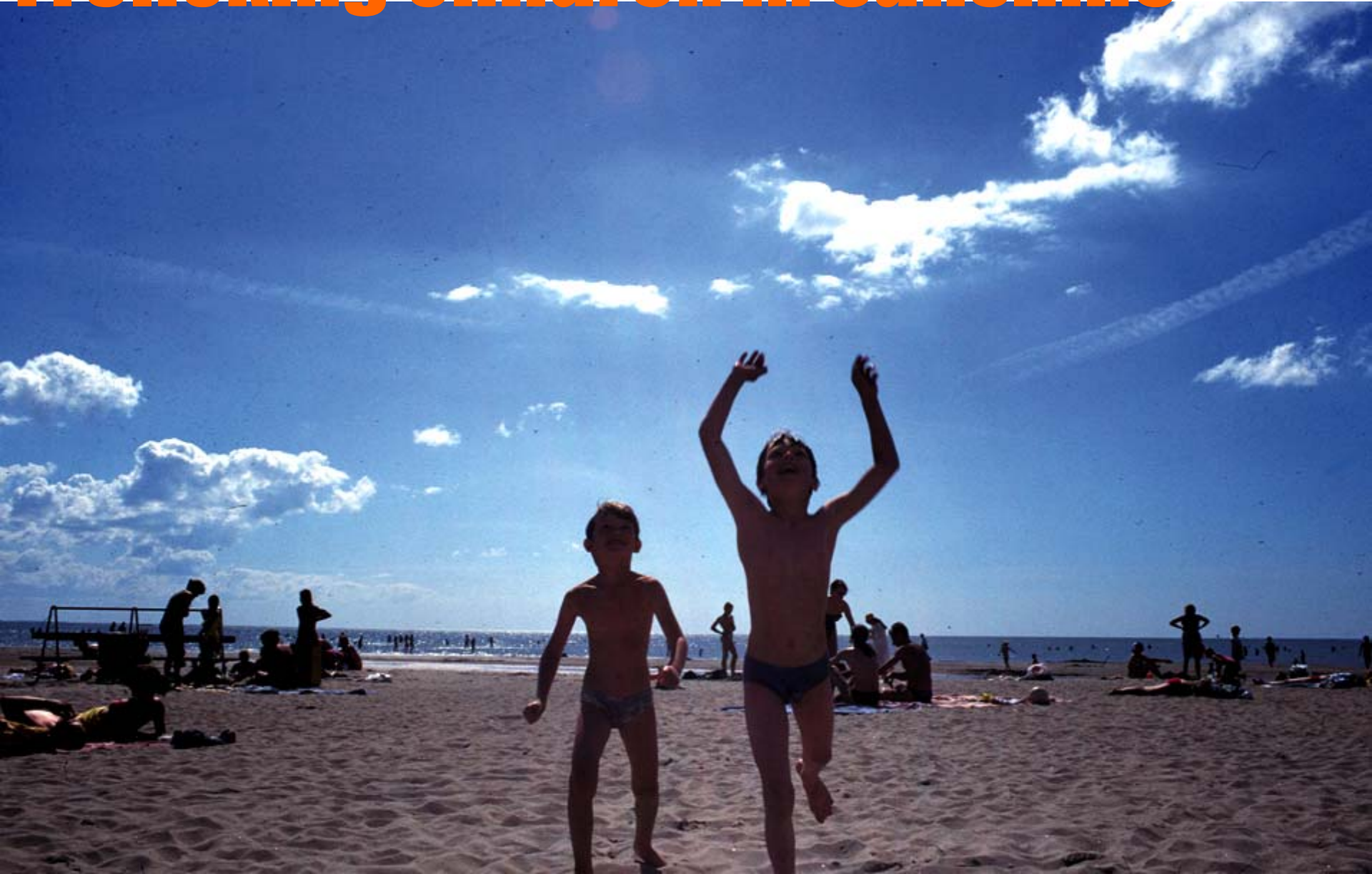
Bio-Brite light visor helps fight against seasonal depression. Great for jet lag.

Try the sunrise alarm and wake up naturally.

The Bio-Brite light visor is a breakthrough in convenience, efficiency and utility of bright light therapy.

Wearable - this bright light source that is light weight, adjusts to fit comfortably around your head and is powered by a rechargeable battery pack that leaves you free to move about. Delivers safe, gentle glare-free light. Super efficiently because the light is fixed close to the eyes.

Frolicking children in sunshine



Sitting couples beside a river



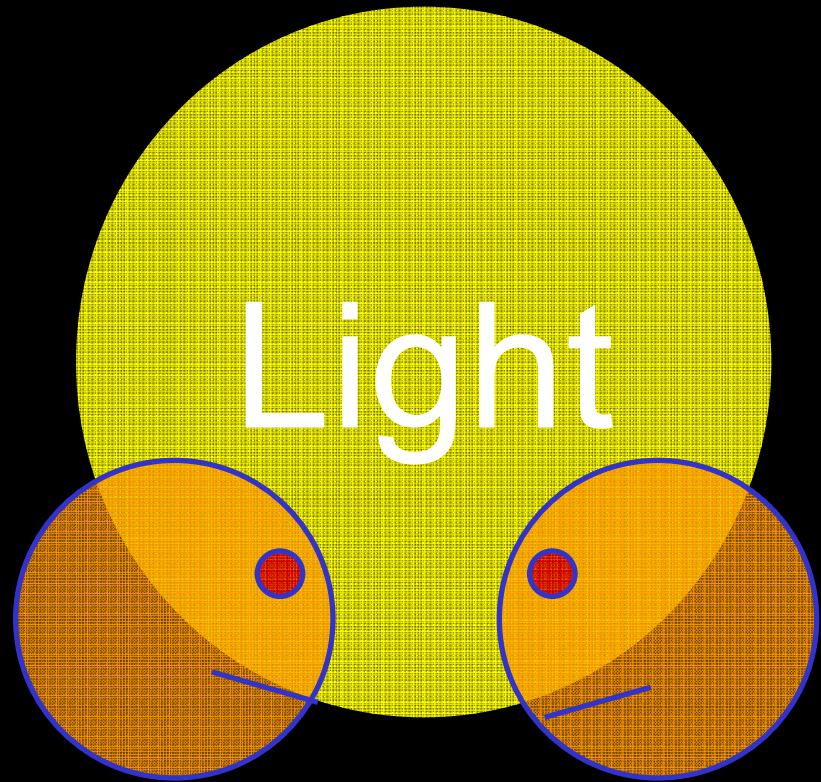




Mature couples in Las Vegas

Interpersonal Communication

- **Interpersonal relationship**
- **Sex**
- **Personality**
- **Personal distance**
- **Facing direction**
- **Eye contact**
- **Surrounding Environment**



Investigations and Experiments about Lighting Effects on Interpersonal Communication

- Speaking volume**
- Personal distance and facing direction**
- Seating posture and eye contact**

Experiment 1

- **Lighting Effects on Speaking Volume**

Spotlighting

Table: 50 lx Ambient: 1 lx



General lighting

Table: 800 lx Ambient: 500 lx

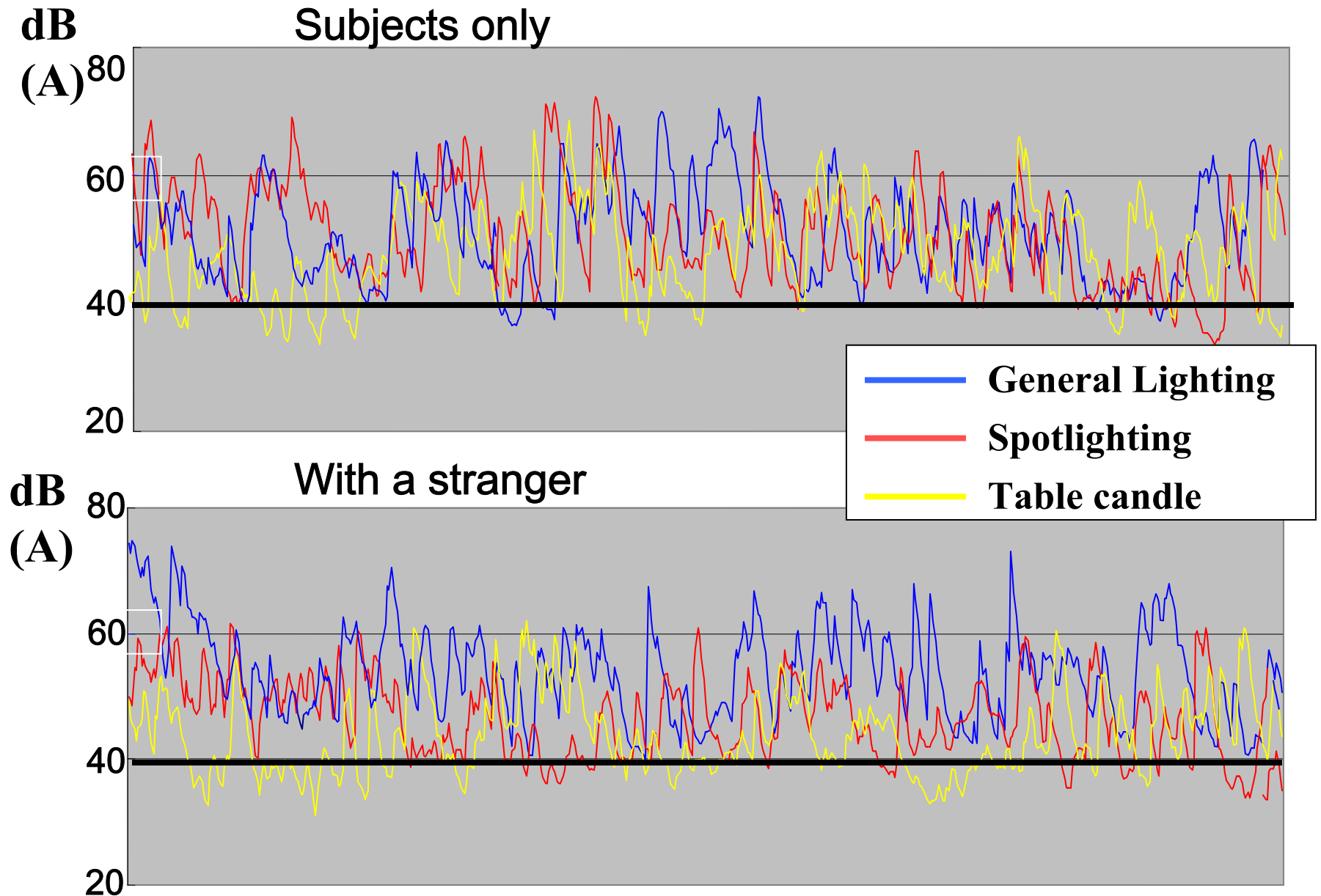


Table candle

Table: 3 lx Ambient: 0.1 lx

Subjects: 20 pairs, 40 people

Speaking volume (one minute example)



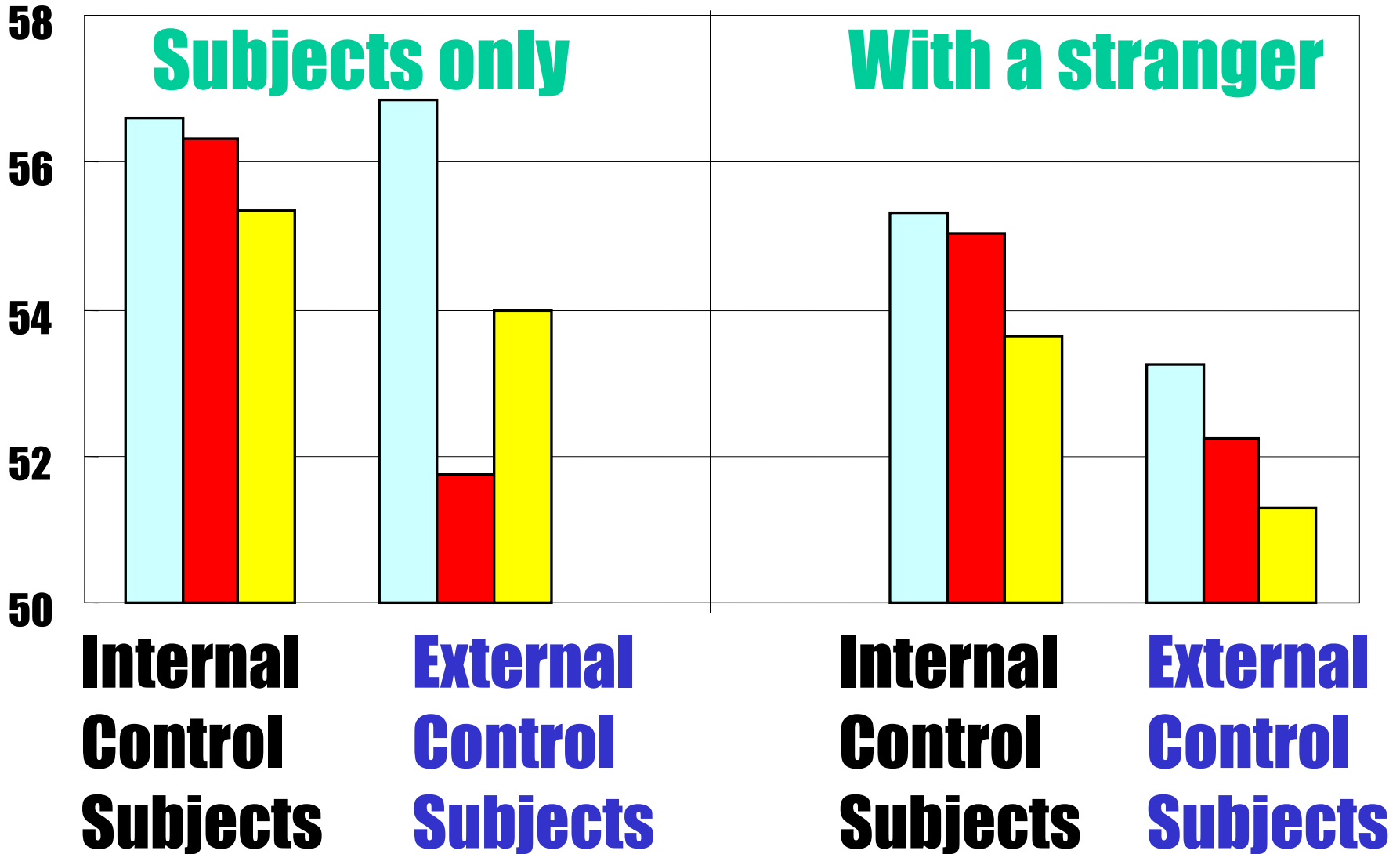
Average Speaking volume dB(A)

Bright

<

>

Dark



Locus of Control

Locus of Control refers to an individual's perception of what are the main causes of events in life. More simply put, do you believe that you control your destiny or that it is controlled by others or fate? "A locus of control orientation is a belief about whether the outcomes of our actions are contingent on what we do (internal control orientation) or on events outside our personal control (external control orientation)." (Zimbardo, 1985)

External Locus of Control

Individual believes that his/her behavior is guided by fate, luck, or other external circumstances

Internal Locus of Control

Individual believes that his/her behavior is guided by his/her personal decisions and efforts.

Speaking Volume

- **Generally, people speak loud in bright environment and speak quiet in dark environment.**
- **In extremely non-uniform lighting, speaking volume vary depending on speaker's personality.**
- **People speak a little quiet sharing with a stranger.**

Experiment 2

- **Lighting Effects on
Personal distance and
facing position**

Personal distance and facing position

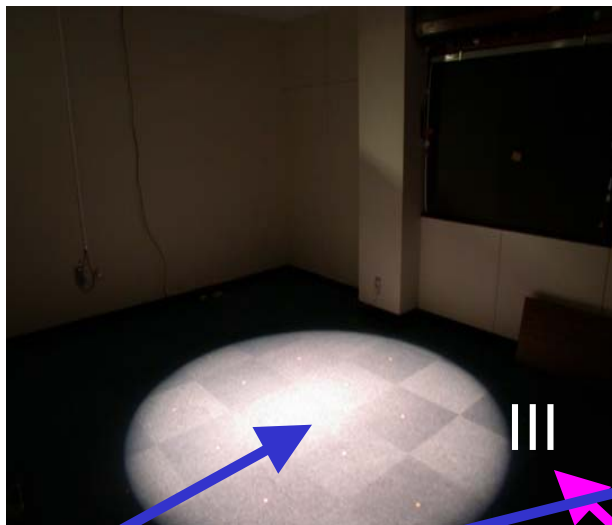
**Experiment scene :
Monitoring subjects' behaviors by an infrared video camera**



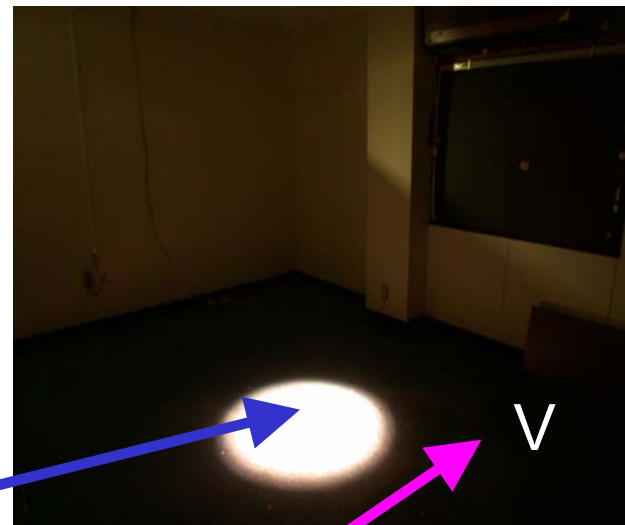
Almost uniform



Wide angle spotlight



Narrow angle spotlight

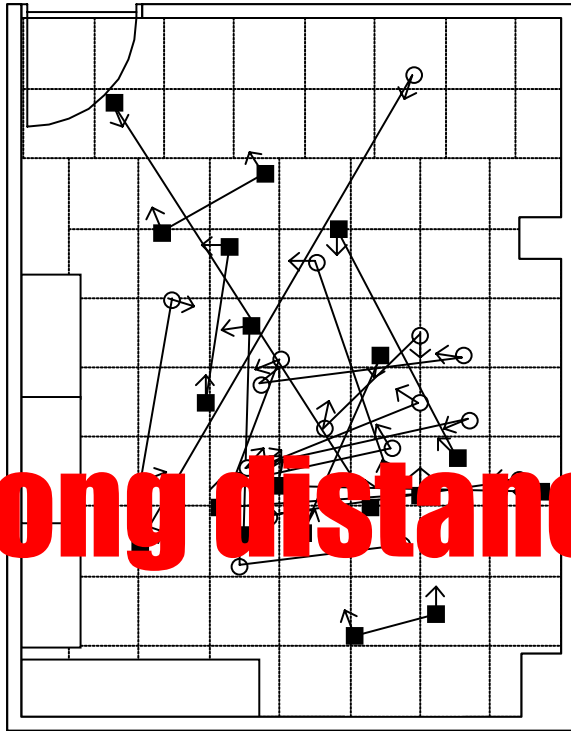


400 lx

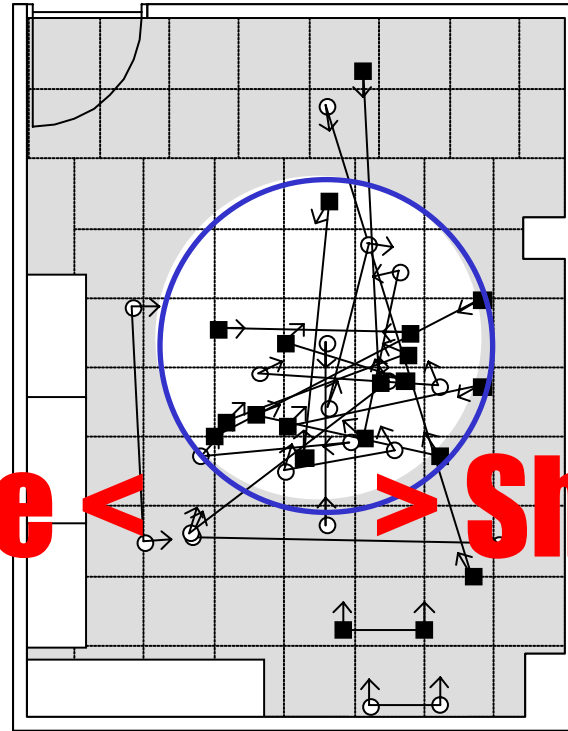
30 lx



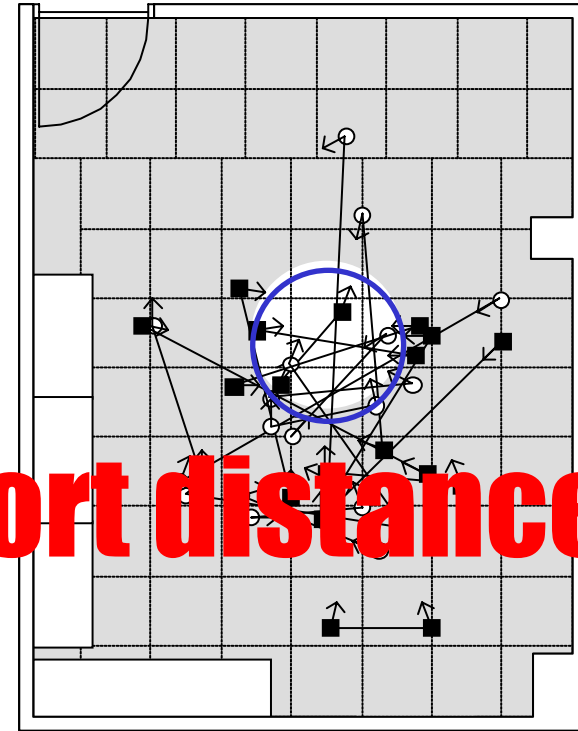
I General lighting



III Wide Spotlighting



V Narrow Spotlighting



Long distance < > Short distance

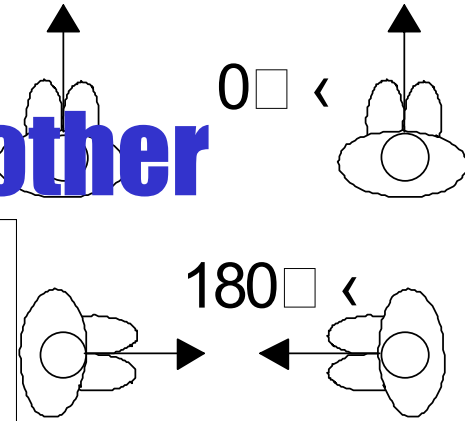
Subject ■ Male 20 people
○ Female 20 people

Selected conversational positions

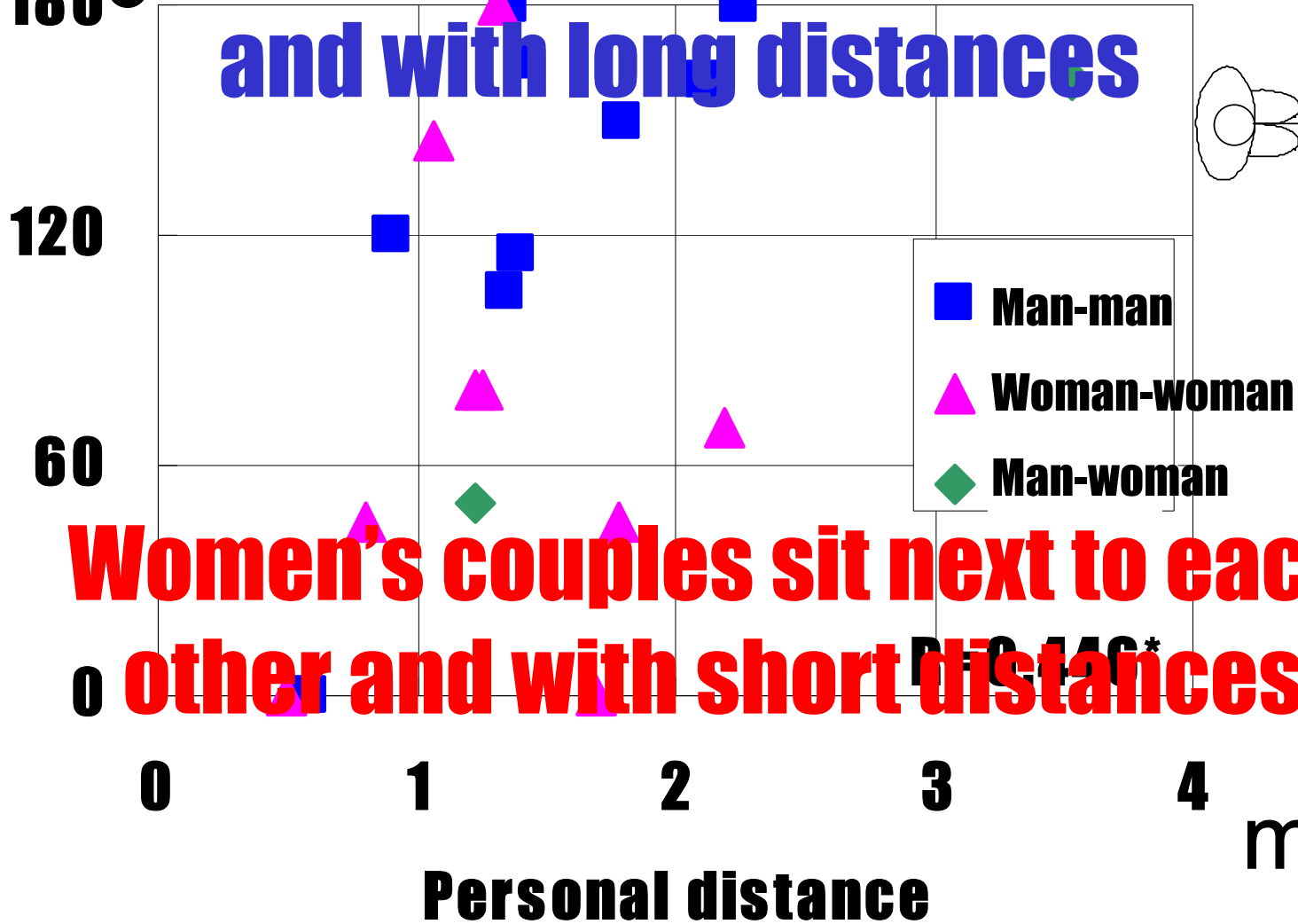
Wide Spotlighting

Facing angle

Facing angle
180°



Men's couples sit facing each other and with long distances



Women's couples sit next to each other and with short distances

Experiment 3

- **Lighting Effects on**

**Seating posture and
eye contact**

Seating posture and eye contact

Experiment scene : Infrared video camera's image



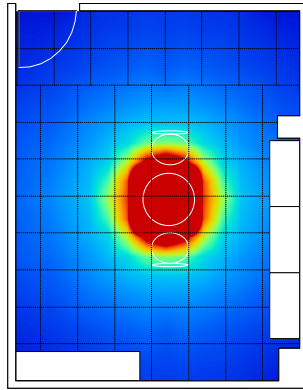
Subjects 120 people

Lighting pattern

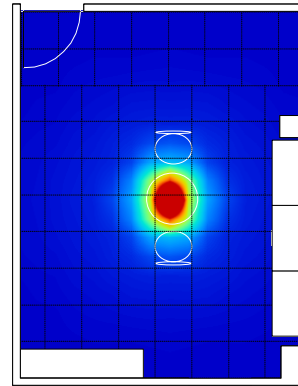


I : Table lighting
(spot lighting)

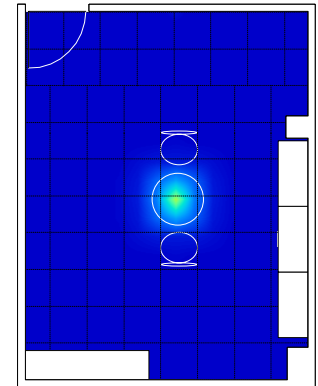
c



b



a

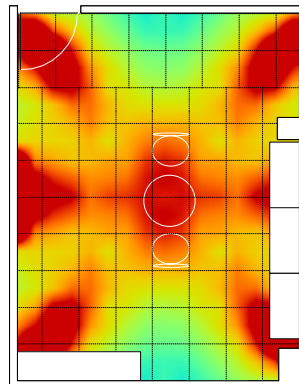


Bright <

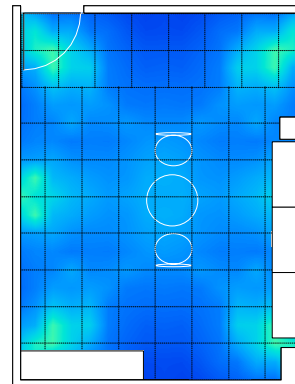
> Dark

II : Wall lighting

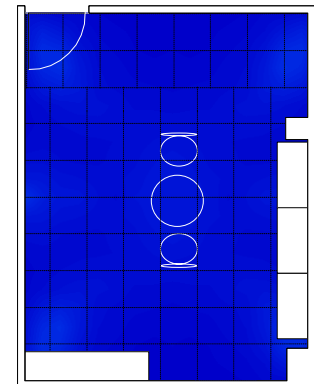
c



b



a








Measure Items

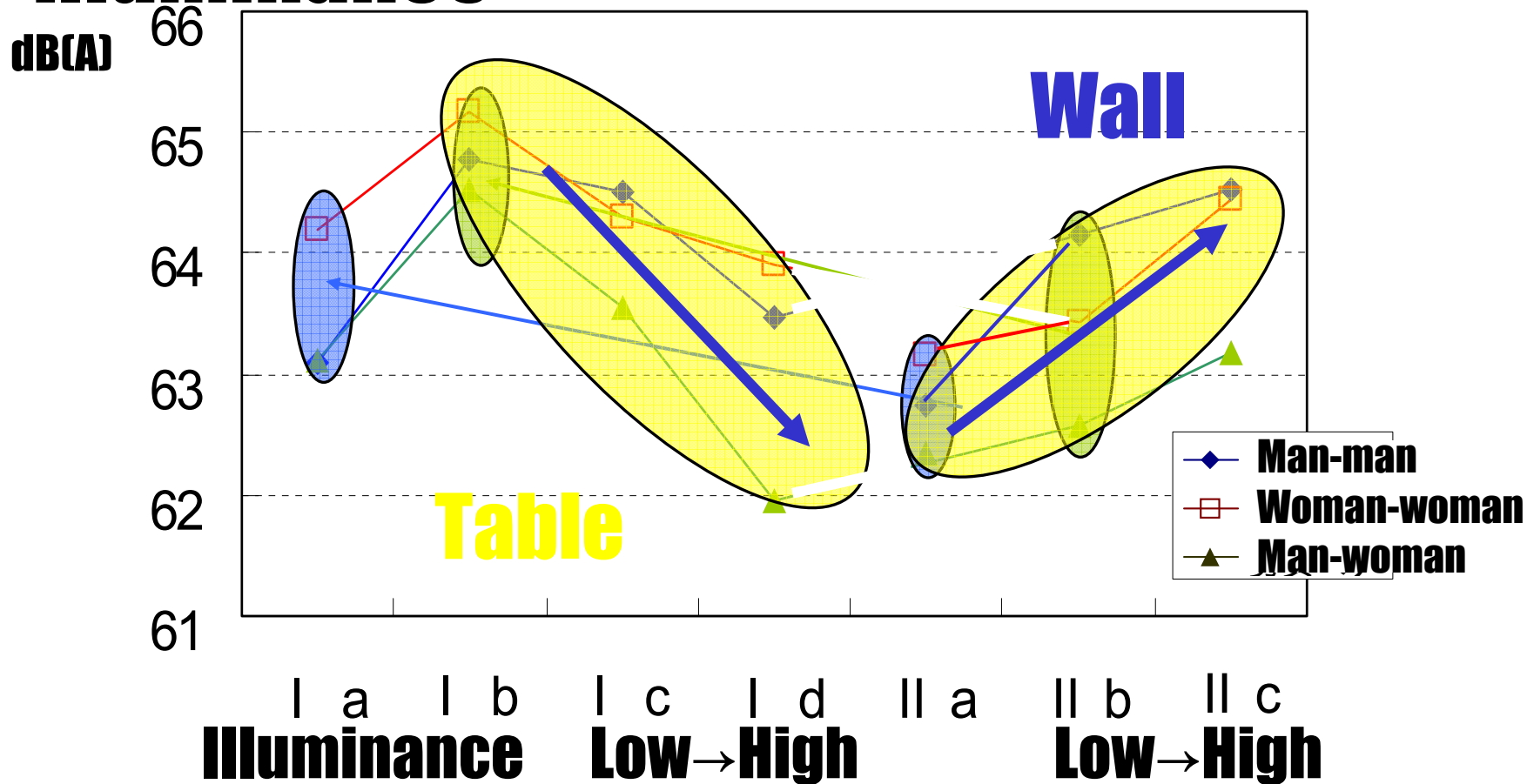
Sound level (Speaking volume)

Measure the sound level during 5 minutes

Posture and Eye contact

| | 1 | 2 | 3 | 4 | 5 |
|------------------|--|--|--|--|---|
| Posture |  Lean back |  |  Vertical |  |  Lean forward |
| Eye contact time | ~ 20% | 20% ~ 40% | 40% ~ 60% | 60% ~ 80% | 80% ~ |

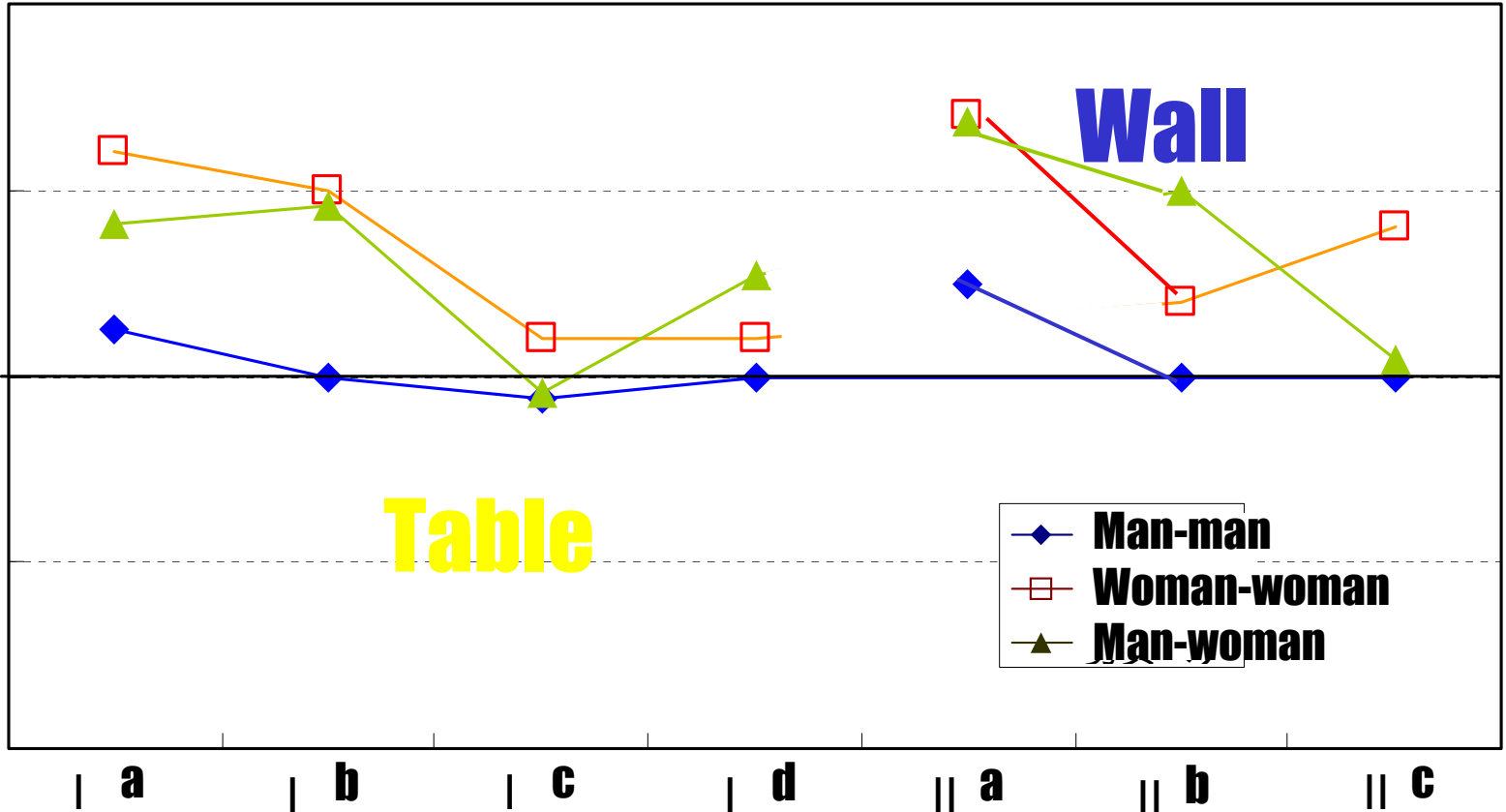
Speaking Volume Comparison of Illuminance



Eye contact

Frequently
(80%)

Rarely
(20%)



Table

Wall

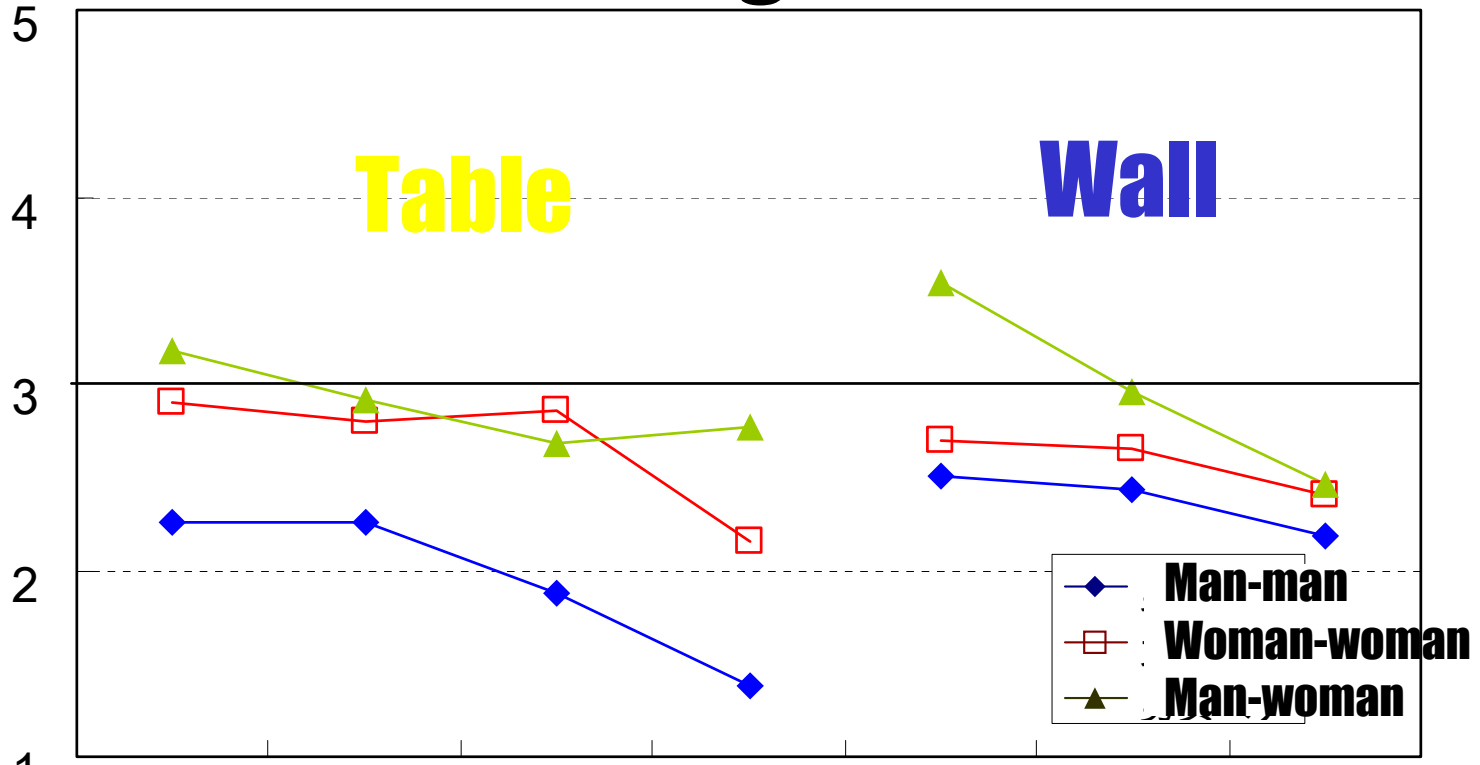
- ◆ Man-man
- Woman-woman
- ▲ Man-woman

Illuminance Low → High

Low → High

Seating Posture

Lean forward



Table

Wall

- Man-man
- Woman-woman
- Man-woman

Lean back

Illuminance

Low → High

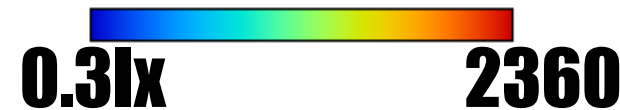
Low → High



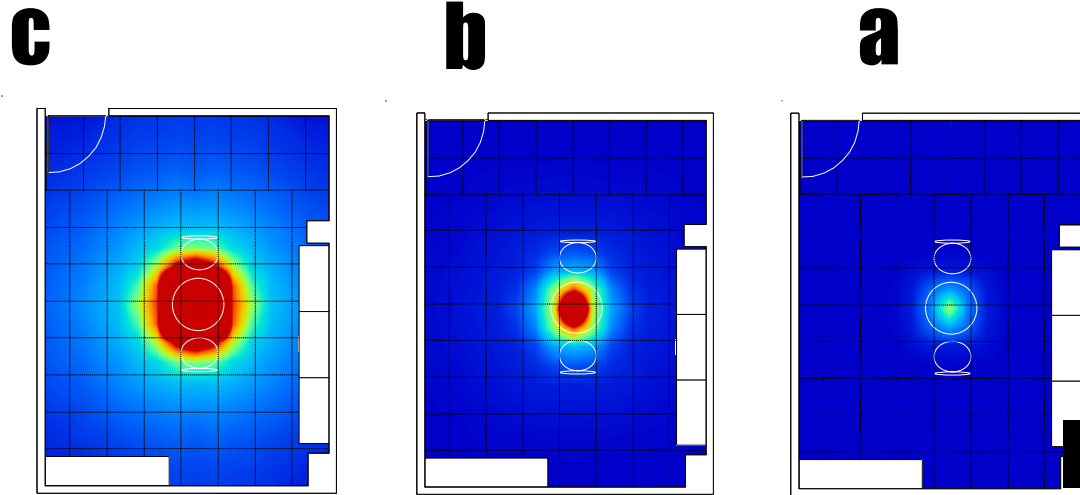
In Dark Environment

- **Much eye contact**

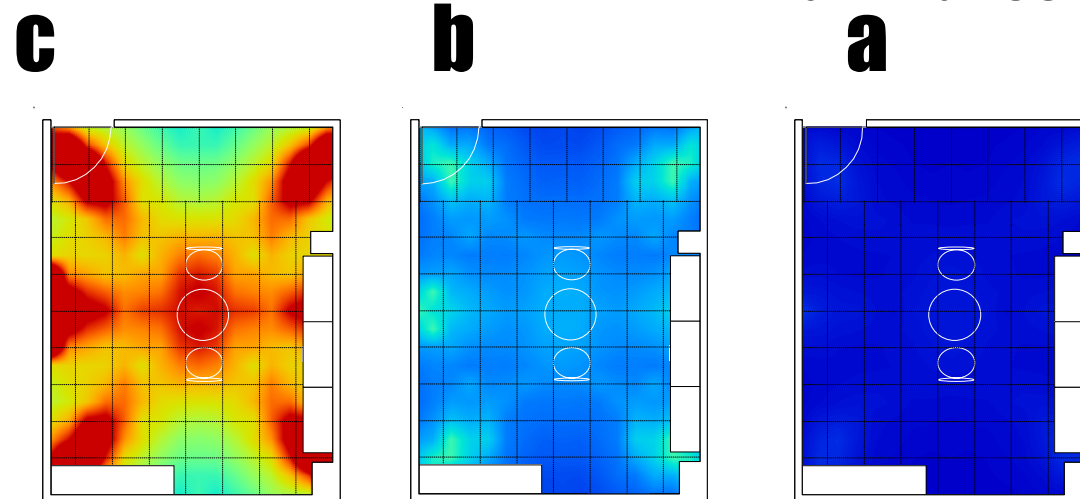
- **Lean forward**



I

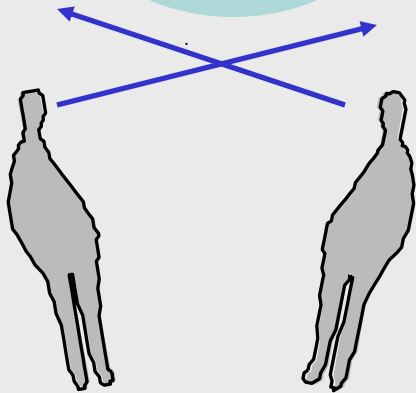


II



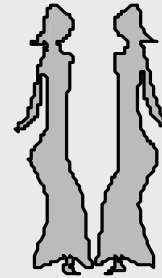
Sex difference

**Man-man
pair**



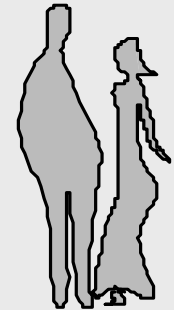
- **Few Eye contact**
- **Lean back**

**Woman-
woman
pair**



- **Frequent Eye contact**
- **Lean forward**

**Man-
woman
pair**



Experiment 4

- **Lighting Effects on Seating posture, eye contact and conversational frequency in the open-air terrace**

Observation of Behavior in Public Space



**Targeted space : Open air café in
Tokyo
Daytime and Nighttime in Summer**



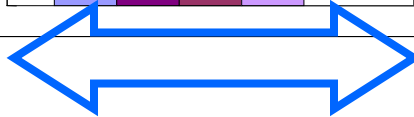
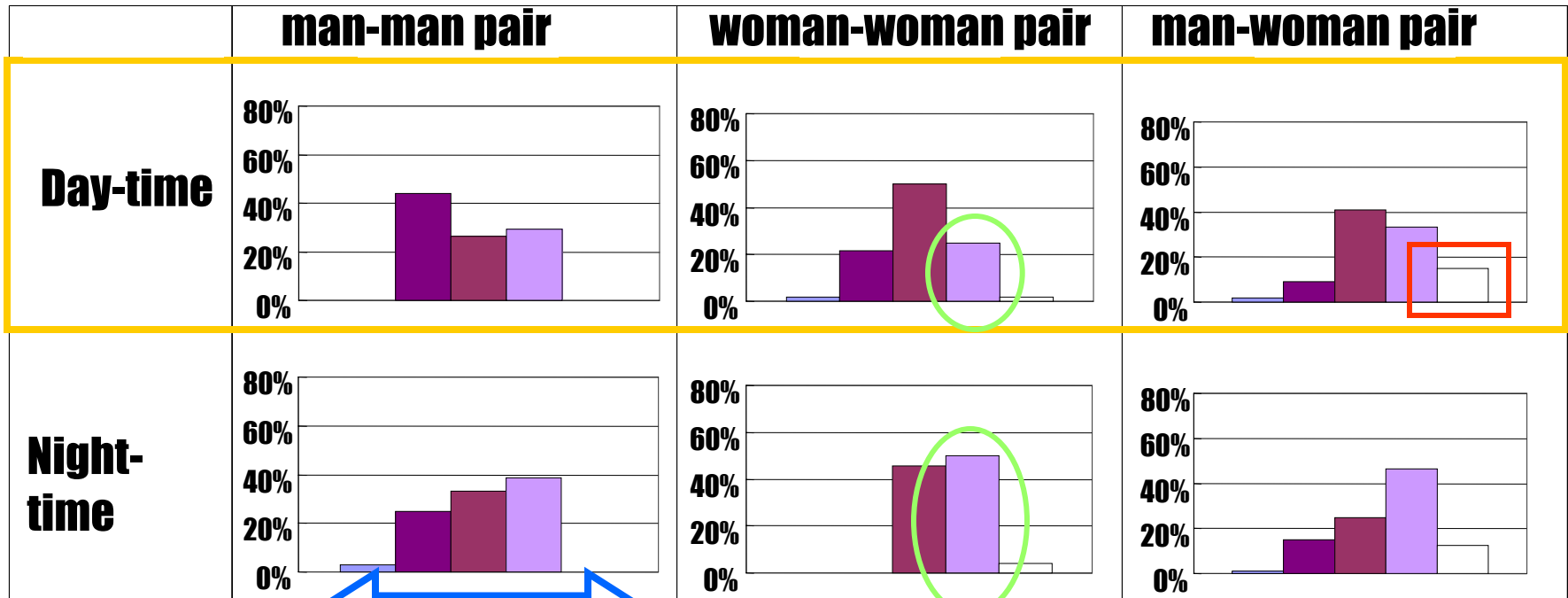
Daytime (Man-man pair)



**Nighttime
(Man-woman pair)**

**Example of subjects
Total 288 people**

Result of posture



Lean back

Lean forward

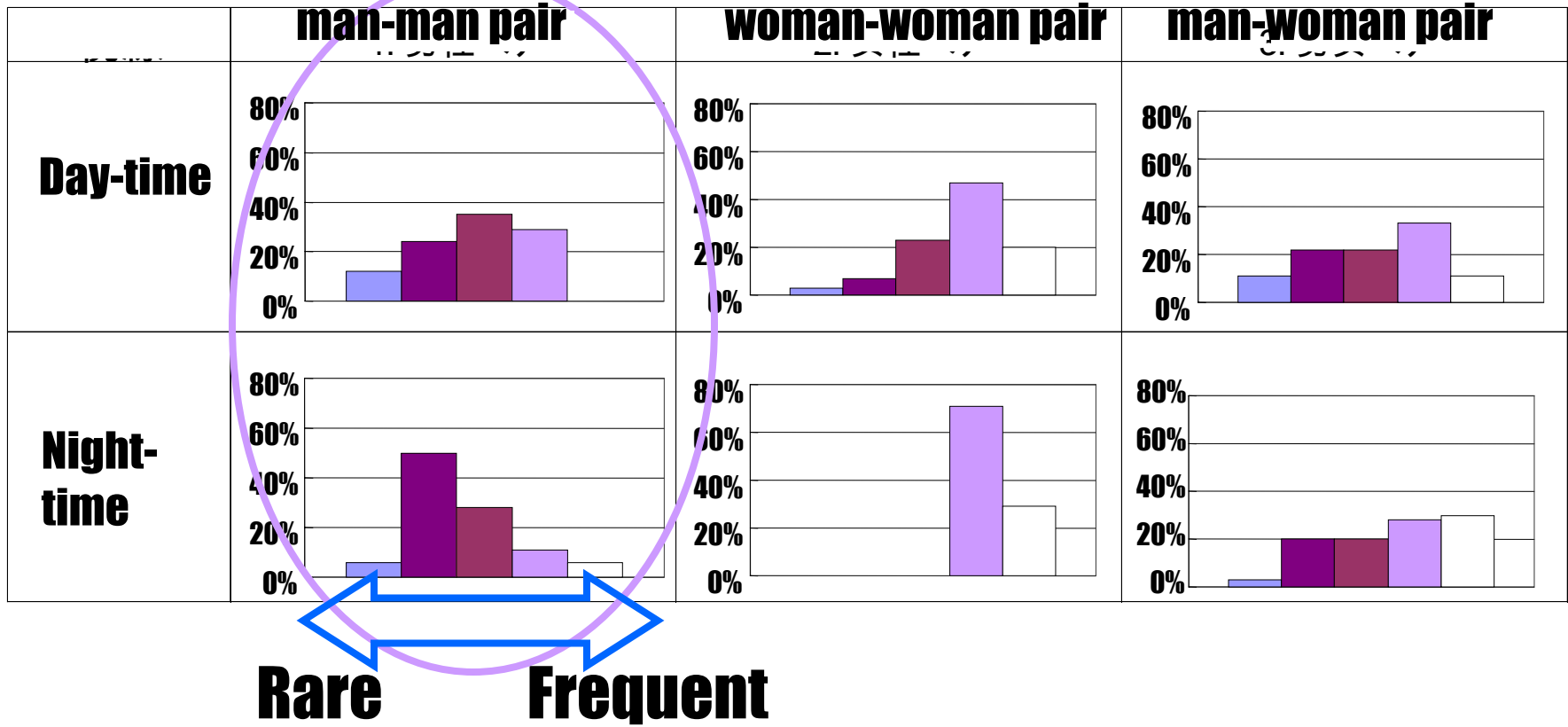
● **Man-man pair: Lean back in their chairs**

● **Woman-woman pair: Lean forward in night-time**

Man's couples



Result of Eye-contact

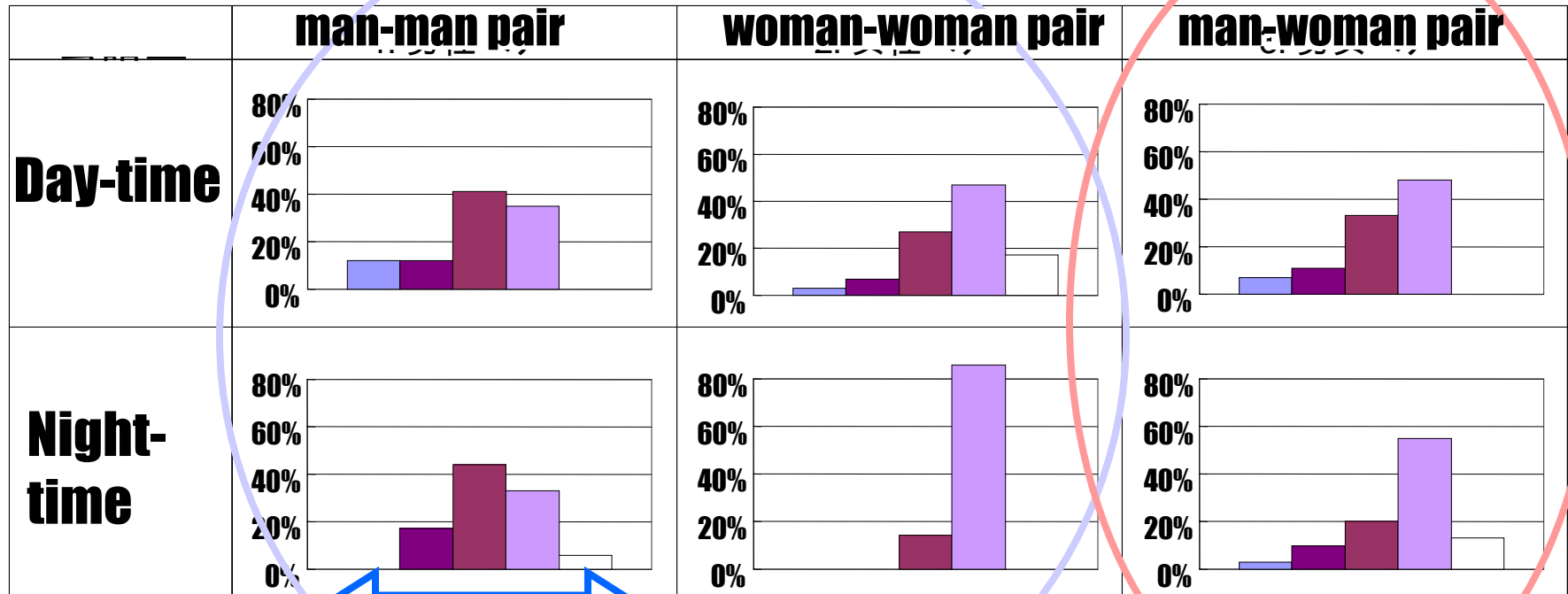


- **Man-man pair: Rare eye-contact especially in night-time**
- **Woman-woman pair: Frequent eye-contact in night-time**

Woman's couples



Result of Conversational Time



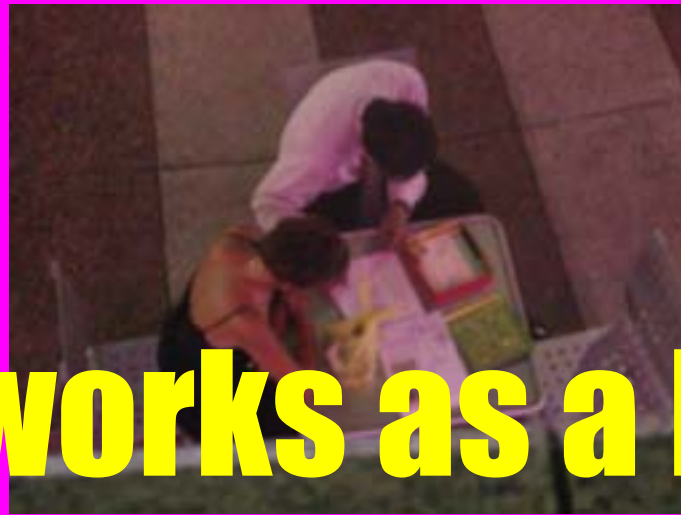
Short
20%

Long
80%

• **Man-man pair: little conversation**

• **Woman-woman and Man-woman pair: Conversation longer, especially in night-time**

Man-Woman couples



Lighting works as a bond of communication

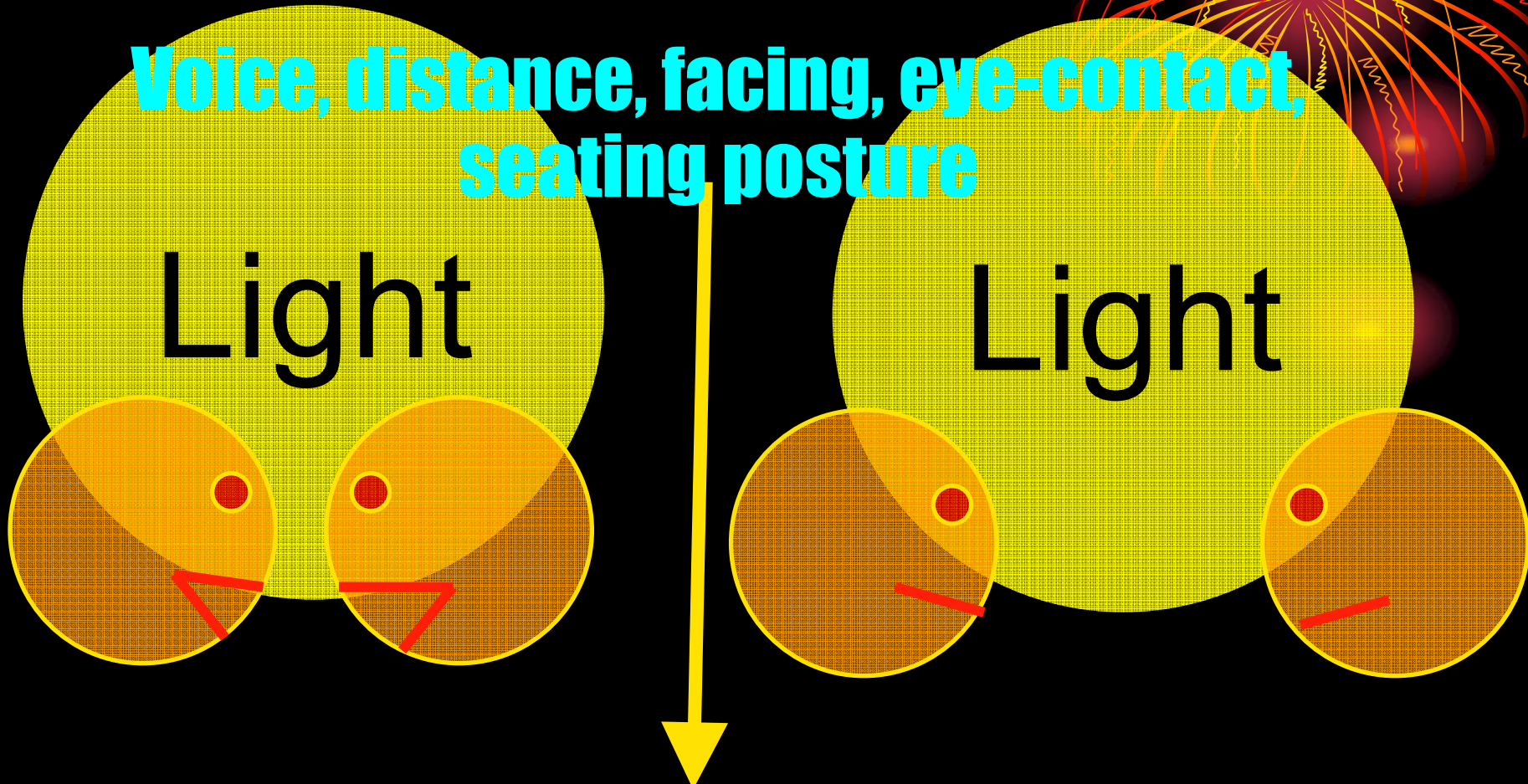
Lighting controls the communication

Voice, distance, facing, eye-contact, seating posture

Light

Light

Light can improve interpersonal relationship in various spaces



Lighting design to promote appropriate communication

- Departure from the visibility and visual impression**
- Consideration with interpersonal relationship, interpersonal conscious and sex difference**
- Lighting design combined with seat configuration**

- What type of communication is desired in the space?**

**Take advantage of Lighting
adjustable character**

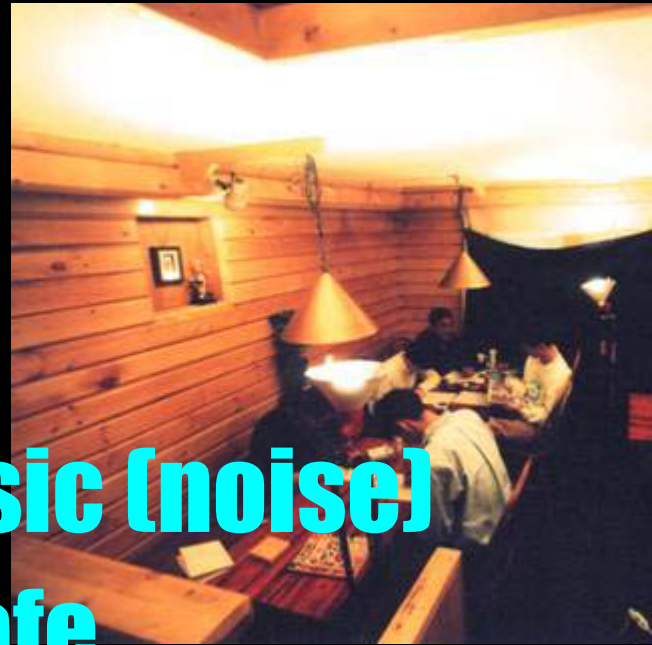


**Lighting design according to the
each situation**

ongoing project



**Lighting + Music (noise)
at a cafe**



Combined effects on behaviors

