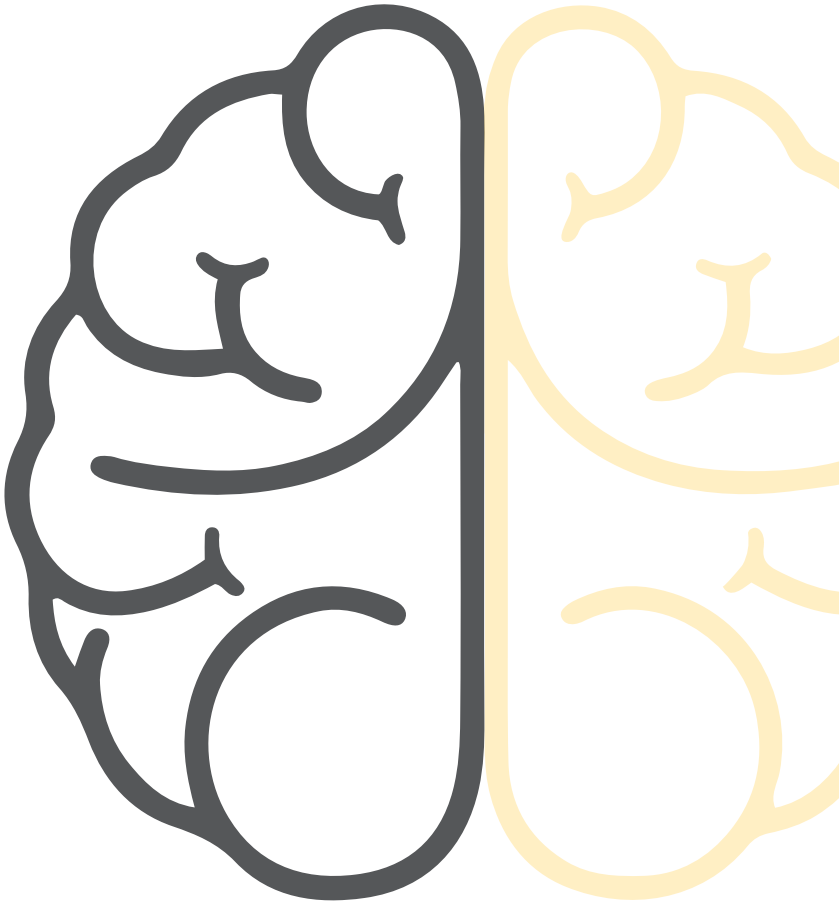
Mindful Event Design

The Psychology of Physical Meeting Environments



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Introduction

A manager's ability to turn meetings into a thinking environment is probably an organization's greatest asset.

Nancy Kline

There is an understanding emerging from current research in the convention and trade show industries: the results stemming from any event come from the experience participants have of that event. Experiences come in many shapes and sizes, having a multitude of aspects that come together to influence how we perceive and respond to them. Consider a multi-day conference: Does it matter days later that we had a pleasant cab ride to the venue? Does a challenging schedule determine how we perceive individual tradeshow booths and meetings? Is there an association between how we experience the general layout and whether or not we achieve our goals? The short answer is yes: our brains register everything and the sum total of these experiences influences how we perceive the event, what we learn and remember, and how we behave when we return to our offices and our work.

Each stakeholder in an event has goals and business results they'd like to achieve. It starts, and ends, with the attendee - because if attendees accomplish their objectives, everyone wins. So a prime objective of organizers and exhibitors is to understand and assist the attendees in achieving their objectives.

Attendees go to conventions and trade shows to discover new products, learn about the current state of the industry, further their education and career, network with colleagues, gain inspiration, gather information, and have their questions answered. Exhibitors are there to gain brand recognition, nurture existing business relationships and generate leads for new relationships, influence buying decisions and create motivation for action. What convention designers and exhibitors must do, then, is to create experiences that enable and empower all participants to achieve their objectives.

The Physical Environment

Our brains are so adapted to make associations with the environment that whether we want to or not, we link our experiences and their settings, and those two things together produce our behavior.
Winifred Gallagher

The power of place to influence our experience cannot be overstated. Environments have a profound effect on people: on our thoughts, our emotions, our state of being, and ultimately our behavior. The physical environment influences our neurochemicals, which create a physiological state that influences our experience at any point in time. What we are experiencing, in turn, influences the way we think, the way we feel, the things we do and the way we do them.

When we talk about the "experience" of a convention, what we are talking about is the physiological states it produces: Are attendees and exhibitors satisfied and motivated? Or are they stressed and disappointed? Energized and productive? Having a great time socializing, but not in the mood to focus on their goals? The environment can factor into all of these states and, even further, can influence our behaviors and actions. Are we pleasantly disposed toward those with whom we shared a fabulous experience? Or do we not want to be reminded of an unpleasant experience? Do products and brands stick in attendee minds for follow up and eventual sales? Or does everything go into one big jumble, soon to be forgotten?

An informed and careful design of the physical environment can create a brain-friendly environment that supports well-being and high performance.

EXPERIENCE AND ENGAGEMENT

Let's look first at what we mean by "engagement." When the brain is engaged, there are certain processes that are happening. It starts with attention. According to neurologist Michael Posner, there are actually three separate attention functions: alerting, orienting and executive attention. The "alerting" function achieves and maintains us in an alert state. It involves the norepinephrine system arising via parts of the brainstem and activating centers in the frontal and parietal lobes. The "orienting" function focuses our senses on the information we want. It involves areas in the parietal lobe and the frontal cortex and seems to be particularly affected by the neuromodulator acetylcholine. Executive attention, the third network, allows us to self-regulate and maintain focus on tasks and events as desired. It involves frontal structures, the basal ganglia and is interconnected with many other areas of the brain as it must regulate widespread brain activity to produce coherent behavior in the presence of widespread brain activation. (Posner, 2012)

We see all of these attentional states during a convention: in breakout meetings, at the general session and on the exhibition floor. People are, for the most part, in an alert state. Our orienting function leads us to those booths, presentations, floor areas and events in which we are interested. Many of the attention-grabbing strategies currently in use engage the orienting network, but can be short-lived as we shift our attention from booth to booth, room to room, or presentation to presentation - with nothing holding our interest or engaging our executive attention. In addition, when faced with too many choices, our brains will often simply opt out. There's simply too much mental effort required to choose. A 2008 study by the MAYA Group (2008a) reports that people found it hard to filter out "product noise." Attendees and exhibitors alike said it's hard to figure out what's worth their attention.

ATTENTION BY EXECUTIVE DECISION = ENGAGEMENT

When it comes to producing results in a convention or trade show, we're particularly interested in executive attention. Once engaged, our executive attention allows us to voluntarily filter out distractions to maintain focus on a particular task, goal or event. It's at this level that attention becomes engagement. We are able to be present, maintain attention, and focus on goals. It's theorized that the neural basis of engagement is related to a basic organizing principle of the brain: maximizing rewards and minimizing threat. We approach those elements in our environment that hold rewards and avoid those which contain a potential threat. In this view, when people are engaged, they are experiencing high levels of activation of their reward and executive attention circuitry. They have good levels of dopamine in these brain regions and onlyx moderate levels of activation of threat circuitry.

In contrast, disengagement is characterized by activation of the brain's threat circuitry, mostly involving amygdala-related networks. Threat circuitry is not just fear – it includes anything that is an avoidance response; including anxiety, lack of safety, sadness, and mind wandering. Activation of our threat circuitry has a strong effect even at very low levels and can impact us even when below the level of conscious awareness. Note that our threat/avoidance circuitry is much more powerful than that for reward. We quickly and definitively avoid anything that is perceived as a threat.

Knowledge of the neural circuitry involved in the engaged vs. disengaged states allows us to understand the immense differences in our state and behavior under these conditions. When engaged – with reward and executive attention active – we have increased cognitive resources for thinking, our perceptual field is wider, we are more creative, solve more problems with insight, and come up with more ideas for actions. Engagement is characterized by a balanced brain-body state and includes an effortless, occupied, joyful feeling. On the other hand, when our threat circuitry is activated, it occupies large amounts of brain resources, decreases the efficiency of attention resources, and negatively impacts productivity. Note that a small amount of threat can be effective for increasing noradrenaline levels and thereby focusing attention for short-term tasks, but our view is very narrow, creative thinking is inhibited, and mental fatigue is induced. (Rock, D. and Tang, Y. 2009)

Please note that engagement is not getting your badge scanned,

We run from risk and walk toward reward.
Dr. Evian Gordon, Ph.D.; M.D.

dropping a business card into a jar, talking or sleeping through a presentation, or listening to someone speak for 30 seconds. Interest must be engaged. Rapport must be built before deeper, more meaningful, productive conversation can occur.

There are many factors involved in producing an engaged brain at an exhibition or event: experiences leading up to the event, the physical space of the event, the "atmosphere" of the environment, sensory input during the event, the learning and social environments, and more. Expectations and attitudes toward the event also come into play in terms of how we interpret what we are experiencing. In short, everything in both the external and internal environments combines to allow us to enter an engaged, productive state or to provoke a sense of threat leading to a very different experience.

Of course, upon entering different areas of a convention people may be on the borderline, experiencing a bit of both. This is where organizers and exhibitors can have a huge impact by designing the physical, learning and relational environments to attract, intrigue, reward, and convey a sense of safety and comfort that calms any sense of threat.

Consider this: Our bodies inform our perception, emotion, and thought via what scientists call "embodied" or "grounded" cognition. The way we think about things and people is intimately related to sensation, perception, and bodily states. For example, the temperature of a room matters: Physical warmth promotes interpersonal warmth, while a cold room makes people seem cold as well. A warm drink makes us feel warmer towards people. Soft furniture influences people to negotiate more flexibly, while straight-backed chairs create rigidity in negotiation. (Moss, 2008) Our brains interpret what's happening in the light of how our bodies feel, and how our bodies feel has a lot to do with the physical characteristics of the environments we are in. Convention environments are complex, with a great many factors contributing to the experience we have; and this experience usually spreads to everything connected to the event.

OVERALL IMPRESSIONS

Consider first the overall impression and experience of the convention. The general session, the breakout meetings and the exhibition floor are each rich in cues and influential in communicating the event's image and purpose. What is the general appearance of the convention? Is it welcoming? Is it easy for people to find what they're looking for? Is there plenty of space for attendees and openness to the visual spaces? Is it attractive and pleasing to the eye? Like any single presentation with multiple media supporting its primary message, does each aspect of the convention include methods that successfully reinforce the convention's (and host organization's) theme and brand message?

Research has shown that we behave differently in attractive, spacious environments than we do in unattractive or cluttered ones. Attractive spaces provide a sense of harmony, symmetry and coherence. Harmony refers to a consistent, orderly or pleasing arrangement of parts. Symmetry has to do with proportion and balance. Coherence is the integration of parts to form a unified whole. Attractive spaces predispose people to have a feeling of "liking" other people and products, leading to beneficial behavioral states for engagement. In our brains, an appreciation of beauty recruits the orbitofrontal cortex and dopaminergic reward system, plus the motor cortex. This is not a small effect: the approach-avoidance dynamic is activated: we lean towards approach in attractive settings, while unattractive settings can cause an avoidance response. (Kandel, 2012) Since a primary purpose of conventions is engaging with customers and networking with colleagues, this one small point is a very big key to success for all involved.

Orderly, clearly-defined spaces maximize the occupants' field of observation, leading to a sense of ownership and satisfaction. People feel confident that they can navigate the space to achieve their goals. There is a sense of belonging, and strengthening of community spirit. (Kopec, 2006) We are happy to approach and available to be engaged.

Crowded, cluttered environments, on the other hand, have a different effect. Conventions are usually high-density environments, which increase "environmental load" - the amount of brain power required to process and negotiate the physical environment. Research on high-density environments has found deficits with information processing and tasks requiring sustained attention. There have been consistent findings of social withdrawal; including less eye contact, greater interpersonal distancing, and less initiation of conversation. In addition, crowding is frequently accompanied by negative affect, including reports of tension, anxiety, and stress. (Baum and Paulus, 1987) Note that there are individual differences: some people are more sensitive than others to these effects. And there are some gender differences to note: Men require more personal space, especially when ceilings are low, (Sorenson, 2009) and tend to be more negatively affected by high-density conditions. (Baum and Paulus, 1987)

Please note that not all crowds have this effect. Transient crowds - like those that form spontaneously around an interesting exhibit - can stimulate interest as we go to see what everyone's looking at. Interesting to note is that this type of crowd does not always translate into goal achievement. Research in the retail industry has shown that while people tend to go where there is a crowd, they don't necessarily shop there! (Sorenson, 2009)

Environment has such a large effect on us that it's essential we address human needs first if we want people to be at their best; engaged, happy and productive in the convention environments. The current model for most exhibitions and breakout meetings, however, seems based on logistical considerations rather than human needs or the physiological states they produce. First, there is usually a linear arrangement of booths or seating and aisles. The experience of walking down narrow aisles with tall, vertical structures on either side restricts visual space, contributing to an experience of being "hemmed in." This layout is not very friendly to our brains, which prefer curves. A recent study found that an overwhelming number of men and women considered a room beautiful when it featured curves instead of straight lines – oblong scenic elements, oval projections, looping floor patterns. (Vartanian, 2013) Finally, when there is an overabundance of visual stimulation it can overwhelm

us, exhausting our attention capacity and limiting our ability to become engaged.

This model could use an update, and we are happy to see conversation, experimentation and innovation around nontraditional room, stage and booth design. An example is supplied by Ethnometrics, a consulting company focused on using measurement to improve trade show and retail results. In one case study, The Radiological Society of North America (RSNA) wanted to improve traffic flow and make specialties easier for attendees to find. Ethnometrics recommended floor areas be organized by topics of interest, that a new physical layout be utilized (hub & spoke) and that signage be simplified and improved. They measured (1) Time spent in each section, (2) The number of sections consumed, (3) the total dwell time in the hall, and (4) the consumption of section by target audience. Results showed that traffic flow throughout the meeting experience increased by 70% and that dwell time in each specialty area increased by 90%. (Ethnometrics, Case Studies)

Human performance varies greatly depending on the experience people have and the extent of their engagement with other people and products. Business results are best supported by creating an environment friendly to the human needs of all involved and, in particular, the attendees. A physical environment that supports a happy, relaxed, focused concentration and an ease of doing business is essential. The overall sense of the environment sets a base experience that will generalize to all experiences within it: If things go well, we are inclined to remember most people and things related to that event with pleasure and a desire to approach. If thing do not go well, that negative experience can be carried through the entire event and everything associated with it.

SUGGESTIONS FOR A BRAIN-FRIENDLY LAYOUT

1. **Create open space.** Research from the retail industry demonstrates that open space attracts more than product or even presentation displays. It was discovered that 85 percent of behavior was controlled by geographic location and only 15 percent by product interactions (Sorenson, 2009). Jamming the floor with booths or chairs leads to narrow aisles and psychic discomfort for attendees. Adding a foot or two (or the appearance thereof) to the width of any walkway is likely to generate more traffic there. Plus, adding elements that remind us of open space (think plants or projections of the beach) draw us nearer to them because our brains interpret them as areas where we will be freer. Make a commitment to accommodate attendees' spatial reasoning, rather than your own display or presentation needs and the result will be more traffic, more attention, and more engagement.

2. **Provide a variety of environmental spaces.** The brain requires balance. A time for purposeful work, a time for networking and socializing, a time for quiet reflection, a time for fun. There are individual differences as well: some people gain energy from exciting and stimulating presentations, while others enjoy a quiet conversation in beautiful surroundings. The brain works better when balanced: directed, effortful attention benefits from periods of effortless, interest-based attention. Muted color tones for conversation, bright-colored movement for high-energy interaction, quiet music for working and recharging of both brains and mobile devices. Huddle rooms can be used at exhibit booths for impromptu meetings with a sense of privacy. Include white boards, note pads, or flip charts for collaborative work.

3. **Create central gathering places.** People often want to go where they'll find their friends and colleagues. Where they can get a cup of coffee and chat with whoever is there. Where they can check in to see what people have seen and recommend. It's great to have this in a central location that's easy to reach from any area of the convention. Recent additions of a Town Square and other central gathering spaces to a convention are wonderful examples of this. A lounge is also a wonderful way for people to connect both virtually and in person. Create an event-specific hashtag so people can easily join the conversation and find the hub of networking action.

4. **Provide novelty.** We are naturally drawn to novel experiences. They elicit the release of the neurotransmitter dopamine, giving us a lift in spirit, an increase in alertness and motivation, and activation of our reward system. Experiment with a new technology or interactive activities. New forms of projections – video mapping or transparent LCD, for example, are fascinating ways to create a distinctive environment that draws attention and creates engagement.

5. **Optimize lighting for outcome.** Lighting is a simple, highly effective way to create impact. Bright lights intensify the initial emotional reaction we have to stimuli, including both products and people. Dim lights turn down emotions for rational decision-making and easing negotiations. Keep it reasonable, though. Too bright and we feel the space is "harsh" leading to harsher judgments of products and presentations, presenters. Too dim and the darkness tells our brain it's time to sleep. Do you sometimes feel "stuck" with the convention center lighting? Remember the power of uplighting and LED fixtures to engage the brain, create mood, or draw attention. You can change the lighting scheme throughout the day to complement or even counter expected attendee moods – soft lighting in morning, high-energy effects after lunch or at the end of a long day.

6. **Create user-friendly wayfinding and activityfinding systems.** Navigational difficulty and confusion is a source of stress at large events. There's even a term for it: navigational angst. Overly-complex systems are frustrating and waste precious time and mental resources. Keep it simple, make it easy, and make it comprehensive. Cross-referencing is necessary so attendees can find what interests them, including people, presentations and exhibits.

7. **Stay aware of, and utilize, emerging technologies that affect both design and experience.** Populus, a collective of architects, designers, technical experts and industry veterans, reports on the emergence of intelligent venues that utilize technology to make venues operationally smarter and more sustainable to ultimately offer a far more engaging experience. They discuss the profound changes in experience brought on with the evolution of technology – everything from social media to augmented reality technologies. (Sherlock, G., 2013) One recent

example of breakaway technology is the mobile event app, which after only five years is now considered a necessary tool in today's meetings, and go a long way to keep attendees engaged with their surroundings, meeting content and colleagues.

8. **Create spaces that evoke emotion.** Lighting, color, sound and scent can all be used to evoke emotion. Architecture, as well. Upon entering an expansive cathedral, our eyes shift upward towards the tall ceiling, and the light coming in through colored glass windows engages our heart. We feel a sense of awe and peace. On the other hand, a small cozy room with comfortable furniture and diffuse table lighting relaxes us and evokes a sense of home. Music, of course, can be piped in to enhance the effect. Audio-visual technologies can be used to create areas targeted to producing specific experiences and moods.

   Color is an environmental factor that can be used to heighten emotional response, increasing engagement, learning, and memory; while also influencing mood. Please note that more is not better. Keep it simple and targeted to the experience you want your attendees to have in any particular area of the convention. Please see the call-out box for ways to target your color scheme to the emotional state you wish to produce.

9. **Include elements, or imagery, of outdoor environments.** Greenery and natural settings have been shown to facilitate attention restoration and reduce stress. The effect is so pronounced that there's now a therapy utilizing natural spaces that's called "Attention Restoration Therapy." (Posner, 2012). Nature settings, projections, or even a faux window overlooking a natural scene can have this effect. Outdoor seating areas even more so, when/where possible.

10. **Provide spaces for fun and relaxation.** Situations requiring sustained mental effort cause us to engage in what's called "directed attention" (voluntary, goal-directed) which requires increasing exertion over time. Like overworked muscles, directed attention gets fatigued; thus creating attentional deficit – an inability to concentrate and focus. Recovery requires rest, but sleep doesn't always do it. Periodic episodes of effortless attention (interest-based attention) are the best way to restore our attention capacity, and it doesn't even take that long. It's wonderful to have spaces and presentations that are just for fun!

ENTRANCES AND EXITS

Our most powerful memories are of first and last impressions. Our brains are designed to adapt to continual stimuli – there's so much information coming to us from our environment that our brains quickly assign the processing of routine stimuli to subconscious processes in our brains; i.e., they occur below the level of our awareness. The process is called "habituation" – reduced physiological and behavioral responses after extended exposure to a stimulus. Once we've adapted to a particular set of stimuli, we no longer notice them and we are much less likely to remember the details. For this reason, our first impression upon entering an environment is the most powerful.

Last impressions are memorable for a different reason. Known as the Recency Effect, our brains tend to remember our most recent experiences over experiences occurring earlier. In addition, as we are exiting an environment or event, we are more aware of producing the outcomes we intended to produce in that environment. This effect is so pronounced that there is a set of "exit behaviors" that have been identified in the retail field. The speed of shopping increases as people begin to exit. They are more focused on goals, make

Effects of Color on Mood & Cognition

Red: Stimulates the brain, the adrenal gland, and heartbeat. An invigorating color, red increases vigilance and memory.

Yellow: Helps release serotonin in the brain, producing a happy, peaceful mood. Enhances concentration, wakes up the brain, speeds up metabolism.

Orange: A combination of red and yellow, orange combines the effects of both. It stimulates mental abilities, while also lifting mood. Orange is also useful for increasing appetite.

Blue: Produces calming chemicals in the brain for a sense of relaxation. Enhances creativity. Materials in blue colors appear to be lighter in weight. Don't use for dining areas, as research has shown it gives a toxic effect to edibles.

Green: Green is the color of balance and harmony. It strikes the eye in such a way as to require no adjustment, and is therefore restful. Research has shown that green relaxes the body and alleviates stress. It even improves vision!

Purple: Purple can take awareness to a higher level of thought. It encourages introspection, contemplation, or meditation. Purple has associations with royalty and, as such, usually communicates fine quality.

Black: Signifies power and authority; represents knowledge and intelligence. Products packaged in black color may be perceived as being higher in quality.

Brown: Has associations with the earth and the natural world. Warmer and softer than black, it conveys the same seriousness.

Grey: Pure grey is the only color that has no direct psychological properties. On the positive side, it's psychologically neutral and can be calming as a good background for splashes of other colors. On the negative side, it is a virtual absence of color that can have a depressive effect, much as the world turns grey when our mood is down.

White: White gives a heightened perception of space. The most neutral color, it can have a calming effect or, when not balanced with accent colors, can produce a sense of sterility.

Mindful Convention Technology: Videomapping a cold, "sterile" room – creates novelty and can be used to create mood. For example, use videomapping to create a nature scene. Combine with nature sounds for an immersive experience. This restores attention and reduces mental fatigue to restore attention.

decisions quicker, and are more likely to engage in impulse buying. This is why stores place small, interesting items along the exit route – people are much more likely to impulsively purchase them than they will earlier in their trip. (Sorenson, 2009)

Below are some suggestions for first and last impressions throughout the convention.

Tips for First Impressions

- Pay attention to the space in which attendees are waiting to enter an area. This is in many ways the first impression formed, and it can be a lost opportunity for organizers and exhibitors alike.
- Waiting time is the single most important factor determining people's opinion of service. You can bend waiting time by providing a diversion – video clips or digital signage.
- Have friendly staff members welcoming attendees, spreading smiles and good will throughout the group. The time a visitor spends waiting after a staff member has initiated contact goes faster than the time spent waiting before that interaction takes place (Underhill, 2009).
- Extend the welcome by widening the entrance or by making it appear wider than it is with projections of open spaces and brighter colors.
- Configure seamless digital signage into a large video wall at entrances that displays high definition video and/or animation, heightening the attraction to what's beyond.

Tips for Last Impressions

- The Recency Effect explains that people remember their most recent impression of an environment or event. Be sure to convey the message you want them to remember.
- Emotional memory is our most powerful memory. People are often tired at the end of a long event, which influences their emotions and loosens their control of their behavior. Place a high value on ending well.
- Make exiting an easy, friendly, fun process. Creating a widening effect at the exit points creates a sense of expansion and comfort.
- Consider giving a small, meaningful gift upon exiting as a great way to both convey your message and engender beneficial neurochemicals in your attendees.
- Presenters should make an effort to reinforce key messages, through projections or other displays, where their audiences exit the room. Exhibitors should be sure to match their speed to that of the attendees. This is not the time for drawing out your interaction with attendees. Be responsive to their needs and, if they're moving quickly, exchange contact information, provide relevant literature, and let them move on.

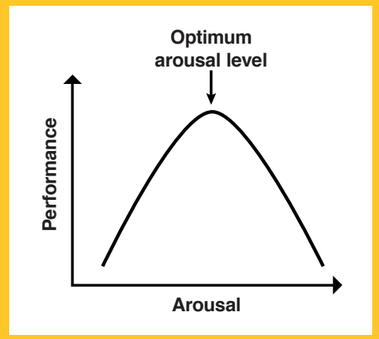
STRESS AND THE ATTENDEE EXPERIENCE

Any discussion of environmental effects on experience and engagement must include the consideration of stress. Stress can be defined as a state that occurs when people are faced with demands from the environment that threaten their ability to cope. (Veitch, R. & Arkkelin, D. (1995).

The external source of stress is known as the "stressor," while our psychological and physiological response is called the "stress response." Individuals differ in how they respond to various stressors; with perception and cognitive appraisal both playing a role in whether or not particular stressors produce a stress response in any individual.

The stress response consists of the following: The body releases catecholamine into the peripheral and central nervous systems. Catecholamines stimulate essential body systems (the heart and muscles) and, when released in large quantity, divert energy from nonessential systems in preparation for basic survival behaviors (the fight-flight-freeze response.) Oh, and by the way - higher cognition and executive attention are considered nonessential by our survival circuitry! In the stress response, catecholamines activate the amygdala, promoting arousal and a focus on negative emotions. With the activation of the amygdala, memories begin to consolidate, however, our prefrontal cortex, which controls higher brain functions such as thought, is suppressed. Exposure to acute, uncontrollable stress causes us to become distracted and confused, with habitual and primal responses controlling our behaviors.

The stress response is highly dependent on both cognitive appraisal and perceived control. Stress brought on by participating in a competitive sports event is very different from that brought on by being trapped in an elevator. Scientists recognize this by acknowledging two types of stress: eustress which is beneficial to our functioning, and distress, which impairs our functioning.



Our relation to stress is complex: a small amount of stress can enhance motivation and performance, while larger amounts lead to biological and psychological impairment. The Inverted-U theory postulates that performance is optimal with a moderate amount of stress, leading to an invigorating and motivating arousal without going so far as to impair performance.

Environmental sources of distress are known as ambient stressors because they are non-urgent, physically perceptible, and limited to a particular environment. The main sources of environmental stress are noise, crowding, heat, and air quality (Stall, 2004).

Environmental stress can be difficult to manage. It can slowly erode our ability to cope, our ability to concentrate and focus on goals, individual and group decision-making, and even our

social behavior. The stress response shifts our attention away from goal achievement and interpersonal interaction: instead of being available and free to engage with our environment, we turn our attention inward as we struggle to manage our own state.

Conventions walk a fine line here, as organizers must balance out many factors to create a beneficial environment in venues that are not necessarily designed with the brain in mind. Here are some suggestions for designing environments within a convention that are beneficial for human functioning.

When people are stressed by an environment, they do not have the mental resources for engagement.

Do's and Don'ts for Managing Ambient Stress

DO

- Create at least the appearance of open space.
- Optimize the level of visual stimulation by providing a reasonable amount of useful, well-executed signage. Minimal graphics, easy-to-read fonts, clear images for instant recognition and association.
- Provide user-friendly wayfinding and activityfinding
- Bring in plants and other greenery to reduce stress levels and restore attention capacity, or project imagery of plants or other outdoor, natural scenes.
- Use sound-dampening materials to reduce or counteract ambient noise.
- When possible, incorporate large windows, mirrors, paintings, or digital imagery for visual escape.
- Provide programming that relieves mental fatigue: fun, social, or relaxing

DON'T

- Crowd people into small aisles and spaces with dim lighting.
- Overload with stimuli or information, or allow the space to be cluttered with signs, graphics, and literature all demanding attention.
- Provide complex or difficult systems which confuse people and lead to navigational angst.
- Create industrial spaces with insufficient or harsh lighting, stark rooms, harsh surfaces, or an echoing empty space.
- Place important information near sources of ongoing or intermittent noise.
- Crowd visual space with signage and objects.
- Offer complicated technology that's hard to use or requires a steep learning curve.

Sensory Input

The brain's raw material is information from the senses – vision, hearing, smell, touch, taste and proprioception. From this information, the brain creates a perception of what lies outside. However, these ideas are not truly useful until they are invested with meaning. The meanings we attach to perceptions transform mere patterns of light into buildings we can use, people we can love, or music we can enjoy.

John Paul Eberhard

Information from the environment comes to us through our senses. Our brains process sensory input in two stages: stage one, "sensation," refers to the stimulus impinging upon the receptor cells of a sensory organ, while the second stage, "perception," is the awareness or understanding of the sensory information.

Our senses take in much more information than we can possibly be aware of. The five senses take in around 11,000,000 bits of information per second, while we can consciously process only around 40 bits! This astonishing fact raises a question: How do we decide which information we'll become aware of? Scientists agree that we subconsciously choose what we attend to via selective attention.

Selective attention is one way we make sense of our world: We unconsciously attend to those stimuli that have meaning for us according to our past experiences and expectations. Our attention is largely directed by our personal value system, and particularly by what we consider personally relevant. Note that the rest of the sensory information does not simply pass us by: even though we are not aware of it, it can have an influence on our physiological state.

Scientists theorize that selective attention developed in order for us to regulate the amount of stimulation in our brains. Too much stimulation and we experience "sensory overload," causing our brains to disengage to regain our equilibrium. Too little stimulation and we experience "sensory poverty," where our brains shut down from a lack of input. In either case, our brains disengage and shut down as a protective mechanism. Conventions must walk that fine line between too much and too little in order to support attendees and exhibitors alike in functioning at their best to accomplish their objectives.

We must address how to achieve this balance before exploring the many ways sensory input can be used to create particular states and experiences. Goal achievement requires mental resources, and there is no question that our resources are challenged at multi-day events. We can optimize people's ability to concentrate and focus by presenting an optimal level of sensory stimulation while minimizing distractions and confusion.

Most of us are now familiar with the notion that sensory rich environments and multisensory input enhance engagement, learning and memory. It is tricky though, as more is not necessarily better. What's needed is a targeted strategy that thoughtfully combines input from the various senses in a process called multisensory integration.

This is how it works: Each sensory channel has its own capacity. When sensory input is aligned with channel capacity, we can combine channels to process more information than any one channel can process alone. In other words, rather than overloading one channel, our goal is to present a level of stimuli for each channel that can be successfully processed. This allows us to combine inputs from several sensory channels to engage the brain at higher levels, producing greater recognition, learning and memory. For example, this is why text-heavy PowerPoint slides combined with a speaker do not work. Our brains convert written language to spoken: we "hear" the words as we read them. In effect, we are overloading the auditory channel and there is a conflict between what we are reading and what the presenter is saying. (PSAV & BrainStrength Systems, 2012)

On the other hand, wisely combining sensory inputs enhances engagement, learning and memory. Research has shown that when brands appeal to more than three senses, "sensory print" can increase brand impact and engagement by more than 70 percent! In a measure of economic effects, the Dove soap brand measured that the smell of the product contributed $63m to its annual US revenues, while touch accounted for $34m and sight $14m (Cooper, 2013).

The senses interact in another way as well. When one sense is overloaded, the other senses become more active. This is particularly noticeable at conventions with our visual sense, which tends to be overloaded on most trade show floors. Unfortunately, when our other senses become more active in this setting, it can have a negative effect: conversational and extraneous noise can become louder and more distracting, we may more readily notice internal sensations like hunger or fatigue, and any odors will be even more disturbing.

Finally, keep in mind that the brain notices contrast. A goal of all exhibitors is to attract attention, but in an environment where everything screams for attention, the eyes don't know where to look. In a very colorful room, white will be noticed. In a neutral room, red will be noticed. The eye is drawn to difference. This is particularly important for the exhibition floor, where a great many booths are vying for attention without the benefit of coordinated design.

VISUAL CONSIDERATIONS

Vision is by far our most dominant sense. Our brain registers everything in the visual field - every detail and every item requires processing energy and mental resources. Overstimulation of the visual sense has become an issue for us in our modern world. In cities, for example, it has been found to negatively affect the general population and hinder the mental development of children. (Gallagher, 1993) Visual stimulation is a priority consideration of convention experience design.

Our brains tend to shut down when trying to take in too much information. There is a biological response to overstimulation: the body absorbs the neurotransmitter serotonin in order to cope. Serotonin produces a calm state of happiness and peace. When too much is absorbed, we can be left with depleted levels leading to a state of anxiety or depression. (Kopec, 2006) You may have experienced this at an event – at first we're excited and having a great deal of fun, and then suddenly we are exhausted and drained.

Be careful to keep visual input at a reasonable level, and offer a variety of habitats to give people choices for controlling the level of sensory stimulation around them. As we become overloaded, our bodies will naturally self-regulate to maintain homeostasis. Organizers can support this natural mechanism by offering variety and choice so people can self-manage their level of visual input.

With the high levels of visual stimulation in our modern everyday environments, it's no surprise that modern design has become increasingly simplistic. The fix for the every meeting space is to simplify, simplify, simplify! A clean design, symmetry, coherence, and a reduction of complexity can greatly enhance the level of engagement experienced by those in the environment.

Another way to aid people in dealing with a complex, saturated environment is to enhance the perception of visual space. This lends a sense of open spaciousness that relieves the brain. Please see some suggestions in the call-out box.

Ways to Enhance the Perception of Visual Space

- Clean, simple lines and open space reduce environmental load. This frees up our brains to focus on learning, interaction, and accomplishment of objectives.
- Reduce visual complexity through projection of uncluttered graphics, open spaces or nature scenes.
- Use curved drape lines to break up visual clutter and create a pleasing simplicity. Scenic props and lighting can create that clean line look for both booths and stages.
- Employ bright lights tend to increase the perceived size of a room. (Be careful not to overdo this, as harsh lighting can lead to harsh impressions of people.)
- A moving LED hanging above entrances looks clean and simple, yet draws attention. In addition, the use of seamless panels and curved screens goes beyond the standard monitor to attract attention, because the clean, bright content provides contrast in a saturated environment.
- Choose high ceilings when possible. Be careful that signage and rigging don't bring ceiling height down.
- Pay attention to the visual entrance to exhibit booths. Booths encourage more traffic when they allow attendees to flow in from the aisles like an off-ramp on a highway, rather than having a small, fixed entrance at 90 degrees to the flow of traffic (Ethnometrics, Case Studies).

Reduce visual clutter and overstimulation:
When we can't take it all in, we filter it all out.

AUDITORY CONSIDERATIONS

Much of the business of experiential marketing communication is auditory in nature: ambient music is played in hotels and restaurants, events have opening or theme songs, products have their own jingles. Marketers know that even brand names influence the perception of the brand. Any word, actually, affects the perception of the object it represents. Yorkston and Menon (2004), for example, performed a study that demonstrated that ice cream with a brand name "Frosh" sounded creamier – hence more delicious - than that named "Frish." Another study showed that when a brand name sounded congruent with expectations, brand evaluations were positive. (Krishna, 2001)

There are two factors to consider when designing environmental sound: ambient noise and intentional sound. Sound can be used to draw attention where we want it or – when there is ambient noise – can interfere with cognition and focus on goals. Our brains process nearly every sound in the range of 20 – 15,000 cycles per second: about 20,000 bits of auditory stimuli every second! We may not consciously hear every sound, but our brains are using mental resources to process them nonetheless. And there is no escaping it: sounds demand our attention; we cannot simply shut our ears as we can our eyes.

Note that loud, unpredictable noise increases catecholamines (dopamine, epinephrine, and norepinephrine), elevates blood pressure, and increases heart rate and skin conductance. Emerging research suggests that these indices are elevated when individuals expend effort to cope with noise during task performance. Sensitivity to others and helping behaviors can be diminished, while judgments can be premature and extreme. (Baum and Paulus, 1987) A 1996 study found that classrooms that failed to reduce ambient noise; echo effects, reverberation and other acoustical problems resulted in a reduction of attention and an increase in off-task behaviors. Similarly, excessive environmental noise including traffic sounds, aircraft noise, machinery, beepers and even casual conversation was shown to reduce comprehension, especially in the early stages of learning a new task. (PSAV and BrainStrength, 2012)

Work to reduce ambient noise in your booth or area. Use carpeting, wall hangings, white noise machines, or sound absorbing panels or drape, which are both functional and decorative.

Intentionally designed sound, on the other hand, can draw attention, influence mood, create engagement, evoke emotion, convey a message, strengthen memory or meaning, and even entrain thought to move at different speeds. While there is some individual variation, people are predisposed to interpret many sounds in particular ways. Some sounds are soothing, while others make us alert. Abrupt, short loud sounds tend to alert us, while slow onset, long and quiet sounds tend to be calming.

OLFACTORY CONSIDERATIONS

Our olfactory sense is extremely powerful, especially in relation to memory and emotion. The primary reason is the physical and neural proximity of the systems associated with olfaction and memory. Olfactory cortex has relatively direct neural links to our amygdala and the hippocampus, parts of the limbic system. The limbic system mediates both emotion and memory, and is characterized by quick synaptic transfers (Herz & Engen, 1996). None of the other senses have as direct a connection to memory.

Because of this, smells can powerfully evoke emotion and create lasting memories. The smell of baking brings comfort and the experience of interpersonal warmth. The scent of lavender on entering a spa provides an immediate sense of relaxation.

The downside, of course, is unintended smells. These can activate our insula, which mediates emotions such as disgust. Unfortunately, the effect often generalizes: everything in the area of an unpleasant smell is tainted by it. Mostly we just want to leave the area. Care must be taken to extinguish any sources of unpleasant smell.

Ambient scent in an environment can affect our cognition, mood, and even behavior. Studies have shown that lavender increases relaxation and lowers levels of the stress hormone cortisol. [Sayorwan, 2012], and that a peppermint scent gives us a lift and improves cognition, test performance and leads to a perception of less mental demand. (McCombs, 2011) Vanilla has been shown to enhance performance and even to result in higher sales. (Sorenson, 2009) Researchers have found that pleasant scents can enhance evaluations of products and stores, increase variety-seeking behavior, evoke emotion, and improve product evaluation. (Krishna, 2011)

There is fascinating research on product scent and memory for associated information. In one of these experiments, subjects were given either a pine-scented or unscented branded pencil along with a list of its 10 selling points. Two weeks later, the subjects given the scented pencils remembered 3.67 selling points, while those given the unscented pencils could recall only 0.87 points! In another interesting experiment, researchers combined verbal information, a picture, and a smell. An image will enhance recall of verbal information, and this study showed that the presence of a scent facilitated this effect; i.e., it made it even stronger. (Krishna, Lwin and Morrin, 2010)

Scent is just beginning to be used in the public arena, as many people are highly sensitive and allergic to artificial scents. Just recently, though, industry has begun providing delivery systems that have a minimal impact on allergies. One excellent application of this was created by ScentAir, Inc. to demonstrate the emotional power of scent through an engaging multi-sensory experience. Designers created a circular chair with suede cushions, wired with speakers for sound and tubing to emit fragrances; all coordinated with a video being viewed through virtual-reality glasses. The enclosure of the chair combined with auditory, visual, tactile and olfactory stimulation provided an excellent multisensory experience. This experiential in-booth experience generated a 627 percent increase in sales leads from 2005 to 2007. (Miller, Scents and Sensibility)

KINESTHETIC CONSIDERATIONS

Our sense of touch informs our cognition. Note that when we understand a concept, we say we "grasp" it. When things are going well, they are going "smoothly." When we are stressed, we often feel "pressured." These metaphors demonstrate the powerful effect of touch on how we interpret our world.

Nothing revives the past so completely as a smell that was once associated with it.
Vladimir Nabokov

Touch is a vital part of learning. The experience of a new product is greatly enhanced by the ability to interact with it kinesthetically. In a 2012 survey of 9,215 attendees and 885 exhibitors, CEIR identified that attendees want experience and interaction with both products and people. Purchase intent, for example, was increased by 18 percent when products were actively explored versus a passive introduction (looking only). Similarly, an emotional connection was increased by 14%. (Drapeau, 2012) Perk and Childers (2003a) have created a Need-For-Touch (NFT) scale that picks up individual differences in the need for touch. Using this, they've demonstrated that high vs. low NFT people react to products differently when they can and cannot touch them. They found, for example, that when evaluating a sweater, high NFT participants were more confident and less frustrated about their product evaluations when they could touch the sweater. On the other hand, touching the sweater made no difference for low NFT participants. Important to note is that, when touching the product was not available, written descriptions of how the product felt alleviated the frustration of high NFT subjects. (Peck and Childers, 2003b)

Event technology allows us to bring in senses other than touch when a product, service or idea is not a good fit without it. And researchers are hard at work to recreate the sensory input from touch in digital devices. The Tangible Media Group at the MIT Media Lab, for example, has created an interface called inFORM which allows users to use and experience touch in a digital interface. Almost like a tablet of living clay, the inFORM is a surface that three-dimensionally changes shape, allowing users to not only interact with digital content in cyberspace, but even hold hands with a person hundreds of miles away! (Brownlee, J. 2013) Clearly, this is an area of research to be aware of as practical applications become available.

Another aspect of touch is products touching products or other objects. Morales & Fitzsimmons (2007) demonstrated that a product touching another object can affect how people react towards the product, particularly if that object elicits disgust or revulsion. There is a type of contagion that occurs, whereby when an unpleasant source object touches a target product, the appeal of the target product is diminished. And the effect can last even after the source is removed. (Careful with those trash cans!)

Temperature is another part of our kinesthetic sense. Ambient temperature in a room can affect how we feel towards others: in a reasonably warm room, we feel more interpersonal warmth towards others, while a cold room has the opposite effect. Williams and Bargh (2008) demonstrated this effect in an interesting study of beverages. Experimental subjects were asked to hold either a warm or a cold coffee cup, and were then asked to judge a target person's personality. It was found that people who held the hot coffee judged the target person as being "warmer" - more caring and generous. The researchers explain that physical warmth generates interpersonal warmth because the same part of the brain is activated for both.

TASTE

Every event will be evaluated based on the food choices provided. Our food is very important to us! Is there variety offered for the many different diets followed in our culture? Is the food well-presented? Are food venues attractive and comfortable? Will the foods provided help or hinder alertness and feeling good? Has an effort been made to incorporate sustainability principles; i.e., do we feel good or guilty about eating the food? Event nutrition is beyond the scope of this paper. What's relevant for us here is that all of these factors play into how the food actually tastes.

Taste, surprisingly, is a combination of all our five senses: vision (how the food looks), smell (how the food smells), touch (temperature, texture, even pain from spices), and audition (e.g., the sound when you bite into it). In advertising, studies show that an ad emphasizing multiple sensations results in better taste perception than one emphasizing taste alone. (Elder and Krishna, 2010) A fascinating finding is that flavor perception depends not only on the sensory inputs associated with the food or drink itself, but also on the multisensory attributes of the environment in which the food is tasted. One study showed that the color of juice dominated the taste of it over the actual flavor. (Hoegg and Alba, 2007). Another demonstrated that people in a "fruity" room with a red color scheme and fruits found a Scotch whiskey up to 13 percent sweeter, while those in a wood-paneled room with a crackling fire enjoyed the whiskey up to 15 percent more. (Velasco, Jones, King, et al., 2013)

Note that there can be what's called "sensory conflict." When we are under a high cognitive load and mental resources are stretched, we have less capacity for the processing of sensory input. If our brains have to choose between competing sensory inputs, it can have some surprising effects. Nowlis and Shiv (2005), for example, examined the effect of distracting input (music) on food choice. They argue that food choice has both an affective (taste) and a cognitive (health) component. Their interesting study on cognitive load demonstrated that distracting people while taste testing resulted in a greater focus on the affective versus the cognitive component, thus increasing the likelihood of choosing a more affective product (e.g., milk chocolate vs. soy chocolate) while also increasing consumption pleasure. There's certainly a trade-off here! Consider your goals for each meal and be sure to align sensory input for desired outcome.

Conclusion

The experience of any convention is greatly influenced by the physical environment. Remember that people are there for a purpose. If they achieve that purpose, business outcomes are achieved and the convention was well worth the investment. If they don't achieve objectives, or if the experience is an unpleasant one, people are hard-pressed to return and, in addition, the experience generalizes to those ideas, messages and companies associated with the convention. This paper provides many suggestions and, even more important, an understanding of how our brains respond to environmental conditions and design. Be aware, be intentional, and be smart: Design the physical environment to support human needs so people can achieve the business results they desire.

Use technology to compensate for a lack of touch. 3D imagery, interactive touch Screens, the "second screen" – content simultaneously displayed with live content, on mobile devices

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