It's a Jungle Out There: The Biology of Facilitation

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ABSTRACT

This paper presents potential applications of biological sciences and adaptive behaviors to group dynamics in a facilitated environment. Although traditional psychology or sociology may be thought of when dealing with groups, this paper goes beyond those fields to explore physiology, biorhythms, human ethology, herd instinct, group think, territoriality, cohesion, team work, learned helplessness, human nonverbal communication, decision fatigue, and media multitasking. Underlying biological principles dealing with phylogenetic and physiological behavioral adaptations are described, along with their potential influence on meeting participants in facilitated gatherings. Suggested strategies for recognizing and dealing with associated behaviors such as territoriality, learned helplessness, and decision fatigue are offered to give facilitation professionals some effective tools for improving meeting outcomes.

KEYWORDS

Behavior, Biology, Biorhythms, Bioteams, Chronemics, Conformity Studies, Decision Fatigue, Ethology, Evolution, Facilitation, Group Dynamics, Groupthink, Herd Instinct, Human Nonverbal Communication, Learned Helplessness, Media Multitasking, Non-Verbal Communication, Phylogenetic Adaptations, Team Work, Territoriality.

BACKGROUND

Have you ever facilitated a session and observed some participants acting like a "bunch of animals"? Considering that humans are mammals, that is a reasonable observation. In fact, there are many underlying scientific principles, such as territoriality and decision fatigue, that may influence participant behavior in a facilitated gathering. While some professionals may think in terms of traditional psychology or sociology when facilitating, one should also be cognizant of some basic biological principles, evolutionary psychology and ethology as well.

Evolutionary psychology can be defined as the study of human cognition and behavior with respect to their evolutionary origins. The field was ushered in by Donald Symons' book *The Evolution of Human Sexuality* (1979). (See also Barkow, Cosmides & Tooby's 1992 book *The Adapted Mind*.)

Ethology is defined as: "1) a branch of knowledge dealing with human character, its formation and evolution, and 2) the scientific and objective study of animal behavior, especially under natural conditions" (Merriam Webster, 2012).

Ethology, Evolutionary Psychology and other sciences can provide some interesting insights into human group dynamics. The author has applied these sciences in her work as a Certified Wildlife Biologist and IAF Certified Professional Facilitator and hopes that sharing them will provide insights into participant behavior from these fields for fellow facilitators to consider in their own practice.

Biorhythms

Facilitators may sometimes notice participants making a quick exit from a session 60-90 minutes after beginning, or becoming sleepy in the morning or after eating. This may result in some facilitator introspection such as, "Did I say something offensive?" or, "Am I boring them?" or "They were so focused and productive before lunch – where's that team energy and drive gone?" Estroff Marano (2004) noted that "Many of the functions of your body and brain are set to operate in cycles of roughly 90 minutes each. And, going with the flow of biorhythms helps you maintain motivation and attention for whatever the task at hand." She added information from an interview with Dr. Roseanne Armitage "that every 90 minutes, we need to take a mental break

because otherwise, our concentration, memory and learning ability start fading." This type of short cycle is referred to as an ultradian rhythm and it may range from 20 to 120 minutes in length (Rossi et. al., 1992). It is related to circadian rhythms that Pobojewski (2007) referred to as "changes in physical activity, metabolism, hormone production, cell activity, organ function and body temperature – that rise and fall at fixed intervals over roughly a 24-hour period." (p. 14). She quoted from an interview with Dr. Jimo Borjigin as saying, "Jet lag's symptoms are caused by the fact that the body's rhythmic cycles all readjust at different rates…the sleep/wake rhythm may adapt within three to four days, but the body temperature cycle may take six days…until all these rhythms are resynchronized to the new time zone, your body won't feel right." (p. 16). Differences in individual

biorhythms may result in some participants being more focused and attentive in the morning while others are more alert in the afternoon.

On a more basic biological level, normal diurnal bladder voiding frequency ranges from 4-6 times per day, or about every two hours (Graugaard-Jensen et al., 2008). The author refers to this as a "bio break" in meetings. While considering these physiological factors, one should also be cognizant of apparent mood-food relationships. Catherine Christie (2012) notes in *Mood-Food Relationships* that some foods can "alter one's mood by influencing the level of certain brain chemicals called neurotransmitters", particularly "dopamine, norepinephrine and serotonin" (p. 1). (See Table 1: *Diet-Mood Connection*)

Table 1. Diet-Mood Connection[1]

Nutrient	Food Sources	Neurotransmitter/mechanism	Proposed Effect
Protein	Meat, Milk, Eggs, Cheese, Fish, Beans	Dopamine, Norepinephrine	Increased alertness, concentration
Carbohydrate	Grains, Fruits, Sugars	Serotonin	Increased calmness, relaxation
Calories	All Foods	Reduced blood flow to the brain	Excess calories in a meal is associated with decreased alertness and concentration after the meal

Now, how might these physiological factoids influence facilitation? Let's assume a scenario of an 8-hour facilitated workshop with participants with different biorhythms, some participants who have traveled long distances across time zones the preceding day (or are global travelers), and a client-sponsored catered Italian lunch with pasta, bread, salad and dessert. One might want to plan for a mental break (think topic or facilitation process change) every 60-90 minutes and a 20- minute physical break every 90-120 minutes. If break refreshments are served, one may want to consider offering protein like nuts plus fruit and some candy, like chocolate. After what will likely be a calorie intense lunch, one may also want to incorporate feedback processes that include physical activities like having participants post ideas on the wall, and moving between break-out session rooms. Additional energizers such as lively music, videos, stress toys, and sharing common interests may also be of value. On a lighter note, homage might be made to a popular saying from Evan Esar (1968) that "lecturers should remember that the capacity of the mind to absorb is limited to what the seat can endure" (p. 468).

Human Ethology

Let us expand on this foundation of biology with potential behavioral applications. Thoughts are offered in recognition of differing opinions on the *Theory of Evolution* (Darwin, 1859) and *Creationism* (National Academy of Sciences, 1999), along with the related topics of sociobiology and evolutionary psychology. In his book *Ethology - The Biology of Behavior,* Irenaus Eibl-Eibesfeldt (1975) discussed extensive animal and human behavior studies and noted that "phylogenetic adaptations influence our everyday life at different levels…we experience serious disturbances in our social behavior and in order to cope with them, we have to learn about the determinants of such behavior" (p. 534). In other words, there are phylogenetic or evolutionary patterns and adaptations that are believed to influence human behavior. As the study of ethology expanded to include more human correlations, Eibl-Eibesfelt went on to become the first president of the International Society for Human Ethology (ISHE, 2012). Miller (2001) observed that intelligence, language, social attachment, aggression, and altruism are part of human nature because they "serve or once served a purpose in the struggle of the species to survive" (pp. 357-358). Given this school of thought, let us examine some specific applications of human ethology that may be relevant to facilitation such as herd instinct,

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[1] Adapted from www.faqs.org/nutrition

territoriality, cohesion, learned helplessness, and nonverbal communication.

Herd Instinct, Conformity Studies and Groupthink

Several components are listed in this section title due to the evolution of terminology. What began as herd instinct studies in animals evolved to conformity studies in people and to terms such as "groupthink" (Janis, 1972; 1982). Animals fleeing a predator as a group is an example of "herd behavior", a phrase initially applied to people by a British doctor named Wilfred Trotter (1916) in his book *Instincts of the Herd in Peace and War*. Trotter noted that "the social instinct drives the individual to seek union with some community of his fellows" (p. 253).

Janis (1972) conducted studies in which he described groupthink as "a mode of thinking that people engage in when they are deeply involved in a cohesive in-group, when the members' strivings for unanimity override their motivation to realistically appraise alternative courses of action" (p. 9). His studies led to analyses of key events such as Pearl Harbor, the Bay of Pigs invasion and the Vietnam War in which he felt groupthink had contributed to flawed decisions. Conditions he believed contributed to groupthink were: "high group cohesiveness, structural faults (insulation of the group, lack of impartial leadership, lack of norms requiring methodological procedures, homogeneity of members' social backgrounds and ideology), and situational context (highly stressful external threats, recent failures, excessive difficulties on the decision-making task, and moral dilemmas)" (pp. 258-259). In facilitated settings, groupthink may manifest itself with a group rushing to make a decision before all viewpoints have been heard, to meet a real or perceived time deadline, or following the input of an influential attendee such as a senior manager. It may also occur when participants want to focus on the current way of operating (the status quo) versus thinking of potential new methodologies and ideas. A risk of groupthink is the group defaulting to a 50-50 compromise solution where each of the two main groups receives half of what they wanted to accomplish.

One of the earliest conformity studies was performed by Jenness (1932) in which he filled a glass bottle with beans and asked participants to guess the number of beans. Participants guessed the number individually, and were then asked to make a second estimate following a group discussion. Almost all of the participants altered their individual estimates to be closer to the group estimates. In another conformity study, Asch (1951) found that almost 75 percent of the participants conformed to the rest of the group at least once (despite the fact that some of the participants were intentionally providing incorrect answers), and that the greatest conformity occurred when three or more confederates were involved. When asked why participants conformed when they suspected or knew the answers being suggested by others were incorrect, their answer was to avoid ridicule. Yet Asch also found in the same study that independent thinking could play a major role in human interactions.

Lemieux (2003) expanded on this with a discussion on business management fads. "Countless management gurus and cohorts of business executives enthusiastically embraced each of those trends, proclaiming it necessary for economic survival, and later dropped the trend in favor of the next emerging idea" (p. 16). He also noted that "one implication… is that the first individuals to decide have disproportionate weight on public opinion and social behavior" (p. 21). Lemieux theorized that examples of herd behavior include: bank runs, adoption of new scientific theories by the public, the rise (and partial) fall of affirmative action, the anti-tax movement, and the spread of ethnic and religious separatism around the world.

It may be possible to avoid or minimize groupthink and more traditional 50-50 solutions (where two entities each receive half of what they desire) by using the group decision-making technique Covey (2011) encouraged in his book *The 3rd Alternative*. He defined his technique as going beyond typical compromise to a higher and better alternative that the parties may not have explored previously. He also recommended listening most carefully to the individual(s) who have an opinion most contrary to one's own, and noted that 3rd alternative thinking companies "…diverge from the norm…they often reverse the conventional wisdom in captivating ways" (p. 141).

Potential facilitation applications of these concepts could include:

- Asking participants to jot down some independent thoughts and partial solutions to bring to a session prior to collaboration.
- Weighing whether to use a blank piece of paper versus a strawman when developing a collaborative plan.
- Asking leaders in a group to refrain from speaking/voting or asking that they speak or vote last in collaboration discussions and prioritization exercises.
- Encouraging clients to assemble all key stakeholders and enabling the opportunity for equal participation so that divergent opinions can be shared.
- Discussing and managing by fact versus by opinion and perceptions.
- Making participants aware of ideas such as the 3rd Alternative for conflict resolution and collaboration in introductory facilitator remarks.

Territoriality

Eibl-Eibesfeldt (1975) observed that "in everyday life, we can observe examples of territorial behavior…individuals maintain specific distances between themselves and others…and fences and signs designate our rightful ownership" (p. 504).

Human territoriality and domination via hunting prey species was popularized by Robert Ardrey (1970). His book *The Hunting Hypothesis* includes a theory that "man is a man and not a chimpanzee, because for millions of evolving years we killed for a living" (p. 10). Hart and Sussman (2005) referred to paleontological evidence that indicates prehistoric man had many roles – hunter, a prey item for other predators, and scavenger. Sussman noted in a talk "that one of the main defenses against predators by animals is living in groups…in fact, all diurnal primates[2] live in permanent social groups" (Ludlow, 2006, p. 3).

Brown et. al. (2005) noted that "life in organizations is fundamentally territorial. We make claims on and defend our control of a variety of organizational objects, spaces, roles and relationships" (p. 577). Examples include "…nameplates on doors and family photos on desks, and behaviors such as resistance to the introduction of office cubicles and reluctance to let others join a key project" (p. 577). They describe positive connotations of this behavior such as: "increasing the rootedness and sense of belonging an individual has with the organization" (p. 586) and the notion that "over time, territorial behaviors will reduce process conflict as organizational members establish and maintain their own territories" (p. 587). Potentially negative connotations described include: "leading employees to become self-focused, taking away from their ability to connect with and focus on the goals of the organization…to seek less interaction with others and to behave in ways that work against the knowledge sharing, cooperation and flexible movement of resources that facilitate organizational productivity and innovation" (p. 588). In addition, "highly territorial individuals may be seen as less cooperative or approachable" (p. 588).

Potential facilitation implications derived from Brown et al. (2005) include:

- Understanding that territoriality is an inherent, inevitable and prevalent component of organizations and that it may appear in facilitated sessions as conflict between different offices in an organization, a fight over finite resources, an unwillingness to share information or ideas, or unwillingness to waiver from an accepted practice or viewpoint.

- Recognizing the possible need and potential for personalization among stakeholder groups in a session, and among small breakout groups when applying standardized facilitation processes. For example, breakout teams might want to adopt a team name or theme or slightly customize a report out format. A facilitator working with a diverse group to collaborate on a joint topic will have to decide when to opt for standardization and when to allow some degree of personalization.

- Territoriality may also be significant when facilitating sessions on more general workplace conflicts. Sometimes, clearly defining roles and responsibilities can help resolve long-standing misunderstandings or perceptions in the workplace.

Cohesion and Team Work

Eibl-Eibesfeldt (1975) described various reasons for group bonding or cohesion such as: bonding through fear (schooling fish), sexual bonding (primates), and bonding through care of young (bees and ants). Boyd (2006) postulated that "human cooperation may have evolved as a consequence of genetic relatedness, culture, or language within a group" (p. 1555). Andras and Lazarus (2005) described two types of cooperation. The first is symbiotic *mutualism* wherein "all individuals involved in the interaction benefit, but no one benefits at the expense of others" (p. 57). Examples given are wolves living together in a pack and people living in a group for protection. In the second type, "the individual benefits by taking a non-cooperative option at the expense of others" (p. 57). In the wolf pack, this might be apparent in an individual wolf contributing less while still taking a share of the spoils.

Human examples include: "cheating, trust, reciprocity, fairness, sanction, retribution, punishment, guilt, forgiveness and reconciliation" (p. 57). In a study of brown capuchin monkeys where monkeys exchanged tokens with humans to receive a treat, Brosnan et al. (2003) found that "monkeys refused to participate if they witnessed a conspecific [another peer monkey] obtain a more attractive reward for equal effort; an effect amplified if the partner received such a reward without any effort at all" (p. 297). In a related interview, Brosnan noted that "it looks like this behavior is evolved…it is not simply a cultural construct. There's some good evolutionary reason why we don't like being treated unfairly" (Markey, 2003, p. 1). Dr. Frans de Waal (2005) expanded on this with theories of reciprocity. These include: "symmetry-based (we're buddies), attitudinal (if you're nice, I'll be nice), and calculated reciprocity (what have you done for me lately?)" (p. 75).

In a book entitled *Bioteams* (2008), Ken Thompson discussed the concept of bioteams to describe how

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[2] Primates that are active in the daytime

organizational teams can become more effective by studying how nature's most successful teams have evolved at the microscopic, insect, animal and ecosystem levels. Successful natural teams noted include ant colonies, bee swarms, flocks of geese, dolphin pods, food webs and large scale ecosystems.

Facilitators work with existing organizational teams, or with temporary teams brought together to focus on a specific task or goal in a facilitated session, and should recognize that:

- Cooperation behavior may differ among participants (mutualism vs. non-cooperative and perceptions of reciprocity).
- Actual or perceived unfairness in what the facilitated group is proposing may result in deeply rooted, strong emotions.
- Mimicking aspects of successful teams in nature may lead groups to new insights in team effectiveness and interactions. Just as swarms of bees work together to form a successful hive, co-workers must work together to survive in business.
- By helping participants identify their underlying motives, identify the root cause of a particular perception, or reveal a proposed course of action as a system with inter-related components or individuals, a facilitator can assist groups in addressing these dynamics.

Learned Helplessness

Learned helplessness can be defined as a condition in which a person or animal has come to believe he or she is helpless in a situation, even when this is untrue. One of the earliest researchers for this topic was Martin Seligman. He found that when animals were given shocks that they were not able to prevent in any way, they tended to react similarly in situations where they could have taken control despite the shocks not being present. He did further research on the subject and found that this type of learned helplessness could apply to humans as well and that it can start as early as infancy (Seligman et al., 1967). Human examples might include remaining in abusive personal relationships or being subjected to bullying behavior in the workplace.

Relatedly, some experiments showed that people who see negative events as permanent ("it will never change"), personal ("it's my fault"), and pervasive ("I can't do anything correctly") are most likely to suffer from learned helplessness and depression (Peterson et al., 1995; Wikipedia, 2012). Bernard Weiner (1986) theorized that people attribute a cause or explanation to an unpleasant event. In a discussion of this on Wikipedia (2012), the following is noted: "A *global attribution* occurs when the individual believes that the cause of negative events is consistent across different contexts. A *specific attribution*

occurs when the individual believes that the cause of a negative event is unique to a particular situation. A *stable attribution* occurs when the individual believes the cause to be consistent across time. *Unstable attribution* occurs when the individual thinks that the cause is specific to one point in time" (p. 2).

McDonald (2012) noted that "employees who experience harassment at work or abuse of management power may see no way of changing the situation…Their experience teaches them to react passively to similar situations as a means of coping. This is known as learned helplessness. When an employee feels powerless in the face of unreasonable organizational behavior, he may become stressed or depressed" (p. 1). Carlson et al. (1994) added "in an effort to encourage employees to work to their potential, organizations have installed a variety of human resource plans designed to make employees responsible for their behavior. However, many of these plans fail. One possible reason for their failure is that the employees are not capable of understanding the link between their effort and performance. Individuals who fall into this category are considered learned helpless" (p. 235).

There are many relevant insights for facilitators in this situation. They may observe that employees feel powerless in their organizations or they may be challenged in understanding how their work contributes to the overall company success. This can enable a facilitator to add specific processes designed to reveal related root causes and means of improving them. The facilitator can also encourage the group to focus on what is within their sphere of influence or control. Phrases that may be heard in workshops to improve business processes or determine strategic objectives where learned helplessness is a factor could include: "nothing ever changes around here" and "why are they requesting our input when they have already made the decision?" Using these as indicators can help surface uncomfortable situations in ways that the group can handle and the facilitator can manage. Abusive situations which involve animals or humans need to be treated with sensitivity and care. Understanding the balance of power and willingness of the system to change is where a facilitator might have influence or control in surfacing the sensitive issues. Early root cause analysis (RCA) developed by Sakichi Toyoda as part of Toyota Motors' production system (Emiliani, 2006) employed the strategy of asking five *why questions* to drill down to the actual cause of an issue. Here is an example of five Whys based on a Benjamin Franklin quote (Frankilin, 2012):

Problem: A mounted soldier is killed in battle.
1. Why? – Soldier was slain by the enemy.
2. Why? – Overtaken while riding his horse.
3. Why? – Horse became lame after losing a horseshoe.

4. Why? - Horseshoe lost when nail loosened.
5. Why? – Farrier nailing technique was inadequate. Alternate – Rough, muddy ground conditions caused nail to loosen.

Nonverbal Communication

In 1872, Charles Darwin published *The Expression of Emotion in Man and Animals* in which he described what he believed to be the origins of verbal and nonverbal communication in animals and man, such as "shrugging the shoulders as a sign of impotence…raising the arms with open hands and extended fingers as a sign of wonder…and drawing down of the corners of the mouth…to prevent a screaming fit" (Darwin, 1872, p. 788). Nonverbal communication research has continued with human behavior and various components of it are examined in this section.

Barbour et al. (1976) characterized a message as being: 7 percent verbal (words), 38 percent vocal (volume, pitch, rhythm), and 55 percent body movements (mostly facial). Segal et al. (2011) offered a helpful methodology for evaluating nonverbal signals that facilitators could apply (Table 2: *Evaluating Nonverbal Signals*).

Table 2. Evaluating Nonverbal Signals[3]

Evaluating Nonverbal Signals	
Eye Contact	Is eye contact being made? If so, is it overly intense or just right?
Facial Expression	What is your/their face showing? Is it masklike and unexpressive, or emotionally present and filled with interest?
Tone of Voice	Does your/their voice project warmth, confidence, and interest, or is it strained and blocked?
Posture & Gesture	Are bodies relaxed or stiff and immobile? Are shoulders tense and raised, or slightly sloped?
Touch	Is there any physical contact? Is it appropriate to the situation? Does it make you feel uncomfortable?
Intensity	Do they seem flat, cool, and disinterested, or over-the-top and melodramatic?
Timing and Pace	Is there an easy flow of information back and forth? Do nonverbal responses come too quickly or too slowly?
Sounds	Do you hear sounds that indicate caring or concern?

For example, a facilitator should first be cognizant of their own facial expressions and demeanor when dealing with different participants to avoid sending unintended signals

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[3] Adapted from Segal et al. (2011)

such as perceptions of favoritism. During discussions, the facilitator can watch for physical signs of tension between individuals or groups who may be representing different interests, and for physical signs of acceptance when those same parties appear to be finding common ground or acceptance. Nonverbal signals may be equally helpful when seeking signs of honesty or true commitment to information that is presented, such as facial expressions that are inconsistent with their statements.

Chronemics is the study of the use of time in nonverbal communication. Two dominant patterns were identified by Gudykunst and Ting-Toomey (1988): monochromic time and polychromic time. Monochromic cultures tend to schedule, arrange and manage time in a precise fashion. Examples of monochromic cultures include Canada, Germany, Scandinavia, Switzerland and the United States. Polychromic cultures take a more dynamic approach, may multitask, and be less focused on precision and incorporate tradition. Polychromic cultures can be found in countries including Africa, Egypt, India, Mexico, the Philippines and Saudi Arabia, along with Native Americans of North and South America.

Potential implications for facilitation include:
- A monochromic individual arriving on time and growing impatient with a delayed start and a polychromic individual being less concerned with being late since the relationship with family or friends who may have detained them may be of greater importance to them.
- Facilitators may want to adjust the session times or design a facilitated process such as time for participants to make individual notations at the beginning of a session to lessen the impact of these behaviors.

Haptics (communication via touch) and *Proxemics* (personal space) are related concepts that may also play a role in facilitated sessions. Remland and Jones (1995) studied this and found that in England (8%), France (5%) and the Netherlands (4%), touching was rare compared to their Italian (14%) and Greek (12.5%) sample. They also found that the English maintained the greatest personal space distance during conversations (15.40 in) as compared to French (14.73 in), Italian (14.18 in), Greek (13.86 in), and Irish (10.34 in) participants.

Potential facilitation implications include:
- Possible misunderstandings between high and low touch participants in terms of their comfort level with touching during greetings and discussions. This could also occur if icebreaker or team

building activities are used during a facilitated session that require touching. This could partially be remedied by avoidance of activities that require physical touching.

- Possible misunderstandings between participants with different personal space requirements during greetings, discussions and with the physical layout of tables and chairs in the room – the proximity of attendees to each other. This could be addressed by allowing as much space as logistically practical between attendees for seating arrangements and allowing for ample space to walk around and between tables and chairs. The author generally tries to provide 24 in of walking space around chairs that are fully extended from a table to avoid the perception of crowding. If other participants have to move their chairs in or otherwise relocate every time someone walks by (to get a beverage and use the restroom), that is usually a sign that the space may be too small for the number of attendees.

Now that we have an understanding of some basic biological factors that have resulted in adaptive behaviors in both animals and humans, we may delve further into some physiological based behaviors that are uniquely human. These include decision fatigue and media multi-tasking which the author has observed influencing facilitated sessions.

Decision Fatigue

Decision fatigue is an emerging concept which is believed to be related to ego depletion (Baumeister et al, 1998). They described ego depletion as willpower being an exhaustible resource. Decision fatigue deals with deteriorating decision quality when faced with many choices or from a prolonged decision-making session (Tierney, 2011; Vohs et al., 2008). A logical assumption is that early humans would have had relatively few daily decisions to make with limited food source selection, living accommodations, and contact with other groups. In comparison, today the options people face are immense. Starbucks, for example, boasts that it offers customers 87,000 drink options (Mannino, 2012). You could also argue here that with fewer options to consider, that the information available to early human groups to make those decisions was much more complete. Today, in comparison, with things changing so rapidly, the right information may not always be available or complete.

Tierney (2011) described parole board hearing results in Israel in which "prisoners who appeared early in the

morning received parole about 70 percent of the time, while those that appeared late in the day were paroled less than 10 percent of the time" (p. 1). He attributed this to "the mental work of ruling on case after case, whatever the individual merits, (wearing) them [judges] down" (p. 2). Tierney (2011) added that "no matter how rational and high-minded you try to be, you can't make decision after decision without paying a biological price…you're not consciously aware of being tired – but you're low on mental energy" (p. 2). Vohs et al. (2008) conducted a study in which college students were randomly assigned to either make choices or rate products. They found that "making choices led to reduced self-control (i.e., less physical stamina, reduced persistence in the face of failure, more procrastination, and less quality and quantity of arithmetic calculations. A field study also found that reduced self-control was predicted by shoppers' self-reported degree of previous active decision making" (p. 3).

A key area of concern is the potential impact of decision fatigue on the poor. Tierney (2011) referenced a study by Spears (2010) in India where inhabitants of poor villages were offered the chance to buy bars of soap at a greatly discounted price. He found that in the poorest villages, the act of making the decision (whether a purchase was made or not) left them with less willpower as measured in a post-test of how long they could squeeze a handgrip. In more affluent villages, "people's willpower wasn't affected significantly… they didn't have to spend as much effort weighing the merits of the soap versus, say, food or medicine" (p. 7). Spears (2010) analyzed several poverty-related behavioral studies and noted that "although a richer person's budget may enable her to face a difficult choice between, perhaps, two vacations, she also has the option of not making this choice at all…if even routine food decisions are costly and difficult for the very poor, then their depleting effect is more inescapable" (p. 23).

Potential impacts to facilitation may be inferred from additional observations by Tierney (2011):

When the brain's regulatory powers weaken, frustrations seem more irritating than usual. Impulses to eat, drink, spend and say stupid things feel more powerful…ego-depleted humans become more likely to get into needless fights over turf. In making decisions, they take illogical shortcuts and tend to favor short-term gains and delayed costs…they become inclined to take the safer, easier option even when that option hurts someone else." (p. 12).

Facilitators can prevent or improve some of these potential impacts by:

- Designing reasonable agendas, i.e., what can feasibly be accomplished given the setting, group, task and time available?

- Having frequent breaks and opportunities for refreshment.
- Encouraging participants to dig deeper when it seems that they may be selecting the path of least resistance or the most expeditious solution.
- Watching for signs of fatigue and frustration in participants.
- Networking activities around an issue is also a way to change the energy in the room.
- Hunter (2009) talked about facilitating against "cheap closure" (p. 111) in relation to negative and stuck energy in the group.

Media Multitasking

As our world becomes more digitized and our facilitated groups include more participants that were raised in a wired world, the desire to multi-task and spend more time online seems to be increasing. This may appear in facilitated sessions as participants being reluctant or unwilling to silence smartphones, laptops, and tablets during discussions. Impacts from multitasking are emerging as scientists conduct more studies on this phenomenon. In a study by Ophir et al. (2009) that compared heavy media multitaskers to those who infrequently multitask, they found "…that heavy media multitaskers are more susceptible to interference from irrelevant environmental stimuli and from irrelevant representations in memory" (p. 15583) and "…heavy media multitaskers performed worse on a test of task-switching ability" (p. 15583). In other words, heavy media multitaskers were easily distracted, had trouble sorting tasks in their minds, and had lower performance on memory tasks. In a study conducted by Yuan et al. (2011) in which they compared Magnetic Resonance Imaging (MRI) scans of the brains of college students who spent approximately 10 hours online daily to brain scans from students who spent less than 2 hours per day online, they found that "gray matter atrophy and white matter…changes of some brain regions were significantly correlated with the duration of internet addiction" (p. 7). Students who spent more time online had less gray matter in the cognition portion of the brain.

In a related story, a medical correspondent for CNN (Cohen, 2011) quoted Dr. David Levy of the Information School at the University of Washington as referring to "popcorn brain – a brain so accustomed to the constant stimulation of electronic multitasking that we're unfit for life offline where things pop at a much slower pace" (p. 1). Cohen also interviewed Clifford Nass of Stanford regarding studies where he found online multitaskers forgot how to read human faces. Nass believes that "human interaction is a learned skill, and they don't get to practice it enough" (p. 2). Following a study by Pea et al. (2012) conducted on teenage girls, Nass noted in an interview that "Humans are

built to notice these cues – the quavering in your voice, perspiration, body posture, raise of an eyebrow, a faint smile or frown…If I'm not with you face to face, I don't get these things. Or, if I'm face to face with you and I'm also texting, I'm not going to notice them" (Belsey, 2012, p. 2).

One attempt to deal with multitasking in a wired generation is to use 'tech breaks' (Rosen, 2011). Dr. Rosen recommended using tech breaks "…as a way of compromising and learning to live with our need to connect and our need to check in with our virtual and real social worlds" (p. 3). He discussed applications for education and business in which the individual running the meeting gets the group to agree not to use tech devices for a specified period of time in return for receiving breaks in which using technology is encouraged. Rosen also referenced functional MRI studies that revealed "certain areas (of the brain) are activated and then deactivated constantly with much processing happening in the prefrontal cortex which controls attention, interest, motivation and decision-making. It is the latter that is crucial. The prefrontal cortex is the executive controller who juggles the various tasks we perform and helps focus our attention effectively directing the oxygen dance from one brain area to another" during multitasking (Rosen, 2011, p. 2).

Facilitation techniques that might be used in awareness of this information include:
- Getting the group to agree to a ground rule of silencing phones or turning off tablets and laptops during the session.
- Encouraging tech breaks.
- Facilitator capturing detailed notes or ensuring that someone else does, so participants can focus on the discussions since note-taking is a frequent answer as to why a laptop or tablet is present. If a participant laptop or tablet remains, be sure the sounds are silenced on it.
- If applicable, stressing that the meeting organizers (frequently the managers of the participants) have determined that this meeting/workshop is the highest and best use of their time and have given them "permission" to fully devote their time to the group work or project.
- Using media tools such as projecting facilitated notes on a screen, using individual electronic voting devices to project real-time results, and viewing videos as part of the facilitation process.
- Providing other hands-on process mechanisms such as charts and markers for drawing or mapping or posting and combining ideas on a wall.

- If some report outs or briefings need to be shared with members of the organization that do not attend the facilitated session and the attendees are agreeable, consider using a small video camera to record these key sessions (not the entire meeting) versus distributing a traditional text file or slide program.

- Sharing some multi-tasking research findings to reveal decreased efficiency and accuracy.

CONCLUSION

Humans are complex animals whose behavior is believed to be influenced by phylogenetic, physiological and psychological adaptations. Examples explored in this paper included how biorhythms can influence physical and mental performance, herd instinct may generate group think during discussions, territoriality may cause conflict in the workplace, cohesion and cooperation may assume different forms in teams, and how learned helplessness can create disconnects between employees and their organizations. The importance of nonverbal communication and chronemic, haptic and proxemic differences across cultures were introduced. The physical and mental impacts of phenomena such as decision fatigue and media multitasking were explored for their increasing influence on facilitated groups. The author believes that professional facilitation is both an art and a science that blends inputs from many sciences. Personal application of these scientific principles to facilitated sessions provides greater insight into participant behavior.

As popular psychotherapist Nathaniel Branden (2012) said, "The first step toward change is awareness. The second step is acceptance. The third step is action." Facilitators need to be aware that when they are faced with challenges such as participants departing meetings outside of scheduled breaks, eating too much or too little food and its effect on alertness, exhibiting helplessness or groupthink, or being addicted to media multitasking, that many of these issues have deeply rooted physiological or psychological underpinnings. Strategies to manage behavior and improve individual and group performance in facilitated sessions can be developed and applied most effectively when constructed from this awareness of potential biological or behavioral root cause. An awareness that the world of group work continues to evolve – that participants are becoming more wired, doing more multitasking, and are being bombarded with an ever increasing number of complex decisions to make rapidly – will assist facilitators in developing strategies and interventions to incorporate or cope more effectively with these evolving dynamics.

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