MindJava®

External Indication of an Internal Decision

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Abstract

It can be very difficult to detect when action will back up an expressed intention to accomplish an act. Fortunately, the distinction between a casual, noncommittal intention to do something and an intention backed by a decision to take action can be seen in the electrophysiological response of an animal preparation. The replication and expansion of an earlier observation of the response of a chicken egg to human intention is presented along with the parameters that lead to the observations.

Background Theory

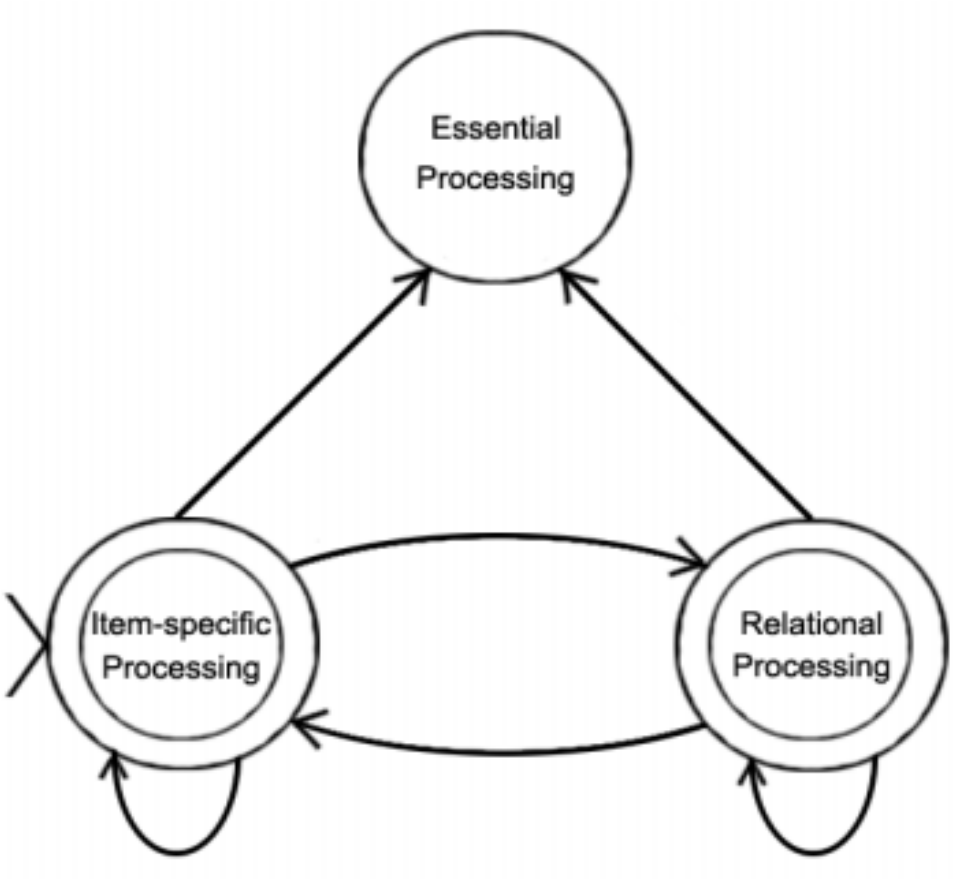
Characteristics of the Three-Part Model of Memory Formation (Epling, 2002).

- Memory formation begins with one or more iterations of Item-Specific Processing (ISP) followed by zero or more iterations of Relational Processing (RP).

- Information for Essential Processing (EP) may be supplied by Item-Specific Processing or Relational Processing.

- Essential Processing is the memory storage process.

Memory Formation Model



Application of the Model

- Some types of memory can be attributed to a prominence of either Item-Specific Processing or Relational Processing (Epling, 2000; Mäntylä,1997).

- Essential Processing should also exhibit distinctive effects under controlled circumstances.

- Hypothesis: The decision to perform an act should
  - Engage Essential Processing - to store the selected course of action in memory.
  - Produce measurable effects.

Evidence of External Memory

One example of an external effect of a decision is found in the effect of a human on a plant. Watering a plant has been shown to produce an electrophysiological response that precedes the application of water as well as a response that occurs shortly after the application of water (Backster, 2003).

The effect of watering a plant was judged to be difficult to replicate and possibly not reliable.

Pilot Study

- The fact that some people are more successful with house plants than others may be linked to the way that the plants are supplied with water. Over-watering some plants can be counter productive. One example of a common house plant that requires little water is the dracaena.

- In a pilot study, a dracaena was monitored as sips of water were supplied to the soil in the pot. The plant showed an initially large response when a small amount of water was supplied. Response diminished dramatically as the soil became moist.

- Review of electrophysiological data that was taken as a dracaena plant was watered revealed rapid spikes of activity. These rapid changes in potential suggested that a high sample rate would be necessary to support further analysis. Special electrodes and instrumentation would also be necessary.

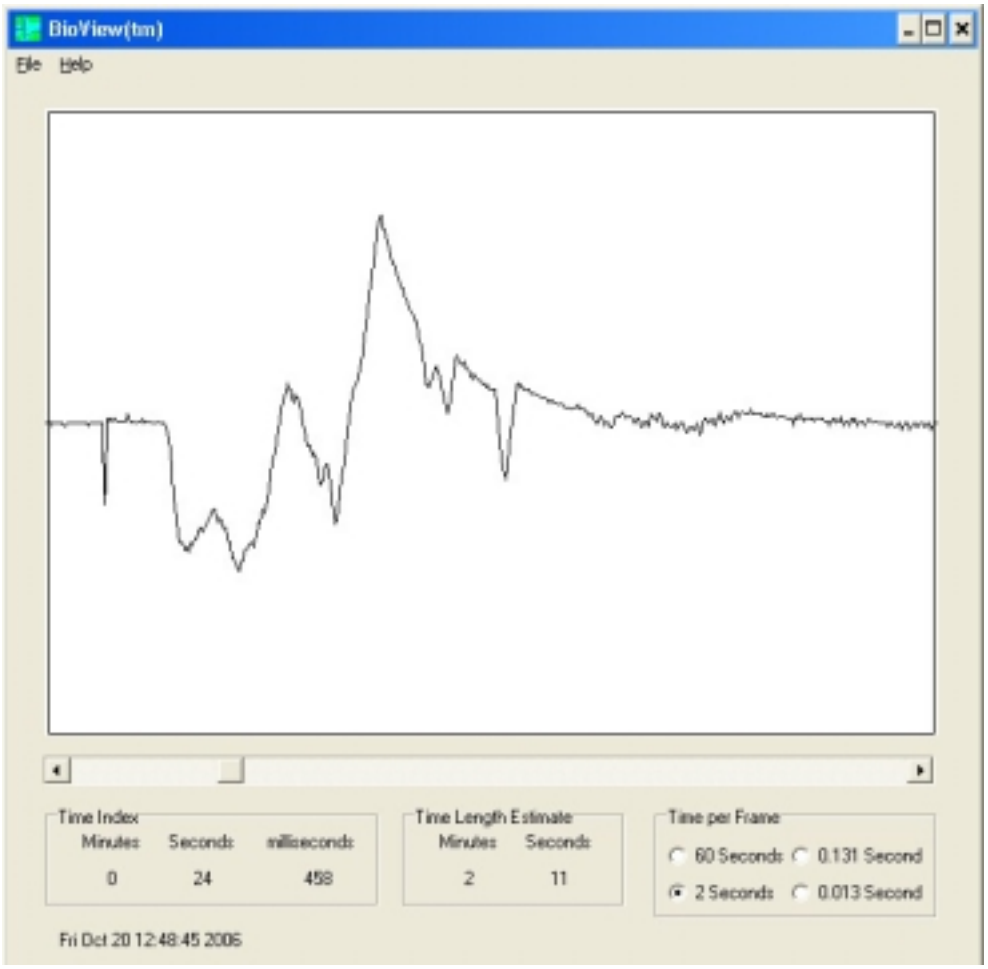
Electrode Placement

Special electrodes were developed for studies involving plants. The standard placement of electrodes is shown. The positive electrode is on top of the leaf with the negative electrode on the opposite side. The zero volt electrode is attached to the stem of the plant, near the soil surface. Conductive gel was applied to the Ag/AgCl electrode surfaces.

Experiment 1

- Hypothesis: A thirsty dracaena will respond to water.
- Participants: One human experimenter.
- Materials: One dracaena plant, BioPulse™ physiological amplifier, electrodes, software and accessories.
- Preparation: A dracaena plant was allowed to go without water for over a week, the soil had started to recede from the sides of the pot.
- Test: Small sips of water were supplied to the plant via the soil while electrophysiological activity was monitored.
- Results: The dracaena produced negative going spikes as the experimenter decided to apply water to the plant. When the first sip of water was added, a dramatic pattern of activity occurred. As additional sips of water were added, the level of response diminished.
- The dracaena response to the first sip of water is presented along with a trace of normal human heart activity for comparison.

Dracaena Response



Normal Human Heart Activity

The same instrument and settings were used to acquire the dracaena response and the heart signal shown here. The heart signal is shown here so that one may get a sense of the time base and scale required.

Discussion

- The dracaena showed electrophysiological activity with rapid changes in potential, this activity is consistent with ion channel activation. Ion channels for sodium, potassium and other ions are known to exist in plants (Colombo, et al, 1988; Ward, Pei & Schroeder, 1995).

- The response of the dracaena demonstrates a capability of producing rapidly changing potentials, although the dracaena does not possess a neurological system that is similar to an animal.

- The experiment was performed three times with similar results.

Experiment 2

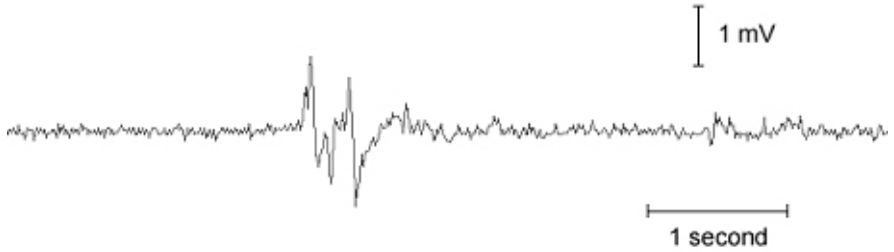
- In order to increase the distance between the Experimenter and the monitored preparation, an egg boiling experiment was selected.

- According to Backster (2003) a warm egg that is monitored at a distance will show a response to the sincere intention of an Experimenter to boil another egg. The response may also be seen when an egg is pushed into a pot of boiling water by a mechanical apparatus.

Experiment 2

- Hypothesis: A chilled chicken egg will produce a distinctive electrophysiological response when the experimenter decides to boil another chicken egg and the decision is followed with action.
- Participants: One human experimenter.
- Materials: BioPulse™ physiological amplifier, electrodes, software and accessories, a dozen chicken eggs, a pot of boiling water.
- Preparation: A single chicken egg is taken directly from cold storage (2-4 degrees C) and connected to the BioPulse™ System. A pot of water was heated to the point of boiling.
- Test: A single egg was selected and dropped into boiling water.
- Results: The monitored egg produced a marked response to the selection and subsequent boiling of another egg.

Response of one egg to the boiling of another egg



- Notice that the initial, positive-going section of the response waveform exceeds one milliVolt.
- The experiment was performed three times with similar results.

Discussion

- Apparently, the response of one chicken egg to another egg being selected and then boiled, is a repeatable and recordable event.

- Interestingly, the Experimenter and the action of Experiment 2 were located over 30 feet away from the monitoring equipment and the monitored egg.

Overall Discussion

- Both experiments illustrate a response to an intention and action of the Experimenter. The time length of responses suggests a capacity for memory, if memory is defined as anything that persists after an event.

- What is clear from the experiments are the actions that lead to the events and the event related potentials.

- The actions of an experimenter that lead to the observed event-related potentials may involve the limbic structures.

- The possible involvement of mirror neurons is intriguing and should be considered. (see: Fallese & Goldman, 1998)

Overall Discussion

- Correlations between the response produced in an egg preparation and the brain activation pattern associated with the selection and boiling of an egg would increase our understanding of the phenomenon.

- Study that is focused on the chicken egg response should include the use of movable electrodes to aid in the identification of the source of the observed signal - especially the initial, positive-going signal.

- When we know which part of the egg is producing the response, we can begin to search for methods of stimulating this region of the egg.

Application Notes

- Several disposable electrodes from a variety of sources were tested in preparation for this Experiment 2. It was found that the Stoelting GSR electrodes (Part Number 85066) performed in a manner that was far superior to any other electrode that was tested with a chicken egg. It is helpful to use a thin rubber band or two to hold the electrodes in place on a chicken egg. The addition of a very small amount of electrode gel to the Stoelting GSR electrodes was found to further enhance long term performance.

- The BioPulse^{sm} system is available through BioExperience, LLC. http://www.bioexperience.com

References

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Addendum

- This presentation will be available after November 18th at, http://www.mindjava.com

- Information concerning instrumentation used to obtain the data reported in this presentation is available at,

  http://www.bioexperience.com

- Timely information related to investigations of phenomenal biocommunication are regularly presented at,

  http://www.arthurepling.com

Disclosure Statement: The author has a financial interest in the BioPulse™ System.