

Using Dynamic Field Theory to Rethink Infant Habituation

Gregor Schöner

Info

Tags

Related

Item Type

Journal Article

Title

Using dynamic field theory to rethink infant habituation.

Author

Schöner, Gregor

Author

Thelen, Esther

Abstract

Much of what psychologists know about infants...

Publication

Psychological review

Volume

111

Issue

2

Pages

273-99

Date

2006-04

Series

Series Title

Series Text

Journal Abbr

Language

DOI

10.1037/0033-295X.111.2.273

ISSN

0033-295X

Short Title

URL

http://www.ncbi.nlm.nih.gov/pubmed/1663...

Accessed

2014-09-25

Archive

Loc. in Archive

Library Catalog

Call Number

Rights

Extra

PMID: 16637762

Citation Key

Schöner2006

Date Added

2014-10-19, 12:13:46 p.m.

Modified

2018-08-14, 4:42:24 p.m.

What do infants know? When do they know it? Are some concepts inherent from the beginning, or does knowledge emerge only through experience in the world? There is a lot at stake in the answers to these questions. For millennia, philosophers and scientists, from Aristotle and Kant to Piaget and Chomsky, have tried to understand the human mind from speculating about how cognition begins. Grand epistemological edifices are built on assumptions about the initial state. Human nature may be very different if babies are born as blank slates, absorbing their environments like a sponge, than if they have kernels or excesses of knowledge already built in and need only to elaborate them. The questions are old ones, but they are still hotly debated by philosophers, psychologists, and linguists (e.g., Haith, 1998; Ploner, 1994; Spelke & Newport, 1998; Thelen & Smith, 1994, and many others). Unfortunately, it is very difficult to ask babies these important questions directly. Infants do not talk and thus have limited ways to express the workings and contents of their minds. For many months, they have little or no control of their limbs, cannot follow verbal directions, and are remarkably indifferent to their privileged status in the philosophy of mind. Until very recently, speculations about what infants know remained only speculations.

Gregor Schöner, Institute for Neuroinformatics, Ruhr-Universität Bochum, Germany; Esther Thelen (deceased December 29, 2006), Department of Psychology, Indiana University.
We thank Roscoe, Cindy, Melissa, Charles, Kelly, and Vaghi Walinger for their very helpful comments. This work was supported by National Institutes of Health Grant R01 HD22801 to Esther Thelen.
Correspondence concerning this article should be addressed to Gregor Schöner, Institute for Neuroinformatics, Ruhr-Universität Bochum 44780 Bochum, Germany. E-mail: Gregor.Schoener@rub.de

Schöner, 2006

Figure 9 is a schematic diagram of a radial stimulus. It consists of six disks of increasing size arranged in a radial pattern, labeled S1 through S6. The disks are arranged in a line that curves from the top left towards the bottom right. The diagram is titled "INTRILIGATOR AND CAVANAGH".

FIG. 9. A schematic diagram of the radial stimulus used in Experiment 2. This trial had six disks on each side of fixation. On a single trial, the attentional "steps" are constrained to always remain entirely in either the upper or the lower radial arm.

Observers were asked to shift their attention (based on the verbal command) to an item adjacent to the currently attended item. For example, assume the observer began by attending to the innermost disk in Fig. 9 and heard the commands "out, out, in, out, in, out, out." After shifting their attention through this series they should have been attending to the fourth disk from the center. After the observers mentally "stepped" as instructed, a single disk would again change to red. On half of the trials, this "probe disk" would be on the location where the observer's walk should have ended, whereas on the other trials, it would be one position off the final disk (in either direction). Observers then indicated (with a keypress) whether this probe disk accurately identified the ending position of their walk.

In the tangential walks, observers were never required to move their attention over the horizontal midline—half the walks remained in the upper visual field and the other half remained within the lower visual field. Similarly, in the radial condition, all walks remained on one side of the fixation. All trials within a condition were presented in a random order. The radial condition and the three tangential conditions were all run in separate blocks. Within each condition (tangential/radial), for each density, and within each visual field (tangential) or quadrant (radial) observers took 32 "walks." Observers were encouraged to carefully focus their attention on each item that they "walked" over and to avoid using any alternative strategies.

Results

The data of each observer was smoothed and interpolated to extract the density leading to 75% performance. These individual thresholds were used in a two-way, repeated-measures ANOVA to examine the effects of eccentricity and upper versus lower field. The percentage correct in each condition was also averaged over the five observers and fit using the model as described below to predict densities for other performance criteria.

Intriligator,2001

Figure 9 is a schematic diagram of a radial stimulus. It consists of six disks of increasing size arranged in a radial pattern, labeled S1 through S6. The disks are arranged in a line that curves from the top left towards the bottom right. The diagram is titled "INTRILIGATOR AND CAVANAGH".

Info

Tags

Related

Item Type

Journal Article

Title

Cambling in the visual periphery: A conjoint-measurement analysis of human ability to judge visual uncertainty

Author

Zhang, Hong

Author

Maloney, Camille

Author

Maloney, Laurence T.

Abstract

Recent work in motor control demonstrates L...

Publication

PLoS Computational Biology

Volume

6

Issue

12

Pages

1-10

Date

2010

Series

Series Title

Series Text

Journal Abbr

Language

DOI

10.1371/journal.pcbi.1001023

ISSN

1553774X

Short Title

URL

Accessed

Archive

Loc. in Archive

Library Catalog

Call Number

Rights

Extra

Citation Key: Zhang2010

Date Added

2019-05-06, 2:47:28 p.m.

Modified

2019-05-08, 8:33:44 a.m.

What do infants know? When do they know it? Are some concepts inherent from the beginning, or does knowledge emerge only through experience in the world? There is a lot at stake in the answers to these questions. For millennia, philosophers and scientists, from Aristotle and Kant to Piaget and Chomsky, have tried to understand the human mind from speculating about how cognition begins. Grand epistemological edifices are built on assumptions about the initial state. Human nature may be very different if babies are born as blank slates, absorbing their environments like a sponge, than if they have kernels or excesses of knowledge already built in and need only to elaborate them. The questions are old ones, but they are still hotly debated by philosophers, psychologists, and linguists (e.g., Haith, 1998; Ploner, 1994; Spelke & Newport, 1998; Thelen & Smith, 1994, and many others). Unfortunately, it is very difficult to ask babies these important questions directly. Infants do not talk and thus have limited ways to express the workings and contents of their minds. For many months, they have little or no control of their limbs, cannot follow verbal directions, and are remarkably indifferent to their privileged status in the philosophy of mind. Until very recently, speculations about what infants know remained only speculations.

Gregor Schöner, Institute for Neuroinformatics, Ruhr-Universität Bochum, Germany; Esther Thelen (deceased December 29, 2006), Department of Psychology, Indiana University.
We thank Roscoe, Cindy, Melissa, Charles, Kelly, and Vaghi Walinger for their very helpful comments. This work was supported by National Institutes of Health Grant R01 HD22801 to Esther Thelen.
Correspondence concerning this article should be addressed to Gregor Schöner, Institute for Neuroinformatics, Ruhr-Universität Bochum 44780 Bochum, Germany. E-mail: Gregor.Schoener@rub.de

Figure 9 is a schematic diagram of a radial stimulus. It consists of six disks of increasing size arranged in a radial pattern, labeled S1 through S6. The disks are arranged in a line that curves from the top left towards the bottom right. The diagram is titled "INTRILIGATOR AND CAVANAGH".

PLoS Computational Biology | www.ploscompbiol.org 7 December 2010 | Volume 6 | Issue 12 | e1001023

Zhang,2010

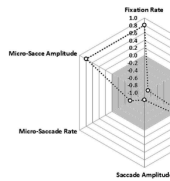


Fig. 3. Average factor loadings for each metric, illustrating the metrics that are positively and negatively correlated.

Table 3
Correlation coefficients of individual factor scores.

Task	Scan-Intensity	Search	Slings
Search-Intensity	0.82	0.57	0.57
Search-Slows	0.57	0.57	0.57
Search	0.57	0.57	0.57

The spatial distributions of the two plots are obviously different, and illustrate the extremes in EnBP observed in the study. The individual with a low factor/AD score exhibits features that are relatively low, tightly packed and clearly organized. The high score individual exhibits more numerous and diffuse features that are larger and less organized. What is not shown in the illustration, but is clear from the correlation and factor analysis of this study (Tables 3 and 4, Figs. 2 and 3) is that individuals with low factor/AD scores not only tended to use fewer fixations of

longer duration, but also used more micro-saccades of smaller amplitude, compared to those individuals with high factor/AD scores. Given that the experimental tasks we used were relatively simple, and we did not employ direct behavioral measures of attentional performance, it is not certain that the EnBP differences we observed between low and high factor score individuals reflect differences in attentional behavior. That said, the attention measure we used is commonly employed by clinical psychologists as one of several measures of attentional function, and scores on this instrument have been shown to predict attention performance on a range of behavioral measures (e.g., Poynter, Spivey, & Minor, 2010). We should also note that the inter-metric relationships we observed may be equally strong or even present in other tasks requiring more demanding and diverse cognitive functions. That the tasks we employed that the strength and consistency of the inter-metric relationships we observed leads us to believe that there is merit in further study of the temporal and spatial dynamics of EnBP during the course of experimental tasks

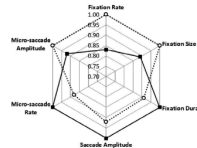


Fig. 4. Relative values of the six eye movement metrics for individuals scoring relatively high ($F > 50$) vs. low ($F < 50$) on the Conners AD scale. Values are the ratio of average metric score for the two groups. For example, the average Fixation Rate for individuals in the Low AD group was 90% that of the High AD group.

Poynter, 2013

Info Tags Related

Item Type Journal Article

Title Poynter, William
movement behavior profiles across tasks

Author Poynter, William
Author Spivey, Michael J
Author Inman, Jason
Author Wiggins, Coral

(.) Abstract The purpose of this study was to examine...

Publication Vision Research

Volume 89

Issue 12-18

Page 12-18

Date 2013-08

Series Series Title
Series Text

Journal Abbr Journal Abbr

Language

DOI 10.1016/j.visres.2013.07.002

ISSN 0942-9593

Short Title

URL http://dx.doi.org/10.1016/j.visres.2013.07.002

Accessed

Archive

Loc in Archive

Library Catalog

Call Number

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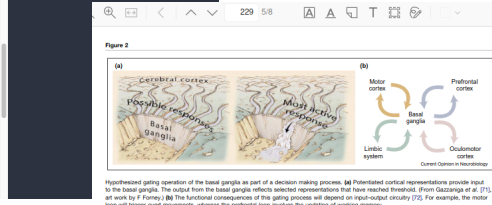
Extra PMID: 23847658

Publisher Elsevier Ltd

Citation Key Poynter2013

Date Added 2015-09-02, 9:56:12 a.m.

Modified 2017-03-25, 3:16:10 a.m.



remains elusive, primarily because similar deficits have been observed in patients with lesions of other structures (J22,26,27,68) but see J68). The cerebellar hypothesis offers a parsimonious account over a broad set of tasks, and neurobiologically feasible models have been developed. Nonetheless, a specialized system hypothesis must be able to account for similar patterns of performance following damage to distinct systems.

As a starting point, we propose that the basal ganglia are an integral part of decision processes, operating as a threshold mechanism (Figure 2). Activation into the basal ganglia is gated such that only those stimuli that exceed a threshold are processed. The activation function for different decisions can reflect multiple factors, such as goals, sensory inputs, and contextual information. These representations engage in a competitive process for control of the decision process.

Although this hypothesis is intended to describe the role of the basal ganglia in response to set selection, it provides a novel perspective of impairments on temporal processing tasks associated with basal ganglia dysfunction. Consider the perception of intervals on the order of multiple seconds, judging the amount of elapsed time for each interval is attention mediated [70], or what has been called cognitive timing [71].

This hypothesis can also be applied to short intervals without postulating a direct role for the basal ganglia in the representation of time. Depressive agents would again be expected to distort perceived durations.

This simple model would not account for PD patients' impairments in judging the duration of a short stimulus, given our assumption that the representation of stimulus duration is derived in the cerebellum. However, this model does account for the deficits in temporal processing in PD patients, which are not accounted for by the cerebellar hypothesis.

With one additional modification, the threshold model can account for the tendency of PD patients to speed-up during repetitive movements [22,27,28], a result that seems at odds with cognitive timing models. The model can account for this by assuming that the threshold is lowered during repetitive movements, which would lead to a speed-up in response times.

With one additional modification, the threshold model can account for the tendency of PD patients to speed-up during repetitive movements [22,27,28], a result that seems at odds with cognitive timing models. The model can account for this by assuming that the threshold is lowered during repetitive movements, which would lead to a speed-up in response times.

Ivry, 2004

Psychological Science

Elizabeth R. Grant and Michael J. Spivey

Figure 1. The diagram that participants viewed while solving Dussan's (1943) radiation problem. The labels of diagram features were not shown; the features were verbally explained.

Participants were seated approximately 30 cm away from a vertical white matter board to which we had affixed a clear overhead transparency sheet printed with this diagram. Participants' eye movements were monitored using a lightweight RSCAN head-mounted eye-tracker, which allowed participants' heads to move naturally. Viewing was binocular, and eye position was recorded from the left eye with an accuracy of about 0.5°, sampled at 60 Hz. Eye position, verbal protocols, drawings, and solution times were recorded on a Sony Hi-8 VCR with 30-Hz frame-by-frame playback.

Participants were tested individually by the same experimenter in a laboratory with controlled lighting. The eyetracker was placed on each participant's head and was calibrated before the task began by having the participant look sequentially at a grid of eight black dots surrounding the diagram, at the inside end of the diagram, and at one or more points along the outside end of the diagram. After calibration of the eyetracker, which lasted approximately 5 to 8 min, the participant was allowed to move his or her head naturally.

Each participant was asked to give a verbal protocol of the solution and also to draw the solution on the diagram, using dry-erase markers, so that we could confirm the accuracy of the spoken solution (e.g., placement of laser sources at appropriate angles). The experimenter then read the problem instructions aloud and explained how the elements of the diagram corresponded to the elements of the problem. During the solution attempt, the experimenter remained silent except for answering direct questions about the problem. The task ended after the participant spontaneously informed the solution or at 10 min, whichever came first. In order to create equivalent time segments for all participants for coding eye movements immediately prior to the solution, the experimenter read one or more hints to unsuccessful participants to allow them to reach the solution. Hint 1 read, "What if you could adjust the intensity of the lasers?" Hint 2 read, "What if you had more than one laser?" The task was ended and hints were given before 10 min only if participants repeatedly stated that they could not generate any further solutions.

Solutions were scored as successful if the participants spontaneously inferred the solution before the task ended (within 10 min), or as unsuccessful if the participants failed to reach the solution in 10 min and solved the problem only with hints.

Eye movements were analyzed by codes who were blind to participants' solution times and success (intercoder reliability ranged from 90% to 100% across time). Two 900-frame time segments were coded for all participants: the 30 s after they heard the instructions (beginning time segment) and the 30 s before they stated and drew the correct solution (end time segment). This moment of insight was clearly identifiable, typically marked by an intake of breath and a comment like "Aha!" "Oh, I know," or "Okay, there it is," the participant then simultaneously drew and explained the correct solution. Although participants may have drawn prior to this time, those drawings did not depict the correct solution.

For these two 30-s time segments, codes assigned the position of each participant's gaze during each video frame (sampled on the VCR at 30 Hz) to one of five mutually exclusive and exhaustive diagram locations: tumor, healthy tissue, skin, outside, or irrelevant (eye-position coordinates either absent from the screen or focused on an object other than the diagram, such as the participant's hand or the marker).

Results and Discussion

Thirty-six percent ($n = 51$) of participants solved the problem successfully. 64% ($n = 9$) were unsuccessful and required hints. We considered two alternative explanations that place the change either at individual intersections (Fig. 4) or at individual segments (Fig. 5). The former solution involves a pattern-selective intervention for each type of stimulus pattern to be solved, and fatigue of those intersections in the course of adaptation. This intervention is widespread in the literature. In the present study, the observation of pattern adaptation is interpreted as evidence for the existence of pattern detector neurons. For example, in human vision, adaptation to an oriented grating raises the contrast threshold for that same stimulus by a factor of 2–4 (e.g., 26, 27). This is commonly thought to occur in the visual cortex, because it is there that one first encounters

Eye Movements and Problem Solving: Guiding Attention Guides Thought

Info

Item Type Journal Article

Author Grant, Elizabeth R

Author Spivey, Michael J

Publication Psychological Science

Volume 14

Issue 5

Pages 462-466

Date 2003

Series

Series Title

Series Text

Journal Abbr

Language

DOI

ISSN

Short Title

URL

Accessed

Archive

Loc in Archive

Library Catalog

Call Number

Rights

Extra Citation Key: Grant2003

Date Added 2012-07-09, 12:32:40 p.m.

Modified 2017-03-25, 3:16:10 a.m.

Abstract

Add abstract...

1 Tag

Grant2003

0 Related

Experiment 1

Method

Forty-four University students who were unfamiliar with Dussan's radiation problem and had normal or corrected-to-normal vision participated for course credit.

One stimulus was the two-dimensional static diagram in Figure 1; its area equaled approximately 30° × 30° of visual angle. Participants

Grant, 2003

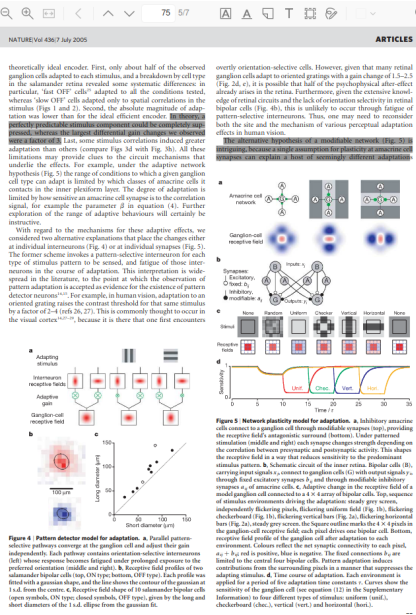


Figure 4. Pattern detector model for adaptation. a. Faceted pattern-selective patterns centered at the ganglion cell and adapt their gain adaptively. b. Each pattern contains orientation-selective interneurons. c. Each response becomes triggered under prolonged exposure to the predominant orientation (middle and right). d. Response field profiles of the adapting interneurons (left) and the ganglion cell (right). Each pattern was fitted with a Gaussian shape, and the Gaussian threshold of the ganglion cell was fitted to the ganglion cell response (right). The response field profiles of the interneurons, OFI types, showed results, OFI types, given by the long and short dimensions of the 1 × 1 ellipses from the Gaussian fit.

Dynamic predictive coding by the retina.

Info

Item Type Journal Article

Author Hosoya, Toshihiko

Author Baccus, Stephen

Author Meister, Markus

Publication Nature

Volume 436

Issue 7047

Pages 71-77

Date 2005

Series

Series Title

Series Text

Journal Abbr

Language

DOI 10.1038/nature03689

ISSN 0028-0836

Short Title

URL

Accessed

Archive

Loc in Archive

Library Catalog

Call Number

Rights

Extra PMID: 16001064

Citation Key: Hosoya2005

ISBN: 0028-0836

Date Added 2015-08-14, 1:54:57 a.m.

Modified 2017-03-25, 3:16:10 a.m.

Abstract

Retinal ganglion cells convey the visual image from the eye to the brain. They generally encode local differences in space and changes in time rather than the raw image intensity.

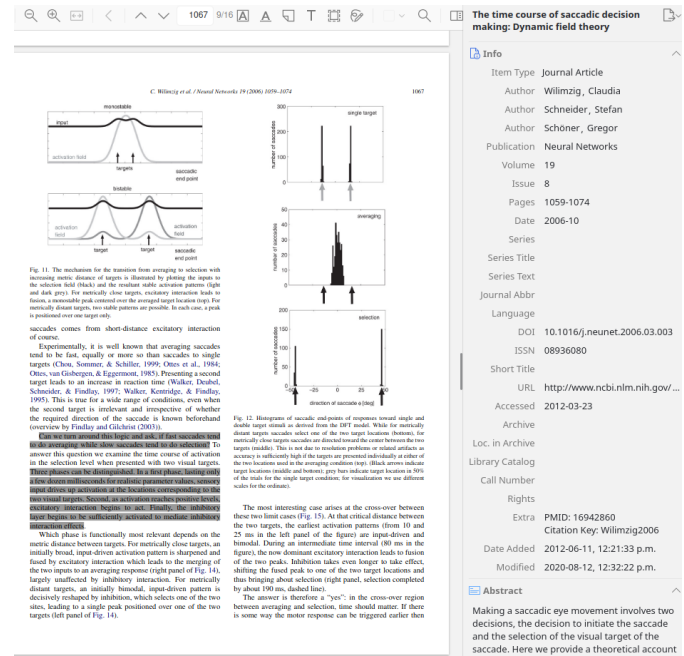
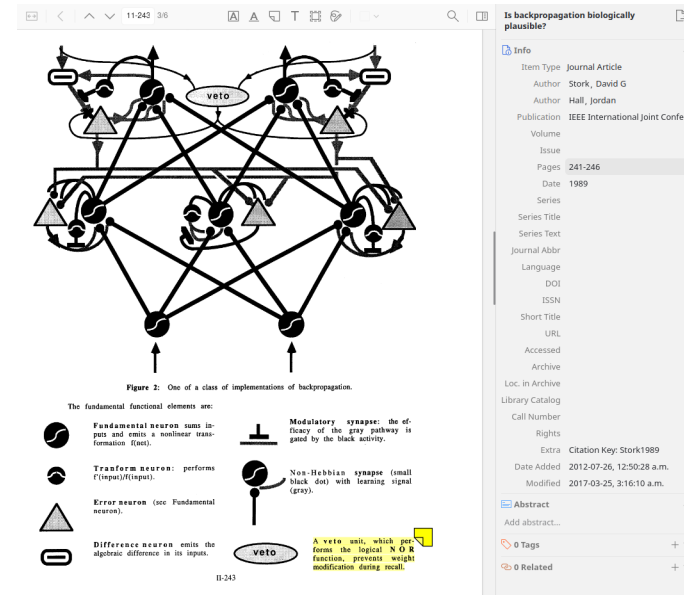
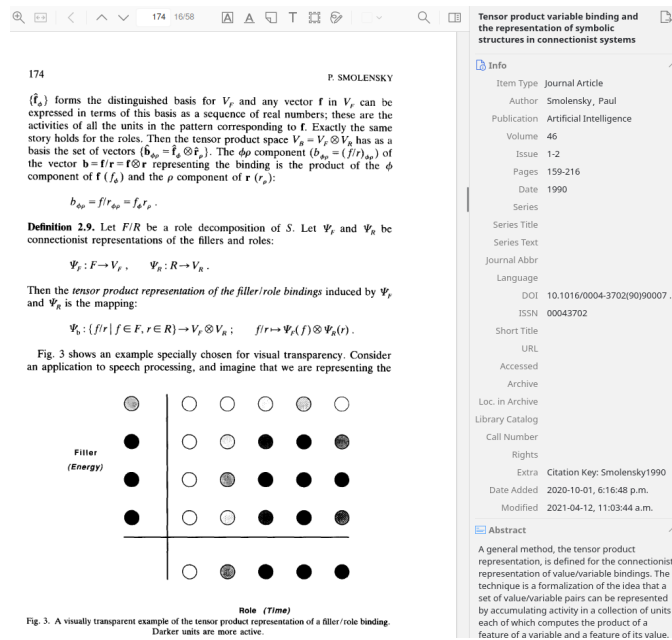
Hosoya, 2005

Wilson & Nisbett, 19??

Stork, 1989

McClelland, 2006

Craig, 2015
Mitkus, 2017



Wilimzig, 2006

242440

How Far Can You Go With Hebbian Learning, and When Does It Lead You Astray?

Hebbian Learning 24

There are several ways to use accuracy feedback to augment Hebbian learning. One possibility, based on O'Reilly's LEABRA learning rule (O'Reilly, 1996; O'Reilly, this volume), is simply to combine error-correcting and Hebbian learning. In LEABRA, the signal that drives the connection weight combines the Hebb, learning rule of Equation 3 with an error-correcting term. If we were to apply this suggestion to capture the role of accuracy feedback in our \tilde{h}/\tilde{w} learning experiment, we would need to imagine that the listener is able to translate the feedback signal into an indication of which response is correct, and then use this as the source of the correct target information required in standard error correcting learning, which then augments the Hebbian part of the learning when accuracy feedback is available.

The LEABRA approach is certainly worth exploring, but does introduce some processing complexity that has led me to consider other alternatives. To compute the error-correction component of the weight update, LEABRA uses a second pass through the activation settling process with the teaching input provided, after the first pass of activation in the absence of the teaching input. O'Reilly and I are currently at work on a successor to the LEABRA algorithm that attempts to eliminate the separate second pass. In the meantime, the two proposals considered below are perhaps mechanistically simpler than the existing version of LEABRA, and have thus been the focus of the modeling effort by Vallabha and McClelland (2004).

The first of the two ideas is to use the feedback signal to produce a reward signal I will call $R(F)$, and then use this to modulate Hebbian learning:

$$\Delta w_{ij} = \tau R(F) f_i(a_i) f_j(a_j) \quad (4)$$

To apply this idea to the results of the experiments reviewed above, in which we see evidence of learning without any feedback, we would require that $R(F)$ have some positive value in the absence of any accuracy feedback. Feedback indicating that the response is correct could then increase the value of the $R(F)$ above its baseline value, and feedback indicating that the response is incorrect could reduce it below baseline, or potentially (as in many applications of reward-driven or reinforcement learning, c.f. Barto, 1992) reverse its sign. The second idea is to use the accuracy feedback signal to derive the identity of the correct response, and use this to adjust the activation of the output unit before applying Hebb, rule of

Info

Item TypeJournal Article

AuthorMcClelland, James L.

PublicationAttention and performance

Volume103

Issue33-59

Date2006

Series

Series Title

Series Text

Journal Abbr

Language

DOI

ISSN

Short Title

URL

Accessed

Archive

Loc. in Archive

Library Catalog

Call Number

Rights

Extra

PMID: 1615

Citation Key: McClelland2006

Date Added2015-08-19, 11:39:55 a.m.

Modified2018-08-31, 7:00:06 p.m.

Abstract

This paper considers the use of Hebbian learning rules to model aspects of development and learning, including the emergence of structure in the visual system in early life. There is considerable physiological evidence that a Hebb-like

119

Long-Term Effects of Stimulant Treatment for ADHD: What Can We Tell Our Patients?

Long-Term Effects of Stimulant Treatment for ADHD: What Can We Tell Our Patients?

Info

Item TypeJournal Article

AuthorCraig, Stephanie G.

AuthorDavies, Gregory

AuthorSchubik, Larry

AuthorWeiss, Margaret D.

AuthorHechtman, Lily

PublicationCurrent Developmental Disor...

Volume

Issue

Pages

Date2015

Series

Series Title

Series Text

Journal Abbr

Language

DOI10.1007/s40474-015-0039-5

ISSN2196-2987

Short Title

URLhttp://link.springer.com/10.1...

Accessed

Archive

Loc. in Archive

Library Catalog

Call Number

Rights

Extra

Citation Key: Craig2015

Date Added2015-09-08, 7:59:54 p.m.

Modified2017-05-11, 6:00:33 p.m.

Abstract

Abstract

Abstract Stimulant medication is a well-researched treatment for attention deficit hyperactivity disorder (ADHD) and is among the most effective treatments in psychiatry. Parents often want to know more about the long-term risks and benefits of medication. Our objective was to review the seminal papers on long-term outcomes of stimulant treatment for ADHD for the purpose of providing clinicians with the background they need to interpret these findings for patients.

Method We reviewed key articles on long-term outcome of symptoms, comorbidity, substance use, executive functioning, academics, side effects, neurobiology, functioning, and quality of life.

Results Stimulants are very effective medications in the short term when used optimally. Long-term randomized, placebo-controlled studies are not feasible. Long-term observational studies are limited by absence of controls.

Discussion When administered properly with careful titration, follow-up, and close adjustment, stimulants are a safe and effective treatment for ADHD with minimal long-term risk and possible long-term benefits.

Keywords ADHD · Stimulant medication · Long-term effect · Outcome

Introduction Clinicians routinely have to summarize the risks and benefits of stimulant medication to their patients. Parents are often as concerned about whether stimulants will have any long-term beneficial or detrimental effects, as they are about the immediate effects of medication. The clinician is often in the position of having to address parents' questions about the long-term risk and benefit of medication. For example, parents may assume that if their child is performing better in the classroom now, this will increase the chances that they will show greater academic achievement in the long term. Parents are also often concerned about possible insidious long-term effects of psychotropic medication on brain health. This has been an anathema as long as clinicians have been using stimulant medication for ADHD in children. Can we assume that the often dramatic, immediate response we see when stimulants are initiated predicts a better outcome in adulthood?

Currently, there is a wealth of research on the use of stimulant medication for the treatment of attention deficit hyperactivity disorder (ADHD) with the most prominent study being the NIMH Collaborative Multisite Multimodal Treatment Study of Children With Attention-Deficit/Hyperactivity Disorder (MTA; [1]). The MTA compared four distinct treatment strategies (i.e. medication, behavioral treatment, combination medication and behavioral treatment and community care) as part of a randomized control study (RCT) of 579

My scholarly papers, p1

PLOS ONE

LAG-1: A model of learning, attention, and gaze

A.

Visual Field

Spatial Attention Field

Feature Detection Neurons

B.

Visual Field

Spatial Attention Field

(A) LAG-1 looking between features.

(B) LAG-1 fixating the top feature.

Fig 2. Information processing schema. Schematic of the relationships between experiment input, the Feature Detection Neurons, Visual Field, and the Spatial Attention Field. A) The fovea is indicated by the dashed grey circle in the center of the Visual Field. B) After an eye movement to the bottom middle feature, the green sensitive Feature Detector is activated and the Spatial Attention Field is boosted at its associated location. The Visual Field is coding spatial information in retinotopic coordinates while the Spatial Attention Field is coding information in spatiotopic coordinates.

<https://doi.org/10.1371/journal.pone.0259511.g002>

The Spatial Attention Field in LAG-1 represents changes in attentional priority to locations in a spatiotopic reference frame. The different frames of reference of the Spatial Attention Field and the Visual Field are depicted in Fig 2. Notice that there is no change in the location of features on the Spatial Attention Field between Fig 2A and 2B, despite the shifting of the bottom feature onto the fovea of the Visual Field.

Changes in activation on the Spatial Attention Field are described by similar equations as those used for the Visual Field, in Equation 13.

Saccade Motor Field. Candidate saccade target locations compete on the Saccade Motor Field [48, 49]. Unlike the Spatial Attention Field which binds a retinue of competing attentional priorities with spatial locations, the Saccade Motor Field resolves competition for attention at locations *other than* the current locus of fixation. The dynamics of this field resolves the competition between locations to be the target of the next eye movement according to Equation 17.

Saccade Timing System overview. Under normal viewing conditions, humans make about three saccades per second [77]. The period of relative spatial stability between saccades is the fixation duration. The parameterizations used in the present simulations were chosen for their rough correspondence with the normal range of saccade and fixation durations. In the model, as in the brain, the timing of an eye movement is affected by previous experience. In people, this includes factors like expected processing difficulty, but category learning experiments are designed to minimize such effects, so changes in fixation duration exhibited by LAG-1 are primarily the result of learning the relevance of different features. We have also observed fixation duration differences in LAG-1 when using it for visual search where disorganized inputs yield spatial interactions that speed or slow its saccade onset latency [40, 46, 58, 67, 78].

As the name suggests, the Saccade Timing System is the primary arbiter of decisions to release fixation and foveate a new location. The trio of neurons controlling this system are: the Gaze Change Neuron, the Fixation Neuron, and the Saccade Initiation Neuron. These model neurons have a functional correspondence with brain stem neurons referred to as: "build-up

Info

Tags

Related

Item Type

Journal Article

Title

LAG-1: A dynamic, integrative model of learning, attention, and gaze

▼ Author

Barnes, Jordan

▼ Author

Blair, Mark R.

▼ Author

Walshe, R. Calen

▼ Author

Tupper, Paul F.

▼ Editor

Sewell, David Keisuke

(...) Abstract

It is clear that learning and attention interact,...

Publication

PLOS ONE

Volume

17

Issue

3

Pages

e0259511

Date

2022-3-17

y m d

Series

Series Title

Series Text

Journal Abbr

Language

en

DOI

10.1371/journal.pone.0259511

ISSN

1932-6203

Short Title

LAG-1

URL

https://dx.plos.org/10.1371/journal.pone.0...

Accessed

2024-01-03, 11:22:03 a.m.

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