

SHOHIN MEDITATION AND THE BRAIN

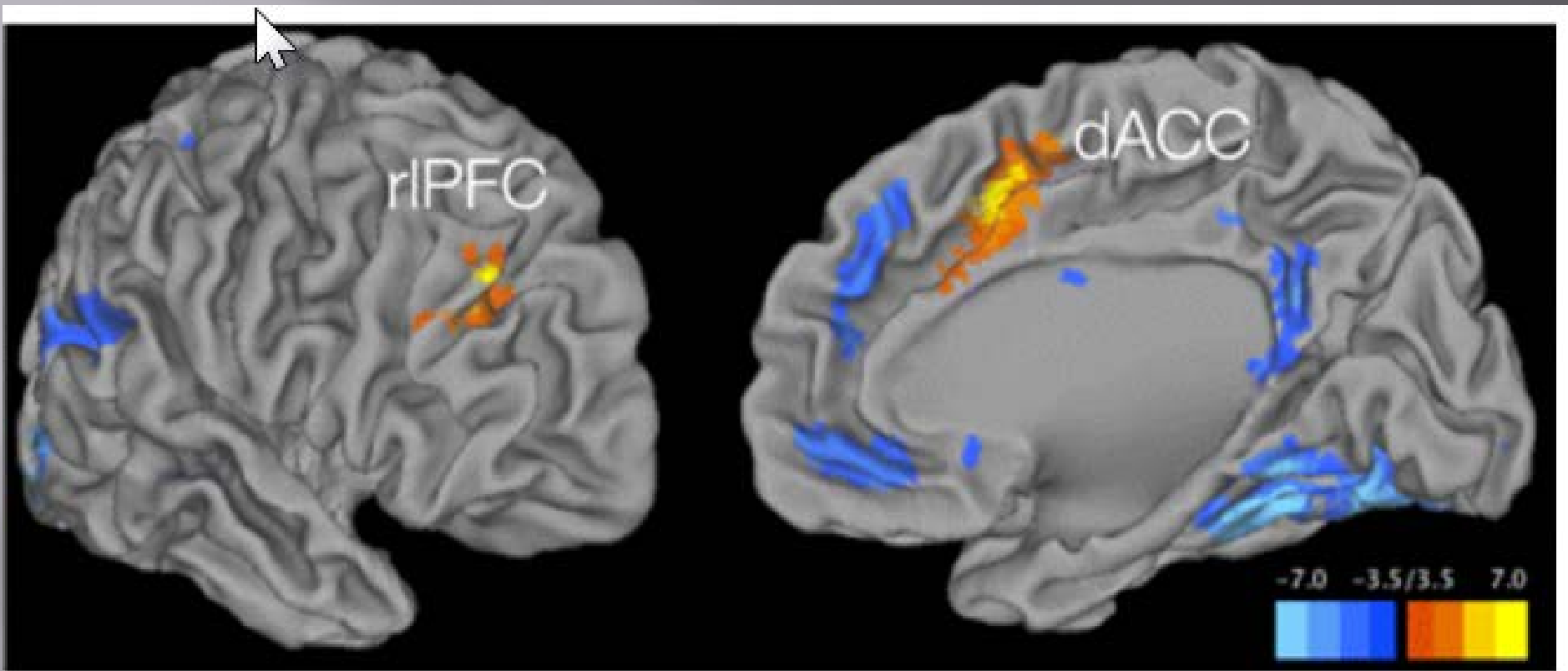
Daniel Drubach. MD
Mayo Clinic
Rochester, Minnesota
Marcelo Skapino.

Definition of Meditation

- ▣ State of Wakeful Consciousness where the mind's attention is highly or exclusively focused on an internally or externally generated phenomenal or non phenomenal stimulus
- ▣ Phenomenal; Pertains to the senses (candle, letters)
- ▣ Non-phenomenal: not pertains to the senses (an idea, God)
- ▣ Different activation of brain structures with each form

A Metacognitive Conscious State

- ▣ Metacognition; A “higher state of cognition that “cognisizes” on “lower levels”
- ▣ “thinking about your thoughts
- ▣ “controlling what you think
- ▣ Judges your decisions
- ▣ Well defined neurological substrate
- ▣ “You are where your thoughts are; make sure your thoughts are where you want to be”



Prefrontal Contributions to Metacognition in Perceptual Decision
Making *Journal of Neuroscience* 2012

Forms of Meditation

- ▣ Differ in:
 - specific techniques utilized
 - Goal to be achieved
- ▣ Focus attention Meditation
- ▣ Open Monitoring Meditation
- ▣ Effortless Presence Meditation

- **Budhist Meditation**
 - Zen Meditation (Zazen)
 - Vipassana Meditation
 - Mindfulness Meditation
 - **Loving Kindness Meditation (Metta Meditation)**
- **HINDU MEDITATION (Vedic & Yogic)**
 - **Mantra Meditation (OM Meditation)**
 - **Transcendental Meditation (TM)**
 - **Yoga Meditations**
 - **Self-Enquiry and “I Am” Meditation**

- ▣ CHINESE MEDITATION
 - Taoist Meditations
 - Qigong (Chi kung)
- ▣ Christian Meditation
- ▣ Guided Meditation

Jewish Meditation



Split



30b

EIN OMDIN CHAPTER FIVE BERACHOS

Chapter Five

Mishnah The Mishnah discusses the proper frame of mind with which the recitation of the Prayer should be approached:

אין עומדין להתפלל אלא מתוך בוך ראש — One should not rise to pray the *Shemoneh Esrei* other than with an attitude of reverence. ^[1] חסידים הראשונים היו שוהין שעה אחת — The early pious ones would tarry for one hour and then pray, כדי שיכוונו לבם לאביהם שבשמים, — in order that they might direct their hearts to their Father in Heaven. ^[2]

Additional laws regarding the *Shemoneh Esrei*:

אפילו המלך שואל בשלומו לא ישיבנו — Even if the king inquires as to his welfare while he is engaged in *Shemoneh Esrei*, he should not answer him; לא יפסיק — and even if a snake is coiled about his heel, he should not interrupt. ^[3]

Gemara The Mishnah states that one should not rise to pray other than with an attitude of reverence. The Gemara asks:

מנא הני מילי — From where in Scripture is this law derived? ^[4]

The Gemara answers:

אמר רבי אלעזר — R' Elazar said: For Scripture

states: "והיא מרת נפש" — *And she was bitter of spirit, and she prayed to Hashem.* ^[5]

The Gemara challenges this source:

דילמא חנה שאני — From where do you know this? Perhaps Hannah is different, דהות מרירא לבא טובא — for she was exceptionally bitter at heart. This does not prove that others are obligated to pray in a similar fashion. ^[6] — ? —

The Gemara offers an alternative source:

אלא אמר רבי יוסי ברבי חנינא מהבא — Rather, R' Yose the son of R' Chanina said: It is derived from here: ונאני ברב חסדך — *As for me, through Your abundant kindness I will enter Your House, I will prostrate myself toward Your holy Sanctuary in awe of You.* ^[7] Thus, we learn that prayer must be approached with an attitude of awe.

The Gemara challenges this source as well:

דילמא דוד שאני — From where do you know this? Perhaps David, the author of this verse, was different, דההוה — for he would torment himself exceedingly in beseeching mercy. ^[8] — ? —

The Gemara suggests an alternative source:

אלא אמר רבי יהושע בן לוי מהבא — Rather, R' Yehoshua ben Levi said: We derive it from here: "השתחוו לה' בהדרת קדש" — *Prostrate yourself before Hashem in holy splendor (behadras kodesh).* ^[9] אל תקרי בהדרת אלא בהדרת — Do not read *behadras* (in splendor), but rather *bechardas* (in



NOTES

3

2. Upon arriving at the place at which they intended to pray (*Rashi*), they would first pause for an hour to contemplate the loftiness of God as opposed to the puniness of man, and erase from their minds all thoughts of earthly pleasures (*Rabbeinu Yonah*, cited by *Rama* to *Orach Chaim* 98:1 ; cf. *Ritva*). Only then would they begin to pray. [Although the term שָׁעָה, *an hour*, is often used in the Talmud in a non-literal sense to imply a short period of time, *Rabbeinu Yonah* proves from the Gemara that here the intent is that the early pious ones would literally spend an entire hour in meditation before praying.]

The standard of pausing for an hour applies only to the early pious ones. For others, it is sufficient to pause for the amount of time it takes to walk eight *tefachim* (see *Magen Avraham* 93:1 with *Levushei Serad*). [Nevertheless, the custom of the early pious ones is preserved somewhat in our Shacharis service. Between *Pesukei D'Zimrah*, which takes about half an hour, the blessings of *Shema*, and the *Shema* itself, almost an hour is spent in thoughtful meditation before the *Shemoneh Esrei* is begun (*Pri Megadim*, *Eishel Avraham* 93:1).]

The *Vilna Gaon* points out that the word וּמִתְפַּלְלִין, *and pray*, seems to be out of place, as it would appear to belong at the end of the sentence (הָיָו שׁוֹהֵיין שְׁעָה אַחַת בְּרִי שִׂיכוּוְנוֹ לְבָם לְאַבְיָהֶם וּמִתְפַּלְלִין), signifying that at the completion of the preparatory hour they would pray. He therefore explains that the phrase “and pray” actually refers to their activity during the preparatory hour itself. The Mishnah should thus be understood to mean that during the preparatory hour they prayed that during the *Shemoneh Esrei* they be able to direct their hearts to their Father in Heaven. [Likewise, it is our practice to begin *Shemoneh Esrei* with a plea that God enable us to pray. Thus, we recite the verse, “My Lord, open my lips that my mouth may declare Your praise” (*Psalms* 51:17) (*Siddur Be'er Chaim*, quoted in *Beis Yosef al Berachos*.)]

1. li. R. 2. th as

Rashi tells us the state of mind the prophets were in Before they'd pray.

SHOHIN

- ▣ The shoshin is shin/heh/heh and does carry the meaning of “hesitate, wait, tarry, delay.”
- ▣ It is also used in the context of not hesitating in the act of ritual slaughter so as to avoid performing it incorrectly.
- ▣ “In the case of the Mishnah, Shohin carries the image of a person being on the portal of entering a “holy space or place” in time, namely that of prayer of both petition and devotion. The person is to stop, pause, reflect, step away from their outside world in an effort to prepare for entry into the realm of prayer.”
- ▣ Rabbi Dr. John Davidson

SHOHIN

- ▣ Form of Meditation
- ▣ Preceded Prayer
- ▣ Exclusive to Prayer (not relaxation)
- ▣ Was distinct from Prayer (not a part of it)
- ▣ Was part of the prayer experience
- ▣ Exclusive to the “pious ones” (learning effect)

Definition of Meditation

This state of mental seclusion is very important to the prophetic experience. There is considerable discussion of this, but the clearest description of this state is presented by Rabbi Levi ben Gershon (1288–1344), a major Jewish philosopher, often known as Gersonides or simply “the Ralbag.” He clearly writes that the receiving of prophetic revelation “requires the isolation (*hitbodedut*) of the consciousness from the imagination, or of both of these from the other perceptive mental faculties.”³

The Ralbag is speaking of the meditative state, which he describes as the isolation of the consciousness to an extent where it is no longer disturbed by the imagination. The imagination to which he refers is the normal reverie involving the stream of consciousness **and** visual imagery that is experienced when all the other senses are shut off. It is from this that the intellect must be isolated, until the individual enters a state of pure consciousness, disturbed by neither reverie nor visual imagery. This is a normal definition of the meditative state, **and** it is the end result of all successful **meditation**. In order to attain this, the individual must isolate both the consciousness

and the imagination from the other perceptive faculties of the mind.

The Ralbag's Imagination and the Default Mode Network (DMN)

- ▣ “Normal reverie involving the stream of consciousness and visual imagery that is experienced when all other senses are shut off”.
- ▣ Mind wandering. The mind is given free reign

The Brain and Functional Networks

- ▣ The brain is organized into “functional networks”.
- ▣ A functional network consists of the conglomerate of brain cells which “assemble” (come together through means of connections among them) to perform a specific function (or task)
- ▣ One brain cell can participate in virtually an infinite amount of functional networks
- ▣ These networks are extremely “plastic” and in a state of perpetual change

Fasciculus the Stranger

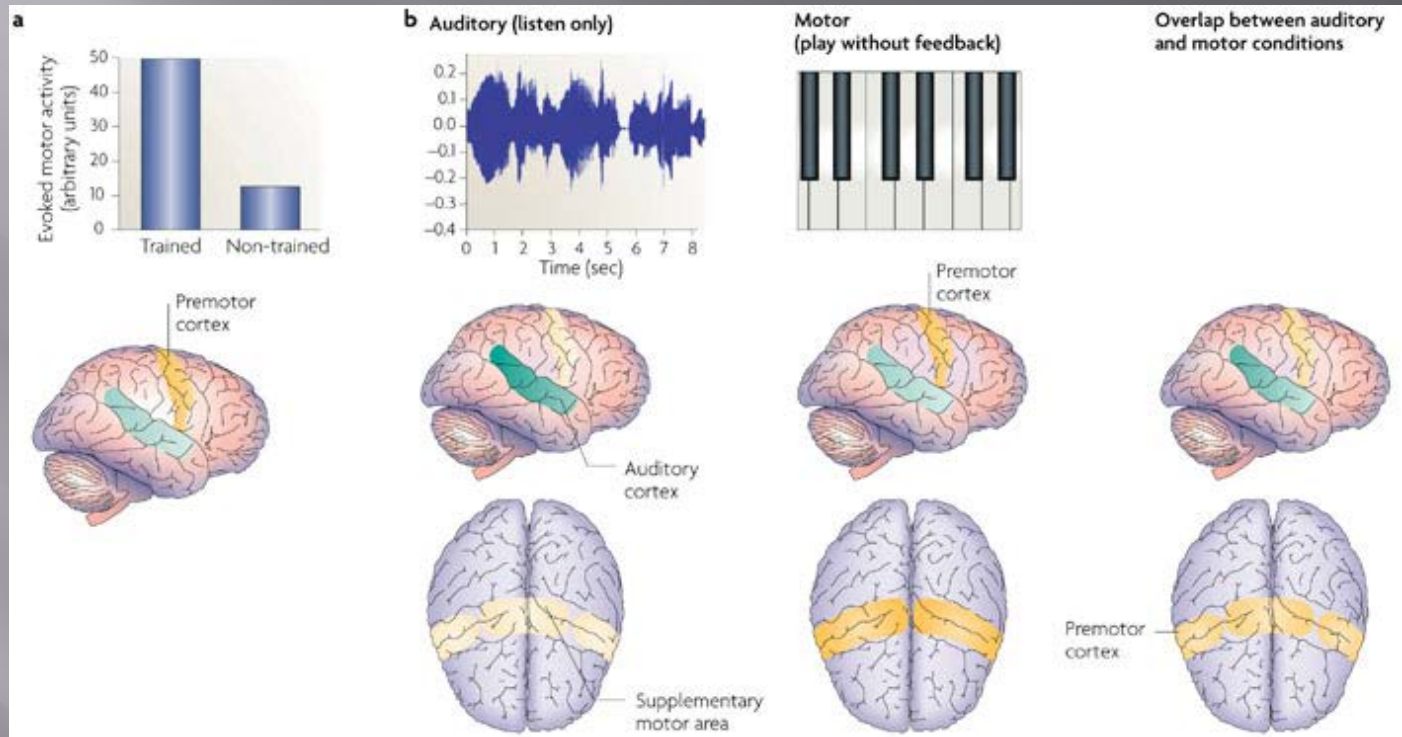
- ▣ Perceptual Network A



Fasciculus the Friend



- ▣ Perceptual Network B
- ▣ Difficult (or impossible) to reverse to Network A
- ▣ He could become an enemy (Network C), but not reverse to Network A



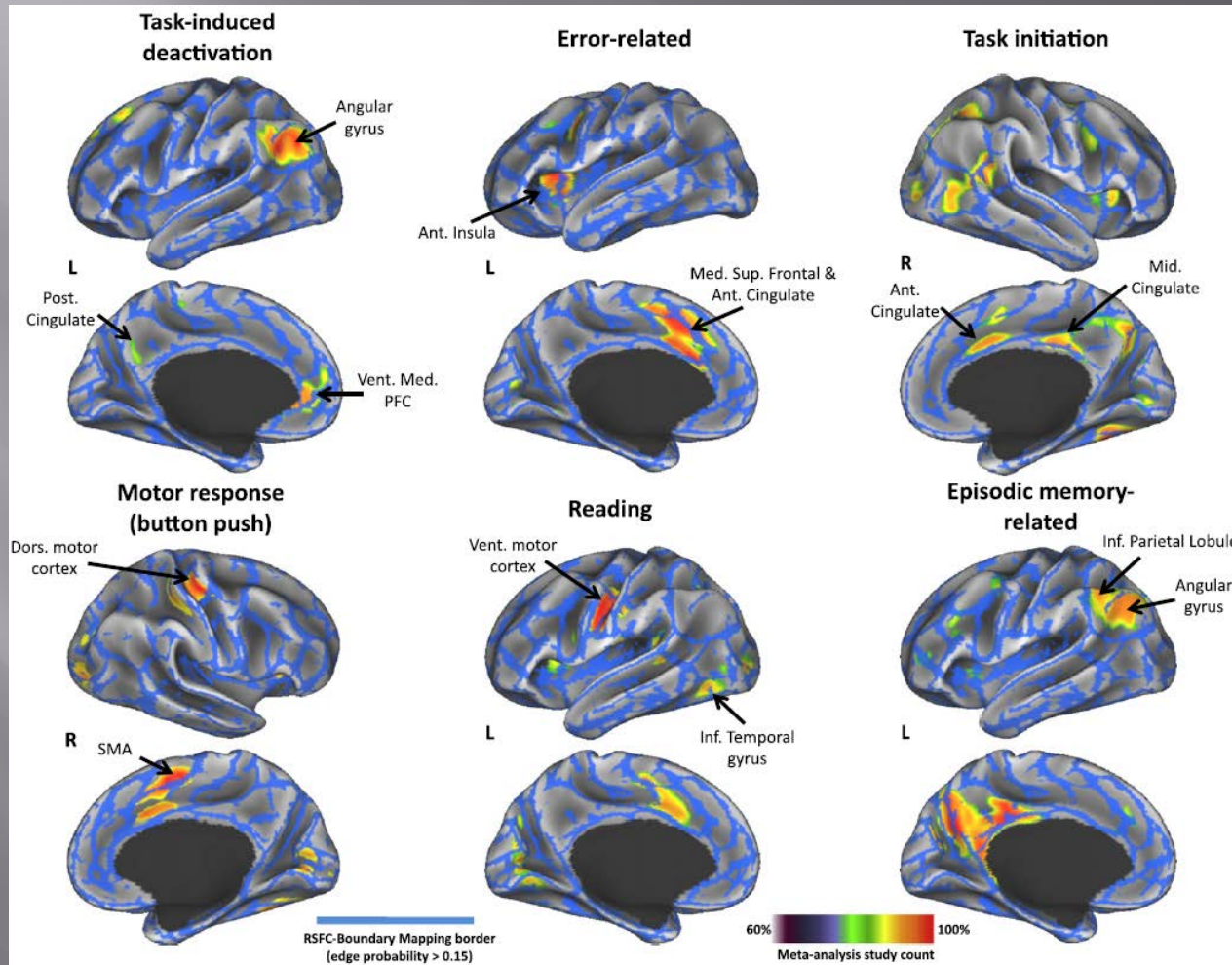
Zatorre, et al; Nature reviews (8) 2007

The Brain and Functional Networks

- ▣ In recent years we have become able to image some of these networks through means of functional imaging (such as PET scans and Functional MRI (fmri))
- ▣ PET SCAN: A person is injected with radioactive glucose, which remains radioactive for 24 minutes. Since the brain is such a ravenous eater (weighs 3 pounds and consumes 25% of glucose, we can see which areas are active at one time)
- ▣ FMRI. Looks at blood flow and oxygen consumption a specific are of the brain with a specific task. Prone to subjectivity.

fcMRI Cortical Cartography

Comparison with task-based fMRI results

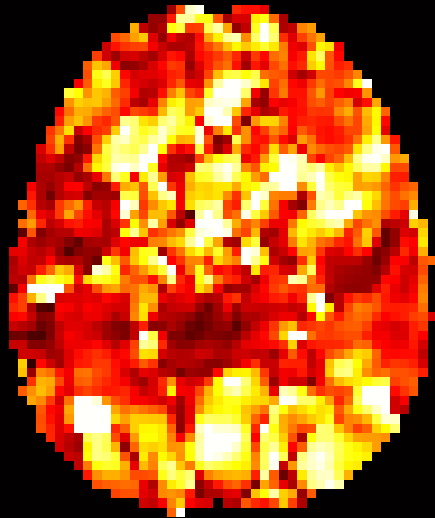
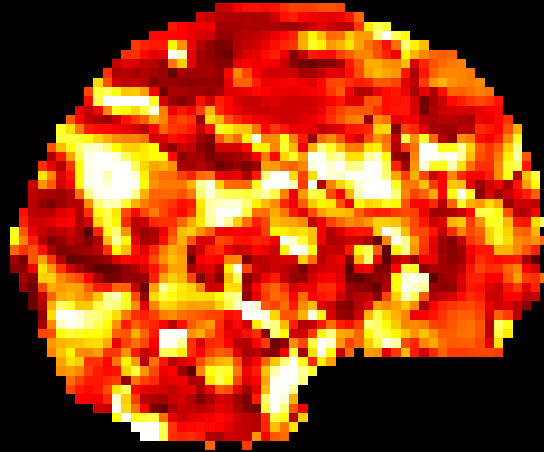
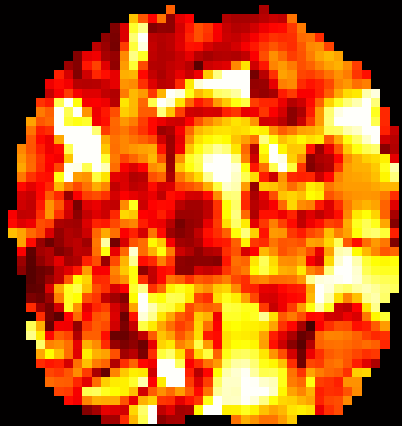


The Ralbag's Imagination and the Default Mode Network (DMN)

- ▣ “Normal reverie involving the stream of consciousness and visual imagery that is experienced when all other senses are shut off”.
- ▣ Mind wandering. The mind is given free reign

Default Mode Network

- ▣ network of interacting brain regions that are known to be highly correlated with each other and distinct from other networks in the brain.
- ▣ is most commonly shown to be active when a person is not focused on the outside world and the brain is at wakeful rest such as during daydreaming and mind-wandering.
- ▣ It is also active when the individual is thinking about others, thinking about themselves, remembering the past, and planning for the future.
- ▣ negatively correlated with other networks in the brain such as attention networks



Courtesy of Dr. David
Jones

Default Mode Network

- ▣ Alterations in the DMN appear to be associated with psychiatric and neurologic disease
- ▣ Disruption in the DMN may be one of the earliest signs of Alzheimer's Disease
- ▣ It is probably an important component of normal brain function
- ▣ May have some functions similar to that of REM sleep (memory consolidation, emotional regulation, etc)

Experience of the DMN

- ▣ It is a “passive state”
- ▣ You are not in control of the flow or the content of the mental activity (random thoughts, memories, emotions, images)
- ▣ The mystery is to identify which is the “generator” that determines the content of the DMN

DMN and Meditation


- ▣ Much data suggests that “successful” meditation requires deactivation of the DMN
- ▣ Deactivation of the DMN requires a person to get “ahold” of their mind and control its content
- ▣ This activates two other networks, the Executive and Salience networks
- ▣ The most efficient cognitive mode to achieve this is to focus our attention on an inner or outer entity



Or on a chair:







Dorsal and ventral Default
Mode Networks (dDMN
and vDMN)

Front Hum Neurosci.
2015; 9: 585





Left and right Executive
Control Networks (lECN
and rECN)

Front Hum Neurosci.
2015; 9: 585

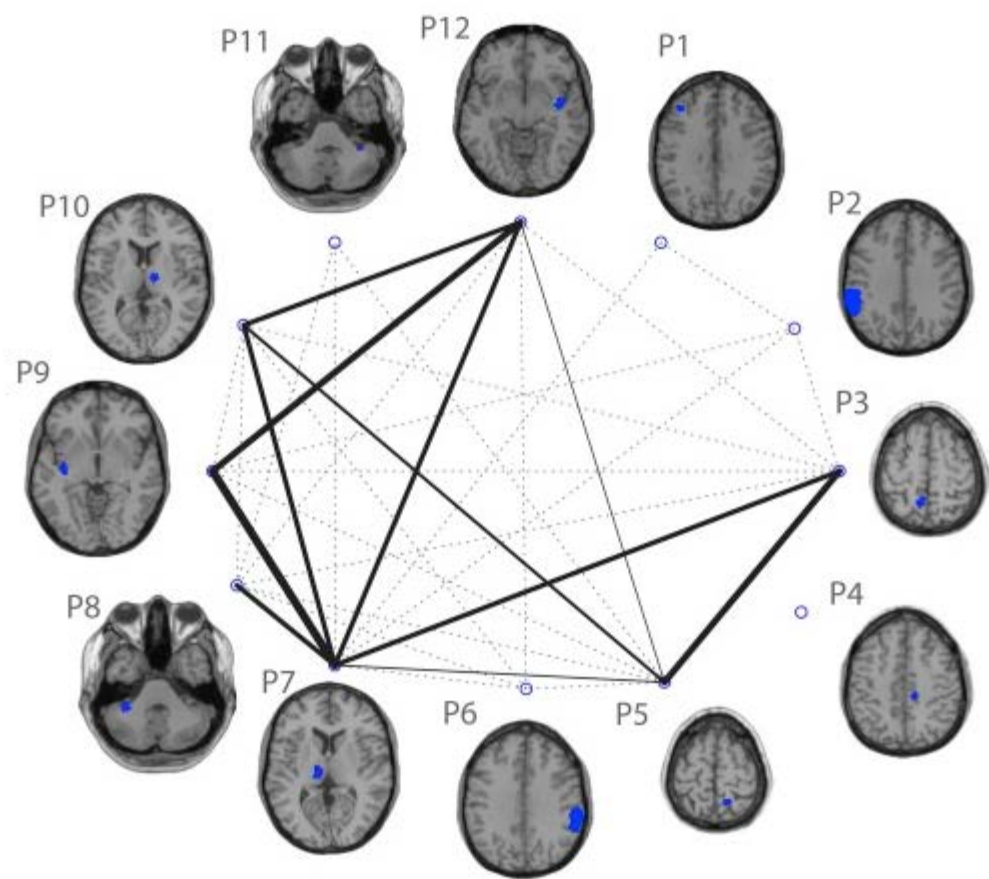


Anterior and
posterior Salience
Networks (aSN and
pSN)

Front Hum Neurosci.
2015; 9: 585

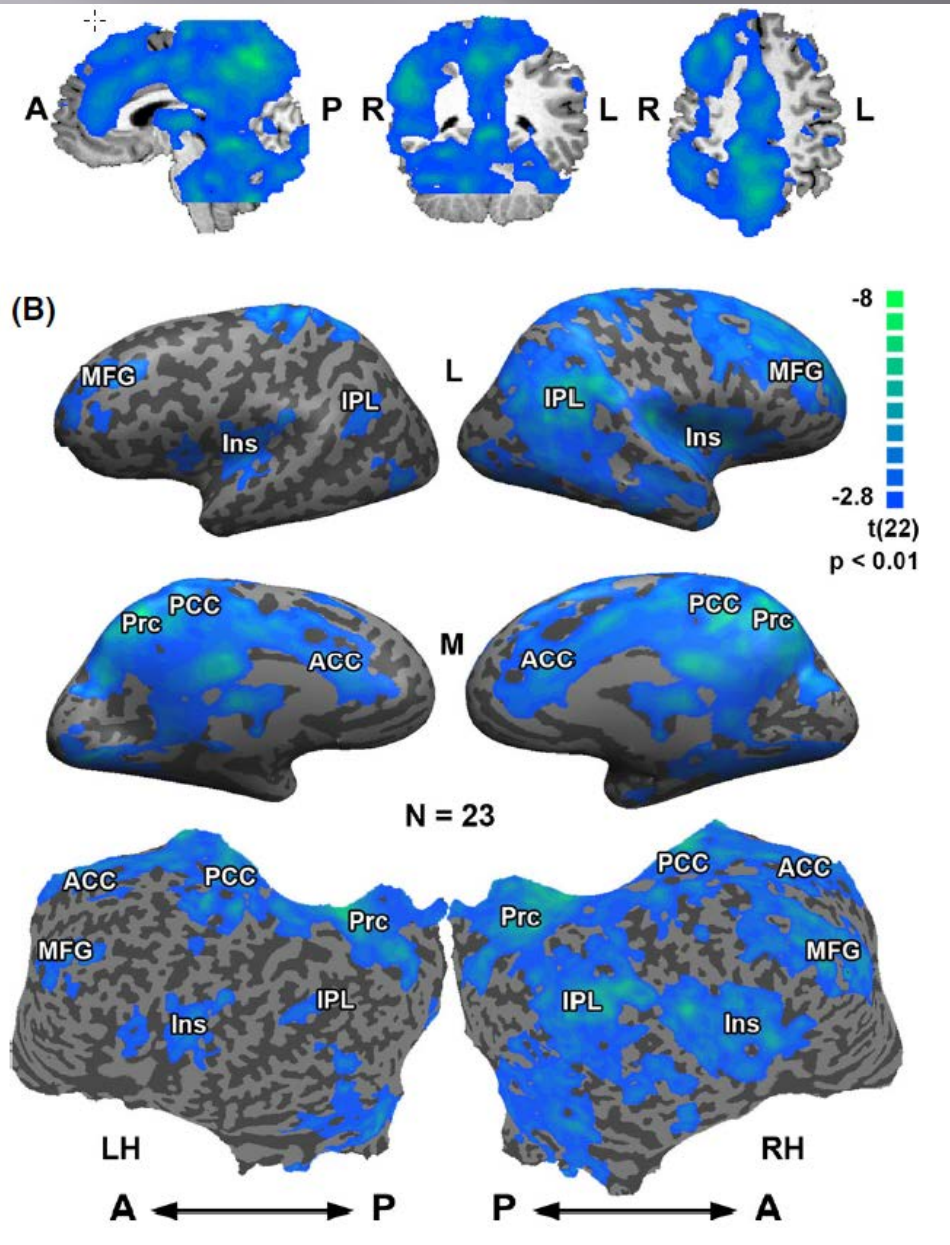


B Posterior Saliency Network (pSN)



Left

Right



Brain and Behavior

Open Access

Repetitive speech elicits widespread deactivation in the human cortex: the "Mantra" effect?

Aviva Berkovich-Ohana, Meytal Wilf, Roni Kahana, Amos Arieli* & Rafael Malach*

Department of Neurobiology, Weizmann Institute of Science, 234 Herzl St., Rehovot 76100, Israel

Meditation and Network Switch

- ▣ Many studies have shown that “successful” meditators are able to switch easily within networks.
- ▣ For example, an extraneous noise may cause deactivation of the salience network, but successful mediators can rapidly “go back”
- ▣ Years of meditation highly correlate with efficiency of network switching, network maintenance, etc
- ▣ Suggests that mediation is a skill that requires practice

Object of Perception in Shohin Meditation

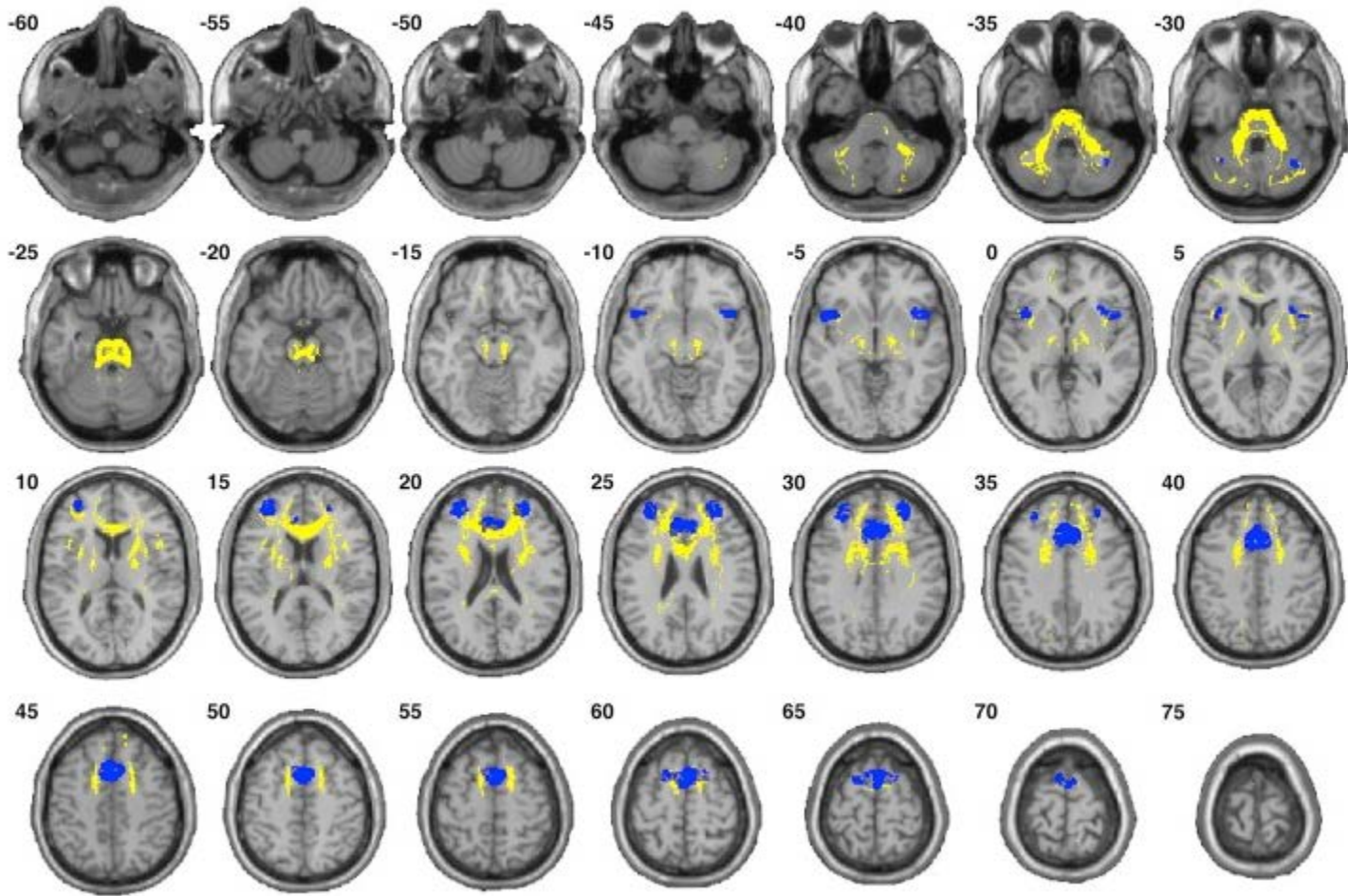
- ▣ (Rashi) Upon arriving to the place that they intended to pray they would first pause for an hour and contemplate the loftiness of God and the puttiness of man and erase from their mind all source of earthly pleasures. Only then they would begin to pray.
- ▣ Abraham Maimonides; Contemplate the beauty God's works (found in nature)
- ▣ Meditate on the prayers but do not pray. Become one with the prayer

Conclusions

- ▣ Shohin meditation is one of the most compelling evidence for the importance of meditation in Judaism
- ▣ It highlights the relationship between prayer and meditation (related but not the same)
- ▣ More research is needed to determine the object of perception, purpose, goals etc.
- ▣ In recent years we have learned much about the neuroscience of meditation.
- ▣ Meditation, to be successful, must be “practiced”

THANK YOU

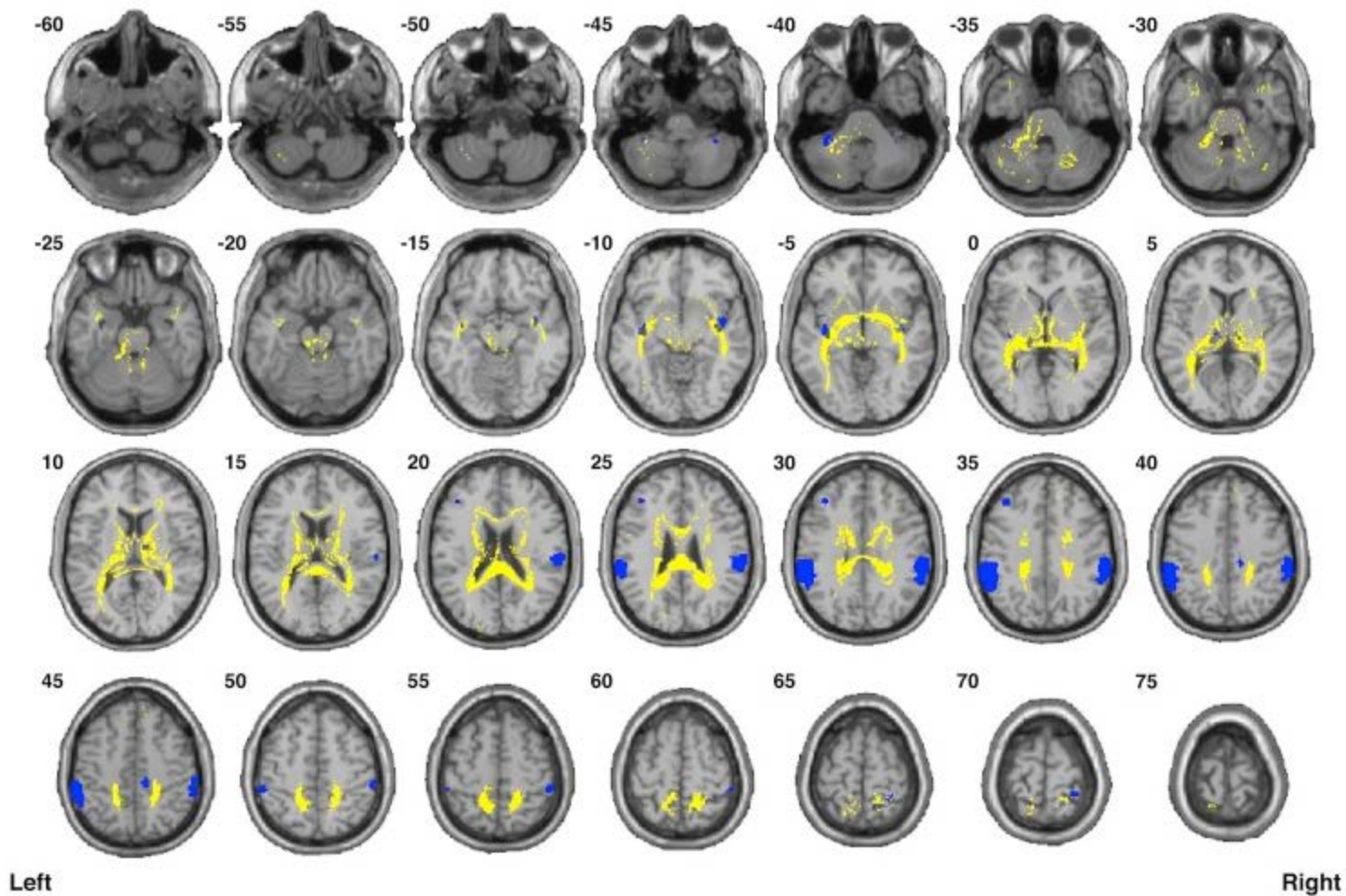
A Anterior Saliency Network (aSN)



Left

Right

B Posterior Saliency Network (pSN)



To you, silence is praise, O God in Zion: and unto You shall the vow be fulfilled. ~ [Psalm 65](#); Stone/ Artscroll Translation

One of the Hebrew words for silence, *dumiyya*, has the sense of not only silence, but also "quiet waiting" or "repose."

"The praises of infinite God can never be exhausted. Silence is his most eloquent praise, since elaboration must leave glaring omissions." (Rashi on Psalm 65)

4. Default and Salience Networks

DEFAULT NETWORK

- ▣ Activated when we don't attend to internal or external stimulus and instead allow our mind to go "free"
- ▣ Deactivated when we attend to an internal or external stimulus

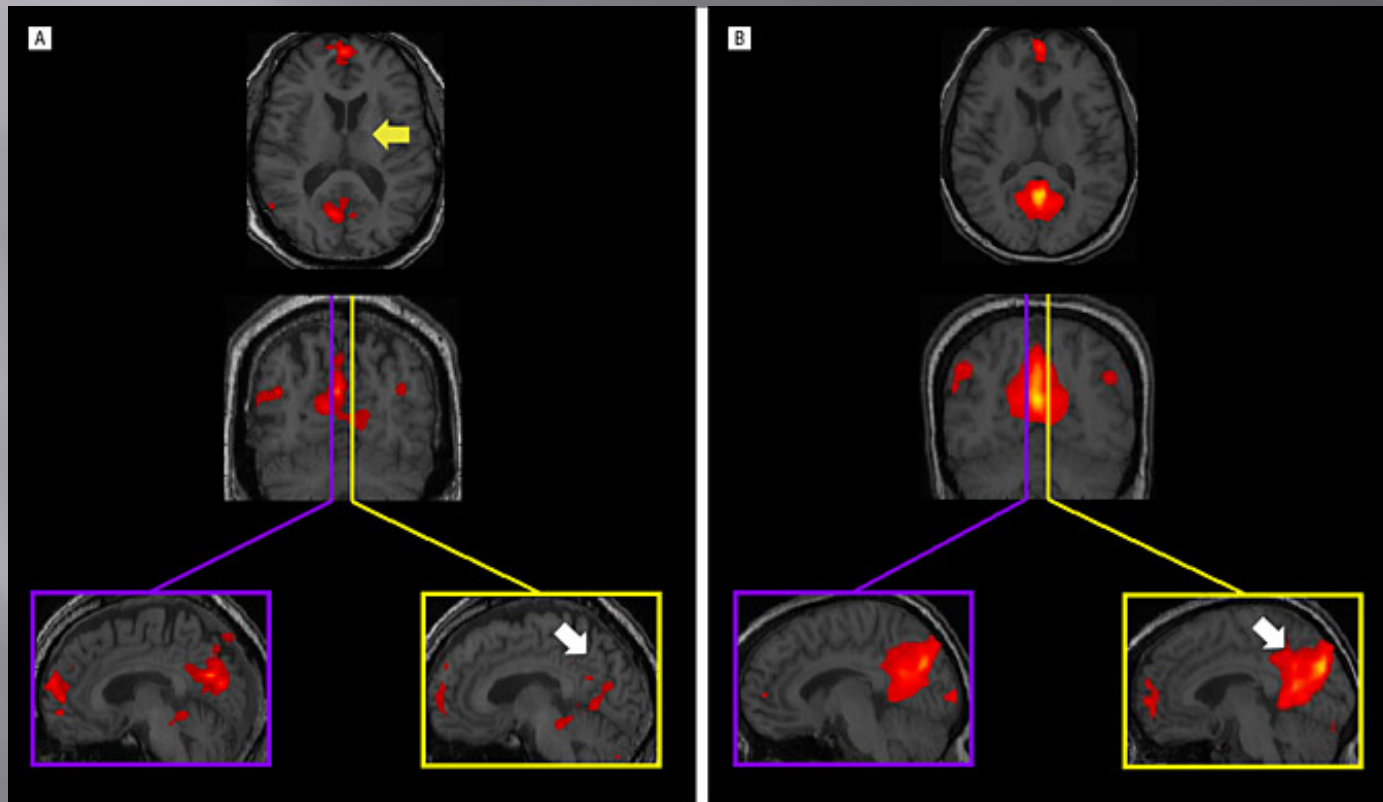
SALIENCE NETWORK

- ▣ Activated when we attend to an internal or external stimulus
- ▣ Deactivated when we do not attend to an external or internal stimulus

Default Mode Network

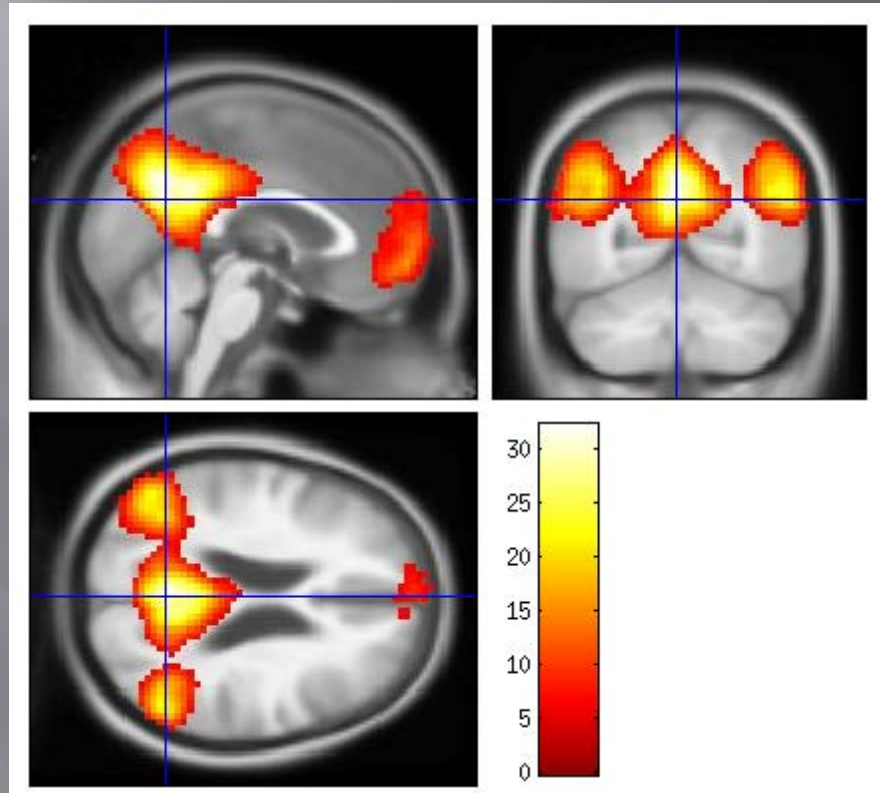
- ▣ more active during passive rest than during attention-demanding tasks.
- ▣ Interaction with the “self” rather than the external world
- ▣ active in self centered thought (planning about the future, seeing oneself in a particular situation)
- ▣ posterior cingulate cortex (PCC), medial prefrontal cortex, inferior parietal lobule, lateral temporal cortex, and hippocampal formation.

Resting-state functional magnetic resonance imaging analyzed with independent component analysis demonstrates the default mode network (DMN)



Jones, D. T. et al. Arch Neurol 2010;0:archneurol.2010.259v1-6.

Default Cognitive Network



Definitions

- ▣ Meditation
- ▣ Imagination
- ▣ The Brain

Meditation

- ❑ A distinctive state of consciousness achieved by the creation of a cognitive emptiness (or nothingness) that allows and invites a selective fullness.
- ❑ characterized by an enhancement in the range and scope of perception and selective receptivity
- ❑ accomplished by volitionally channeling all cognitive resources towards the volitionally accomplished state of mind which utilizes metacognition to direct cognitive resources to a specific task
- ❑ Focused attention, control of cognitive activities (metacognition)
- ❑ Enhanced Perception Depth and Range
- ❑ Creation of a cognitive emptiness that allows selective fullness

Metacognition

- ▣ A higher order cognitive entity that monitors and control “lower” cognitive processes
- ▣ Lower cognitive tasks include attention, concentration, thought, imagery,
- ▣ Metacognitive agent thinks about

Chapter Five

Mishnafi The Mishnah discusses the proper frame of mind with which the recitation of the Prayer should be approached:

אין עומדין להתפלל אלא מתוך כבוד ראש — One should not rise to pray the *Shemoneh Esrei* other than with an attitude of reverence. ^[1] **חסידים הראשונים היו שוהין שעה אחת ומתפללין — The early pious ones would tarry for one hour and then pray, כדי שיכוונו לבם לאביהם שבשמים — in order that they might direct their hearts to their Father in Heaven.** ^[2]

Additional laws regarding the *Shemoneh Esrei*:

אפילו המלך שואל בשלמו לא ישיבנו ואפילו נחש ברוך על עקבו לא יפסיק — and even if a snake is coiled about his heel, he should not interrupt. ^[3]

Gemara The Mishnah states that one should not rise to pray other than with an attitude of reverence. The Gemara asks:

מנא הני מילי — From where in Scripture is this law derived? ^[4]

The Gemara answers:

אמר רבי אלעזר — R' Elazar said: דאמר קרא — For Scripture

states: "והיא מרת נפש", — And she was bitter of spirit, and she prayed to Hashem. ^[5]

The Gemara challenges this source:

דילמא חנה שאני — From where do you know this? Perhaps Hannah is different, מרירא לבא טובא — for she was exceptionally bitter at heart. This does not prove that others are obligated to pray in a similar fashion. ^[6] — ? —

The Gemara offers an alternative source:

אלא אמר רבי יוסי ברבי חנינא מהכא — Rather, R' Yose the son of R' Chanina said: It is derived from here: ואני ברב חסדך, "אבוא ביתך אשתחוה אל-היכל-קדשך ביראתך", — As for me, through Your abundant kindness I will enter Your House, I will prostrate myself toward Your holy Sanctuary in awe of You. ^[7] Thus, we learn that prayer must be approached with an attitude of awe.

The Gemara challenges this source as well:

דילמא דוד שאני — From where do you know this? Perhaps David, the author of this verse, was different, דהוה נחש ברוך על עקבו — for he would torment himself exceedingly in beseeching mercy. ^[8] — ? —

The Gemara suggests an alternative source:

אלא אמר רבי יהושע בן לוי מהכא — Rather, R' Yehoshua ben Levi said: We derive it from here: "השתחוה לה' בהדרת-קדש", — Prostrate yourself before Hashem in holy splendor (*behadras kodesh*). ^[9] **אל תקרי בהדרת אלא בהדרת — Do not read *behadras* (in splendor), but rather *bechardas* (in**

30b

EIN OMDIN CHAPTER FIVE BERACHOS

Chapter Five

Misfnah The Mishnah discusses the proper frame of mind with which the recitation of the Prayer should be approached:

אין עומדין להתפלל אלא מתוך כבוד ראש — One should not rise to pray the *Shemoneh Esrei* other than with an attitude of reverence.^[1] חסידים הראשונים היו שוהין שעה אחת — The early pious ones would tarry for one hour and then pray, לבם לאביהם שבשמים — in order that they might direct their hearts to their Father

in Heaven.^[2]

Additional laws regarding the *Shemoneh Esrei*:

ואפילו נחש כרוף על עקבו לא — Even if the king inquires as to his welfare while he is engaged in *Shemoneh Esrei*, he should not answer him; ואפילו נחש כרוף על עקבו לא — and even if a snake is coiled about his heel, he should not interrupt.^[3]

Gemara The Mishnah states that one should not rise to pray other than with an attitude of reverence. The Gemara asks:



Notes



1. Literally: from amidst heaviness of head [in contrast to קלות ראש, lightheadedness ([Rashi below, 31a מתוך ד"ה](#)); cf. *Aruch*, [ה] ע' כבוד [ה], [Rabbeinu Chananel](#)].

2. Upon arriving at the place at which they intended to pray ([Rashi](#)), they would first pause for an hour to contemplate the loftiness of God as opposed to the puniness of man, and erase from their minds all thoughts of earthly pleasures (*Rabbeinu Yonah*, cited by *Rama to Orach Chaim* 98:1; cf. *Ritva*). Only then would they begin to pray. [Although the term שעה, an hour, is often used in the Talmud in a non-literal sense to imply a short period of time, *Rabbeinu Yonah* proves from the Gemara that here the intent is that the early pious ones would literally spend an entire hour in meditation before praying.]

The standard of pausing for an hour applies only to the early pious ones. For others, it is sufficient to pause for the amount of time it takes

to walk eight *tefachim* (see *Magen Avraham* 93:1 with *Levushei Serad*). [Nevertheless, the custom of the early pious ones is preserved somewhat in our Shacharis service. Between *Pesukei D'Zimrah*, which takes about half an hour, the blessings of *Shema*, and the *Shema* itself, almost an hour is spent in thoughtful meditation before the *Shemoneh Esrei* is begun (*Pri Megadim, Eishel Avraham* 93:1).]

The *Vilna Gaon* points out that the word ומתפללין, and pray, seems to be out of place, as it would appear to belong at the end of the sentence (היו שוהין שעה אחת כדי שיכוונו לבם לאביהם שבשמים ומתפללין), signifying that at the completion of the preparatory hour they would pray. He therefore explains that the phrase “and pray” actually refers to their activity during the preparatory hour itself. The Mishnah should thus be understood to mean that during the preparatory hour they prayed that during the *Shemoneh Esrei* they be able to direct their hearts to their



Split

Berachos 30b



30b EIN OMDIN CHAPTER FIVE BERACHOS

Chapter Five

Mishnah The Mishnah discusses the proper frame of mind with which the recitation of the Prayer should be approached:

אין עומדין להתפלל אלא מתוך כבוד ראש — One should not rise to pray the *Shemoneh Esrei* other than with an attitude of reverence. ^[1] חסידים הראשונים היו שוהין שעה אחת ^[1] ומתפללין — The early pious ones would tarry for one hour and then pray, לבם לאביהם שבשמים — in order that they might direct their hearts to their Father

in Heaven. ^[2]

Additional laws regarding the *Shemoneh Esrei*:

ואפילו המלך שואל בשלמו לא ישיבנו — Even if the king inquires as to his welfare while he is engaged in *Shemoneh Esrei*, he should not answer him; ואפילו נחש כרוך על עקבו לא יפסיק — and even if a snake is coiled about his heel, he should not interrupt. ^[3]

Gemara The Mishnah states that one should not rise to pray other than with an attitude of reverence. The Gemara asks:



Notes



1. Literally: from amidst heaviness of head [in contrast to קלות ראש, *lightheadedness* ([Rashi below, 31a](#) [ר"ה מתוך](#)); cf. *Aruch*, [ה] ע' כבד [ה]; [Rabbeinu Chananel](#)].

2. Upon arriving at the place at which they intended to pray ([Rashi](#)), they would first pause for an hour to contemplate the loftiness of God as opposed to the puniness of man, and erase from their minds all thoughts of earthly pleasures ([Rabbeinu Yonah](#), cited by *Rama* to *Orach Chaim* 98:1; cf. *Ritva*). Only then would they begin to pray. [Although the term שעה, *an hour*, is often used in the Talmud in a non-literal sense to imply a short period of time, [Rabbeinu Yonah](#) proves from the Gemara that here the intent is that the early pious ones would literally spend an entire hour in meditation before praying.]

The standard of pausing for an hour applies only to the early pious ones. For others, it is sufficient to pause for the amount of time it takes

to walk eight *tefachim* (see *Magen Avraham* 93:1 with *Levushei Serad*). [Nevertheless, the custom of the early pious ones is preserved somewhat in our Shacharis service. Between *Pesukei D'Zimrah*, which takes about half an hour, the blessings of *Shema*, and the *Shema* itself, almost an hour is spent in thoughtful meditation before the *Shemoneh Esrei* is begun (*Pri Megadim*, *Eishel Avraham* 93:1).]

The *Vilna Gaon* points out that the word ומתפללין, *and pray*, seems to be out of place, as it would appear to belong at the end of the sentence (היו שוהין שעה אחת כדי שיכוונו לבם לאביהם שבשמים ומתפללין), signifying that at the completion of the preparatory hour they would pray. He therefore explains that the phrase “and pray” actually refers to their activity during the preparatory hour itself. The Mishnah should thus be understood to mean that during the preparatory hour they prayed that during the *Shemoneh Esrei* they be able to direct their hearts to their

