PSYC 2530: Implicit influences

and the mere exposure effect

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Last compiled 03/29/22

Reminders from last class

There are no textbook chapter readings for this learning module.

All readings are pdfs available on blackboard.

This is the last learning module before midterm 2.

Roadmap

1 Implicit vs Explicit

2 Mere exposure effect

3 Testing Explanations

Implicit vs. Explicit Cognition

Cognitive psychology often distinguishes between implicit and explicit processes.

Implicit vs. Explicit Cognition

Here are some features commonly used to distinguish implicit from explicit processes

Implicit Processes

- Unaware
- Automatic
- fast, effortless

Explicit Processes

- Aware
- Controlled
- slow, effortful
- Strategic, rule-based

How is the distinction used?

- The implicit/explicit distinction is used to help describe and classify particular cognitive abilities.
- Claims about implicit vs. explicit processing are often debated.
- Researchers gather evidence to determine whether a particular cognitive phenomena/ability reflects implicit or explicit processing.

Implicit or explicit?

Consider whether this situation requires implicit or explicit processes?

> *A person listens to a song and says they like it.*

Could be implicit

- automatically get a gut feeling about the song
- didn't have to "think about it"
- can't explain why they like it

Could be explicit

- person could have deliberately analyzed the song
- can provide reasons they like it
- their preference is based on their reasons

Implicit or explicit?

Consider whether this situation requires implicit or explicit processes?

> *A person makes the next move in a chess match*

Could be implicit

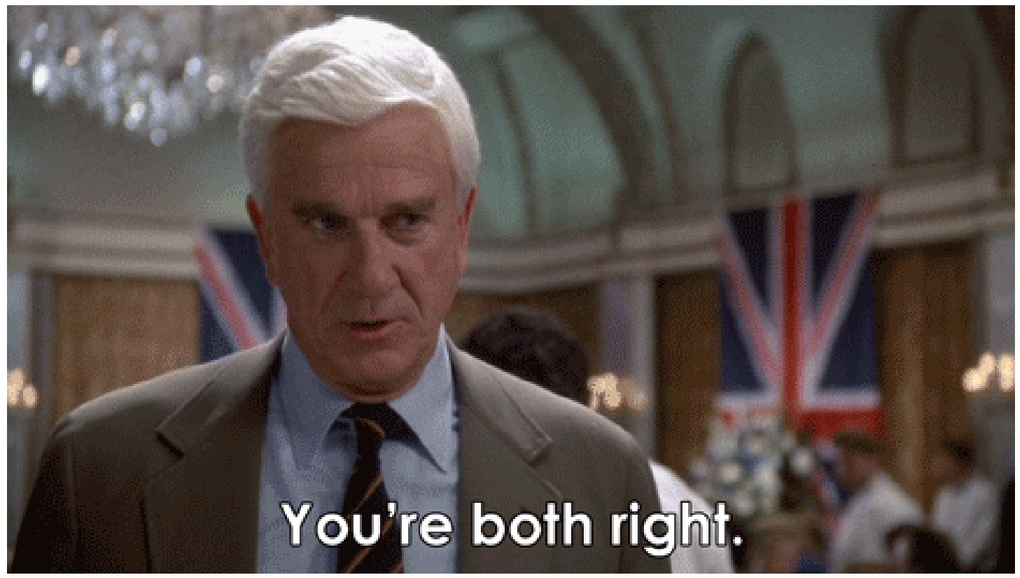
- could be an expert
- lots of practice
- made the move without even thinking about it

Could be explicit

- person could have deliberated
- thought about the future moves
- made the move based on explicit reasoning process

Implicit and Explicit processes

Complex cognitive behavior/abilities can be a mixture of implicit and explicit processes



Implicit influences

This module will focus on the mere exposure effect as an example of an implicit influence in cognition.

There are many others, here is a short list:

- Implicit learning
- Artificial grammar learning
- False memory
- implicit attitudes
- implicit memory

Roadmap

1 Implicit vs Explicit

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3 Testing Explanations

Mere exposure effect

Repeated exposure to a stimulus enhances positive attitude toward the stimulus

- The more you see something, the more you will like it
- Familiarity breeds….liking

Journal of Personality and Social Psychology Monograph Supplement

Volume 9, No. 2, Part 2 June 1968

ATTITUDINAL EFFECTS OF MERE EXPOSURE [1]

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The hypothesis is offered that mere repeated exposure of the individual to a stimulus object enhances his attitude toward it. By "mere" exposure is meant a condition making the stimulus accessible to the individual's perception. Support for the hypothesis consists of 4 types of evidence, presented and reviewed: (a) the correlation between affective connotation of words and word frequency; (b) the effect of experimentally manipulated frequency of exposure upon the affective connotation of nonsense words and symbols; (c) the correlation between word frequency and the attitude to their referents; (d) the effects of experimentally manipulated frequency of exposure on attitude. The relevance for the exposure-attitude hypothesis of the exploration theory and of the semantic satiation findings were examined.

What is the evidence for the mere-exposure effect?

Preference of words depends on their frequencies

- Subjects shown antonym pairs
- Asked to choose more favorable word
- Choices were influenced by word-frequency

% agreement	Preferred alternative (*a*)	Nonpreferred alternative (*b*)	Frequency of (*a*)	Frequency of (*b*)
100	able	unable	930	239
100	attentive	inattentive	49	4
100	better	worse	2354	450
100	encourage	discourage	205	147
100	friendly	unfriendly	357	19
100	honest	dishonest	393	41
100	possible	impossible	1289	459
99	advance	retreat	452	105
99	best	worst	1850	292
99	clean	dirty	781	221
99	comfortable	uncomfortable	348	112
99	favorable	unfavorable	93	25
99	good	bad	5122	1001
99	grateful	ungrateful	194	13
99	peace	war	472	1118
99	present	absent	1075	65
99	pure	impure	197	4
99	responsible	irresponsible	267	30
99	reward	punishment	154	80
99	right	wrong	3874	890
99	smile	frown	2143	216
99	tolerant	intolerant	42	13
99	victory	defeat	118	166
98	add	subtract	2018	6
98	advantage	disadvantage	404	41
98	agreeable	disagreeable	58	43
98	capable	incapable	176	30
98	desirable	undesirable	160	42
98	find	lose	2698	593
98	fortunate	unfortunate	136	108
98	forward	backward	736	139
98	friend	enemy	2553	883
98	high	low	1674	1224
98	honorable	dishonorable	58	8
98	kind	unkind	1521	34
98	legal	illegal	180	34
98	life	death	4804	815
98	love	hate	5129	756
98	mature	immature	91	17
98	moral	immoral	272	19
98	pleasant	unpleasant	457	114

Favorability ratings depend on word frequency

- Anderson (1964) showed people adjectives
- Rate “how much would you would like the person described by this word?”

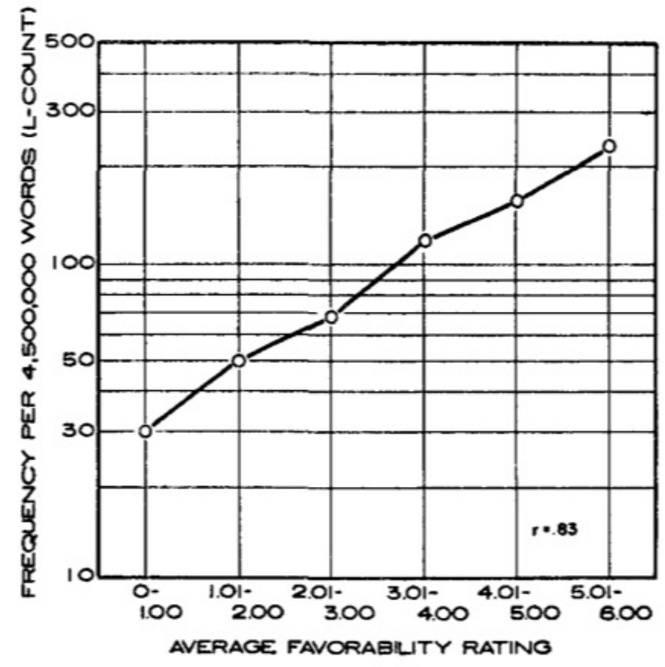

FIG. 1. Average frequencies of 555 adjectives rated for favorability. (Based on data from Anderson, 1964.)

Ratings were influenced by word frequency (how often words appear in the language)

Preference ratings and frequency

TABLE 5

PREFERENCE RANKS AND FREQUENCY COUNTS FOR 10 COUNTRIES AND 10 CITIES

Countries			Cities		
Country	Frequency	Average preference rank	City	Frequency	Average preference rank
England	497	2.67	Boston	255	2.75
Canada	130	3.33	Chicago	621	3.08
Holland	59	3.42	Milwaukee	124	3.83
Greece	31	4.00	San Diego	9	4.25
Germany	224	4.92	Dayton	14	5.75
Argentina	15	6.08	Baltimore	68	6.08
Venezuela	9	6.58	Omaha	28	7.08
Bulgaria	3	7.75	Tampa	5	7.08
Honduras	1	7.92	El Paso	1	7.50
Syria	4	8.34	Saginaw	2	7.58

Preference ratings and frequency

TABLE 6

PREFERENCE RATINGS OF TREES, FRUITS, VEGETABLES, AND FLOWERS, AND THEIR CORRESPONDING FREQUENCIES

Trees	f	APR	Fruits	f	APR	Vegetables	f	APR	Flowers	f	APR
pine	172	4.79	apple	220	5.13	corn	227	4.17	rose	801	5.55
walnut	75	4.42	cherry	167	5.00	potato	384	4.13	lily	164	4.79
oak	125	4.00	strawberry	121	4.83	lettuce	142	4.00	violet	109	4.58
rosewood	8	3.96	pear	62	4.38	carrot	96	3.57	geranium	27	3.83
birch	34	3.83	grapefruit	33	4.00	radish	43	3.13	daisy	62	3.79
fir	14	3.75	cantaloupe	1.5	3.75	asparagus	5	2.33	hyacinth	16	3.08
sassafras	2	3.00	avocado	16	2.71	cauliflower	27	1.96	yucca	1	2.88
aloes	1	2.92	pomegranate	8	2.63	broccoli	18	1.96	woodbine	4	2.87
yew	3	2.83	gooseberry	5	2.63	leek	3	1.96	anemone	8	2.54
acacia	4	2.75	mango	2	2.38	parsnip	8	1.92	cowslip	2	2.54

Note.—f = frequency of usage; APR = average preference rating.

Experimental Evidence

- Johnson, Thomson, & Frincke (1960)
- **phase 1**: participants rate pleasantness of nonsense words
- **phase 2**: pronounce nonwords 1, 2, 5, or 10 times
- **phase 3**: Re-rate pleasantness of nonsense words

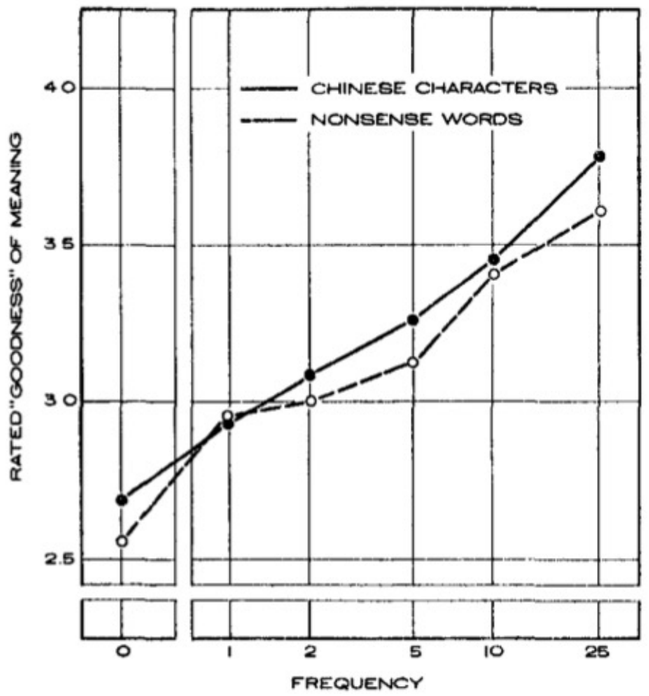

FIG. 2. Average rated affective connotation of nonsense words and Chinese-like characters as a function of frequency of exposure.

- scroll down for additional results

more results

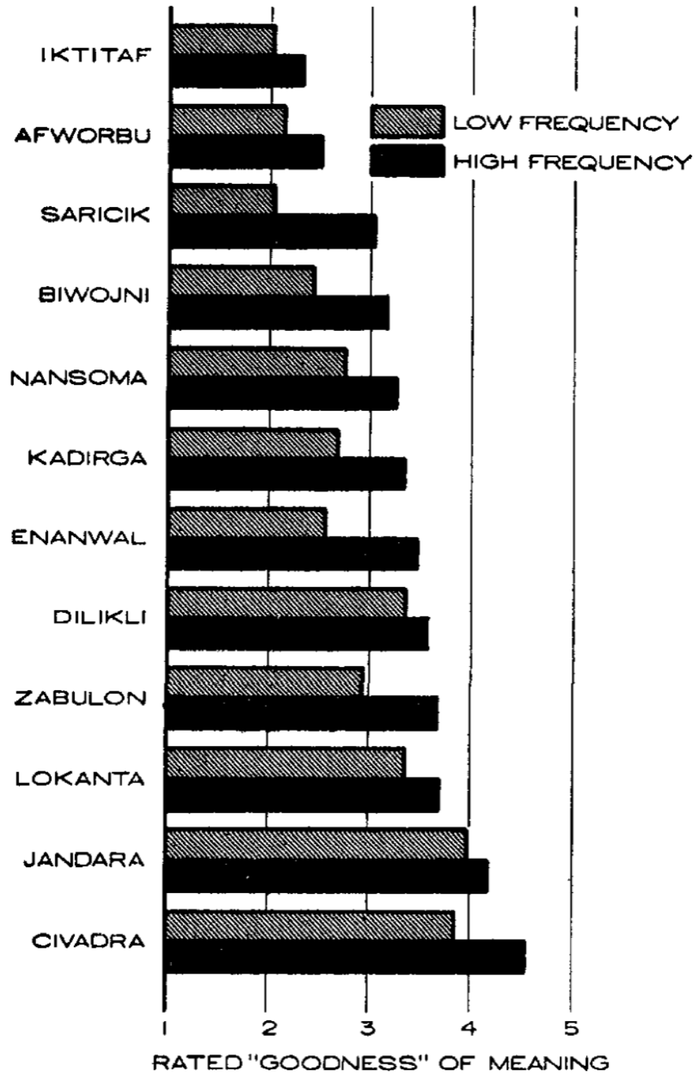

FIG. 3. Average rated affective connotation of nonsense words exposed with low and high frequencies.

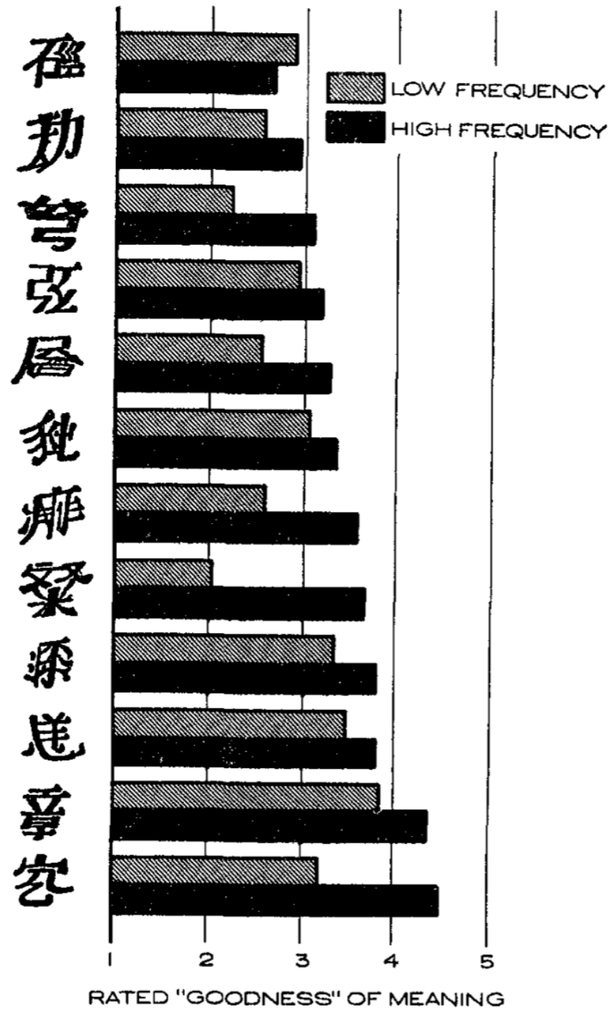

FIG. 4. Average rated affective connotation of Chinese-like characters exposed with low and high frequencies.

Mere exposure and pictures

Mere exposure and pictures

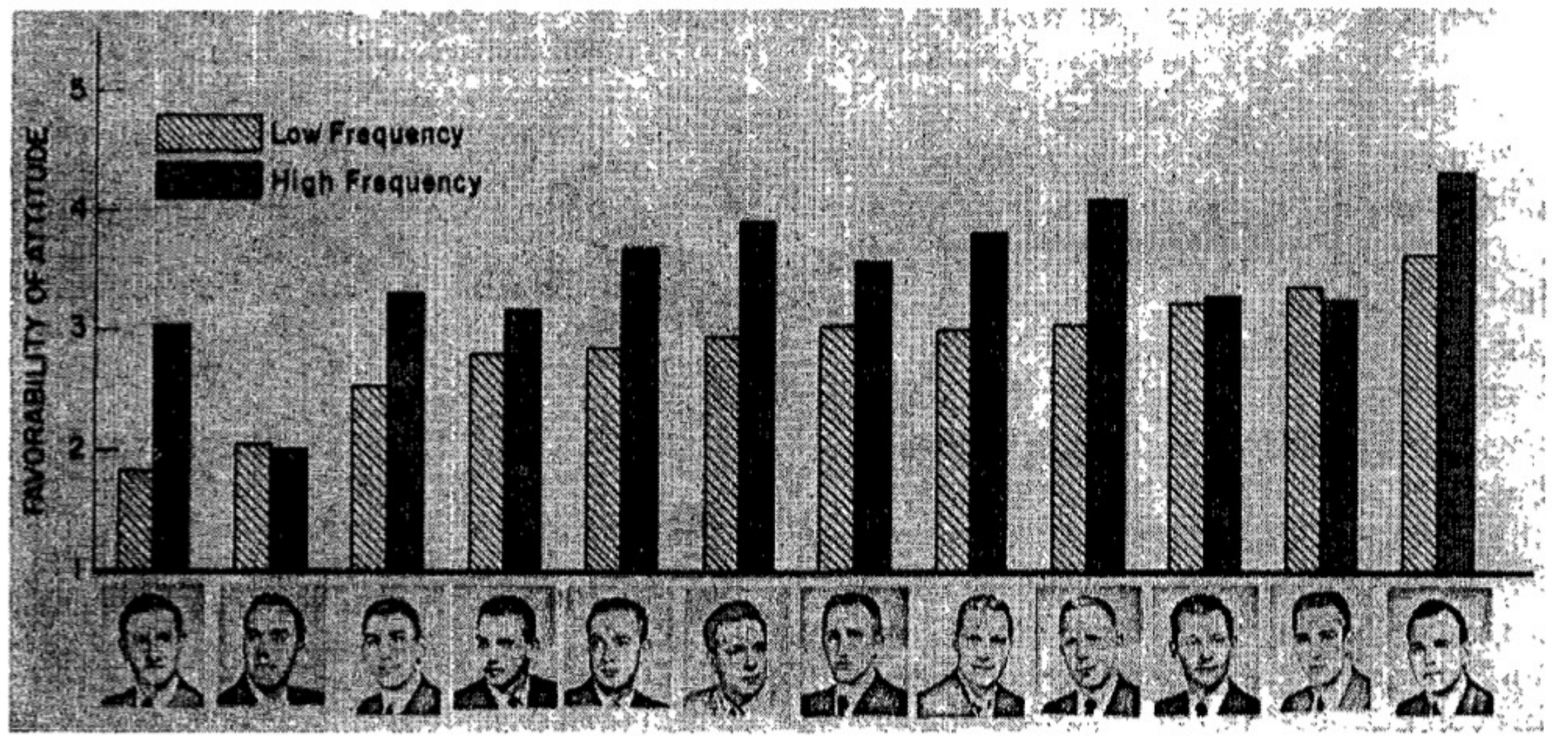

FIG. 6. Average attitude toward photographs exposed with low and high frequencies.

Preference without recognition

Affective Discrimination of Stimuli That Cannot Be Recognized

Abstract. *Animal and human subjects readily develop strong preferences for objects that have become familiar through repeated exposures. Experimental evidence is presented that these preferences can develop even when the exposures are so degraded that recognition is precluded.*

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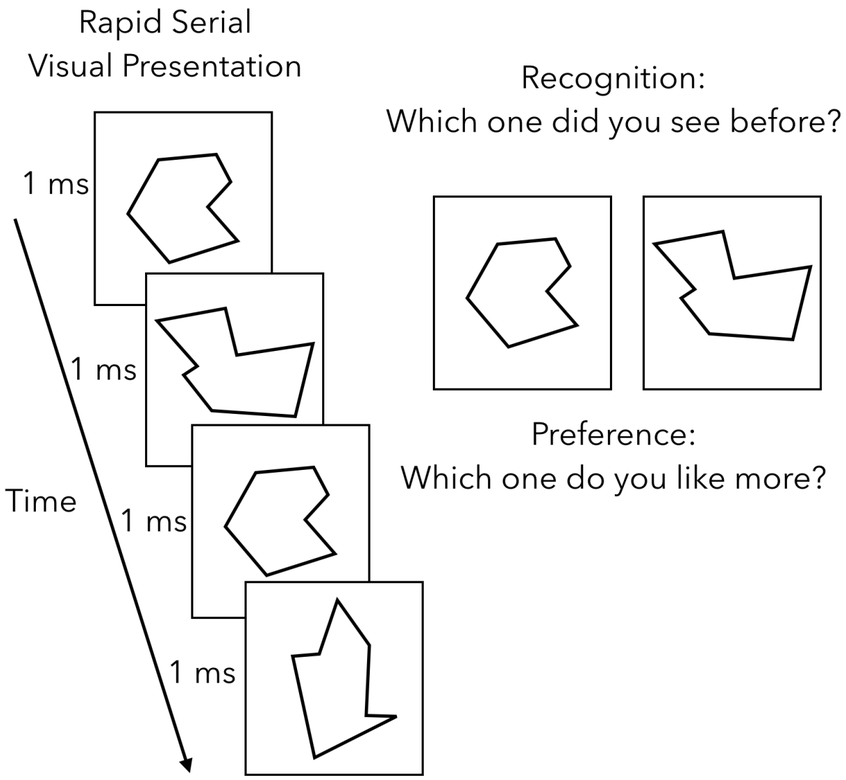
SCIENCE, VOL. 207, 1 FEBRUARY 1980

Questions

- Can the mere-exposure effect occur even for “subliminal” stimuli?
- If people can’t recognize the repeated stimuli, will they still show a preference for them?

Method

- **Phase 1**: Participants viewed a RSVP sequence geometric shapes
- **Phase 2**:
- *Recognition test*: Which stimulus was shown before?
- *Preference test*: Which stimulus do you prefer?



Results

- Recognition performance is at chance
- People prefer the repeated item above chance

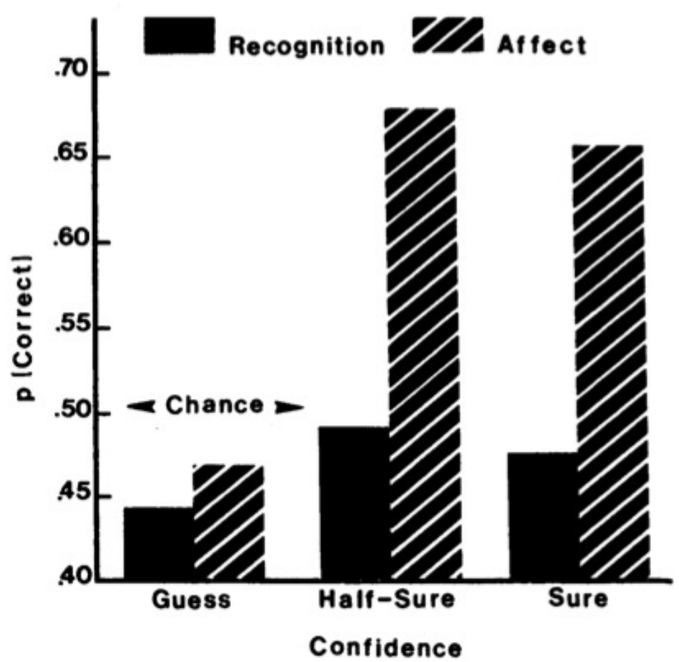


Fig. 1. Proportion of correct recognition and affective discriminations for first judgments in each category.

Timecourse of mere-exposure

Journal of Experimental Psychology:
Learning, Memory, and Cognition
1984, Vol. 10, No. 3, 465-469

Critical Importance of Exposure Duration for Affective Discrimination of Stimuli That Are Not Recognized

John G. Seamon, Richard L. Marsh, and Nathan Brody
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Previous research has found that repeated exposure to briefly presented visual stimuli can increase the positive affect for the stimuli without enhancing their recognition. Subjects could discriminate target and distractor shapes by affective preference in the absence of recognition memory. This study examined this phenomenon as a function of stimulus exposure duration. Over exposure durations of 0, 2, 8, 12, 24, and 48 ms, the functions for affect and recognition judgments exhibited different temporal dynamics. Target selection by affect was possible at very brief exposures and was influenced little by increasing durations; target selection by recognition required longer stimulus exposures and improved with increasing durations. Affective discrimination of stimuli that are not recognized is a reliable phenomenon, but it occurs only within a narrow band of time. This parametric study has specified the relationship between exposure duration and affect and recognition judgments and has located that temporal window.

Results

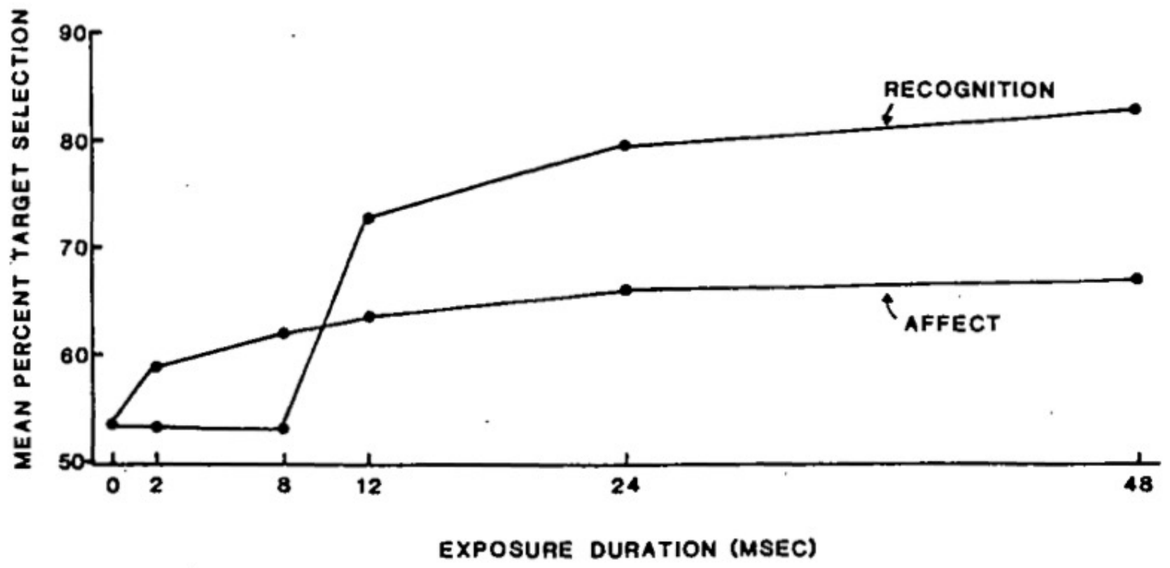

Figure 1. Mean target selection performance for affect and recognition judgments as a function of stimulus exposure duration during study. (Chance performance is 50%. No study stimuli were shown during the 0-ms control condition that yielded performance scores of 47.5%, affect, and 46.6%, recognition, in a comparable condition of an earlier study, Seamon et al., 1983a.)

Explanations?

- We have reviewed some evidence that the mere-exposure effect occurs
- What does this tell us about cognition?
- What cognitive processes give rise to the mere-exposure effect?

Roadmap

1 Implicit vs Explicit

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Explanations?

- We have reviewed some evidence that the mere-exposure effect occurs
- What does this tell us about cognition?
- What cognitive processes give rise to the mere-exposure effect?

Processing debates

Researchers have proposed multiple theories to explain the mere-exposure effect

- We will evaluate some of them
- They are all tentative working hypotheses
- Ideally, the theory should be clear enough to make predictions that can be evaluated and measured.

Zajonc's two system account

- Proposes two memory systems: regular and emotional
- Argues against the cognitive stage model (on right)
- The "emotion memory" system is very fast, and quickly extracts emotional information

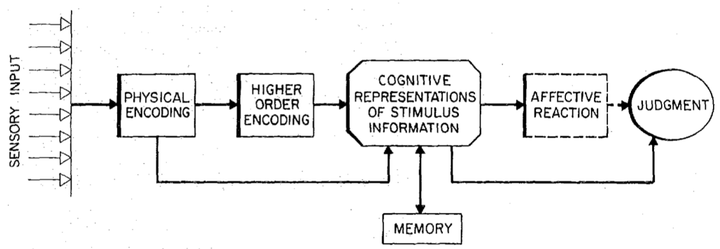

Figure 1. Typical information-processing model of affect.

According to the prevalent models for affect (e.g., Figure 1), preferences are formed and expressed only after and only as a result of considerable prior cognitive activity. How fully and completely must objects be cognized before they can be evaluated? I argue, along with Wundt and Cummings, that to arouse affect, objects need to be cognized very little—*in* fact, minimally.

Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. American psychologist, 35(2), 151. Chicago

Explaining results

- How does Zajonc's two-system idea explain the pattern of results showing chance recognition performance, but above change preference for briefly presented shapes?

Familiarity vs. recollection

A different two-system account.

- Mere-exposure might reflect familiarity-based processing

Familiarity-based

- Relies on implicit knowledge
- Gut-feelings
- Feelings of fluency

Recollection-based

- Relies on explicit memories
- People can declare, the who, what, when, and where of memories

Fluency heuristic

- Some cognitive operations are experienced as easier or more fluent than others
- People's feeling of familiarity can be influence by processing fluency
- E.g., you might think you saw a word before because it is easy to read, and not because you saw it before

Is preference just familiarity?

Preference, familiarity, and recognition after repeated brief exposures to random geometric shapes

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AMERICAN JOURNAL OF PSYCHOLOGY
Fall 1986, Vol. 99, No. 3, pp. 403–415

Preference, Familiarity, and Recognition

- Method: People were shown geometric shapes very rapidly (just like previous study)
- Preference task: Which shape do you prefer?
- Recognition task: Which shape did you see before?
- Familiarity: Which shape feels more familiar?

Results

Table 1. Mean percentage correct as a function of test condition and test context in Experiment 1

	Test context	
Test condition	White	Color
Preference	66.0***	63.0**
Familiarity	63.0***	63.0**
Recognition	45.0	62.0*

Note. Maximum number correct in each cell = 5. Chance performance = 50%.

* Accuracy > 50%, $p < .025$. ** $p < .01$. *** $p < .005$.

Inference

- Stimuli are presented too briefly to support recollection
- Repeated items are “easier” to process
- The processing fluency associated with the repeated items is mistaken for a feeling of familiarity
- People have limited familiarity-based access to the briefly presented information

A Puzzle?

- Why don't people use their feeling of familiarity when they are asked to recognize which item they saw?

Memory & Cognition
2001, 29 (2), 234-246

Implicit/explicit memory versus analytic/nonanalytic processing: Rethinking the mere exposure effect

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In studies of the mere exposure effect, rapid presentation of items can increase liking without accurate recognition. The effect on liking has been explained as a misattribution of fluency caused by prior presentation. However, fluency is also a source of feelings of familiarity. It is, therefore, surprising that prior experience can enhance liking without also causing familiarity-based recognition. We suggest that when study opportunities are minimal and test items are perceptually similar, people adopt an analytic approach, attempting to recognize distinctive features. That strategy fails because rapid presentation prevents effective encoding of such features; it also prevents people from experiencing fluency and a consequent feeling of familiarity. We suggest that the liking-without-recognition effect results from using an effective (nonanalytic) strategy in judging pleasantness, but an ineffective (analytic) strategy in recognition. Explanations of the mere exposure effect based on a distinction between implicit and explicit memory are unnecessary.

Quote 1

We agree with much of the fluency-attribution account of the mere exposure effect offered by Seamon et al. (1983a) and Bornstein and D'Agostino (1992). However, that account leaves unanswered one very important question. As was indicated earlier, various investigators have observed that rapid exposure can increase liking judgments without producing accurate recognition. Given that people can use the enhanced fluency of processing caused by a prior experience with a stimulus to judge the stimulus likable, why do they not use that same enhanced fluency to judge the item old? They must be sensitive to that fluency, to use it in the liking decision, and the feeling of familiarity is based on the perception of fluency. Why do people not experience a feeling of familiarity for a stimulus and claim it to be old, when it is processed fluently enough to sponsor a feeling of liking?

Quote 2

We suggest that, because the stimuli in mere exposure studies are initially unfamiliar and bear perceptual family resemblance, people are motivated to process items analytically for recognition judgments, but nonanalytically for preference judgments. We suggest that the adoption of an analytic policy for recognition prevents the subjects from experiencing the fluency of processing the item as a whole and, hence, prevents them from experiencing a feeling of familiarity. We also suggest that the analytic strategy is inappropriate for the demands of this recognition task, resulting in poor performance on that basis as well. We therefore suggest that the finding that people claim to like old stimuli without recognizing them results from the procedures employed to study the effect, not because liking and recognition judgments rely on different forms of memory.[5]

Experiment 1

EXPERIMENT 1
Homogeneous Categories

We conducted two experiments to test the analytic/nonanalytic hypothesis. In Experiment 1, all the items presented within a test were taken from the same category. Consequently, they possessed a fairly strong family resemblance, which (as was discussed earlier) is usual in studies of the mere exposure effect. Across the conditions of this experiment, we required the subjects to perform either recognition or preference judgments; we also varied the incentive to perform those judgments analytically or nonanalytically.

Table 1
Probabilities of Selecting Old items in a Forced-Choice Test With Homogeneous Categories in Experiment 1

	Number of Training Presentations			
Experiment	One	Three	Five	*M*
1A: Spontaneous preference	.52	.56	.57	.55
1B: Spontaneous recognition	.53	.54	.53	.53
1C: "Global similarity"	.56	.59	.62	.59
1D: "Global similarity" with justification	.52	.52	.51	.52
1E: Preference with justification	.51	.52	.52	.52

Inferences

- Analytic mode can cause people to change how they use and evaluate sources of fluency
- Recognition task demands can prompt people to go into “analytic mode”, and search for “evidence” they saw the stimulus
- Preference judgment tasks encourage people to use “non-analytic mode” and rely on general feelings

- Mere-exposure effects do not require different kinds of memory systems
- Results reflect how task demands encourage people to rely on different sources of evidence while making decisions

What's next

Take the quiz and complete any additional assignments

Next week is midterm 2