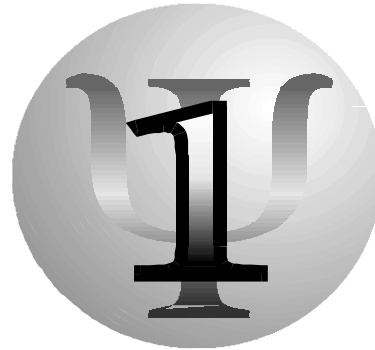


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Inside

Another opportunity to comment on the passing of time and what is uppermost. Another half year is upon us. Have you ever noticed how frequently dental appointments occur these days? At any rate we have had an election and the results are in. Bruce Overmeir has been chosen as our next President-Elect while Susan Mineka and Bonnie Strickland were elected to become Members-at-Large of the Executive Committee. Welcome to all. This is the Convention Issue so-called with the Society's upcoming Convention program available as a tearout on the last page of this issue. In addition we have a message from current Society President Lyle Bourne. Also don't forget to sign up for the Society's listserv (see page 45). See you at the Convention and Business Meeting.

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HOW DOES THE BRAIN COMPUTE AESTHETIC PREFERENCE?

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A connectionist or neural-network theory of beauty and aesthetic preference is presented. It is not possible to specify a list of features shared by all things that are considered to be beautiful. However, I argue, such things induce similar patterns of activation in the brain. Something is considered to be beautiful to the extent that activation is maximized and inhibition of activated nodes is minimized. This simple postulate can account for a variety of seemingly unrelated aesthetic effects. This is demonstrated for a sample of 60 such effects. Given that successful cognition can be explained by the same postulate, the laws of cognition and the laws of aesthetics are isomorphic. Examples showing this are given. The act of creation, a case of extremely successful cognition, is thus isomorphic with the perception of something of great beauty.

Baumgarten (1750) coined the term 'aesthetics'. He argued that aesthetics is the "science of sensory cognition." Good sensory cognition leads to a sense of beauty, whereas imperfect sensory cognition leads to a feeling of ugliness or deformity. Subsequent usage of the term aesthetics has deviated from the way Baumgarten used it. It should not have, as Baumgarten was closer to the truth than many later aesthetic theorists. It turns out that the laws of aesthetics and of cognition are largely isomorphic. Fechner (1876) guessed this might be the case. In founding psychological aesthetics, he set forth a number of principles. He was explicit that most are principles of general psychology rather than of aesthetics per se.

Cognition and neural networks

Cognitive theorists have increasingly turned toward a brain metaphor: the mind works like the brain. Because cognition occurs in the brain, this is certainly reasonable. Connectionist or neural-network theories all postulate nodes and connections amongst these nodes. Nodes work like neurons but are simpler, and connections work like axons and dendrites but are again simpler. The reason for this simplification is that we do not know enough about the brain to attempt a neuron-by-neuron explanation of cognition.

To build a neural network, we need several components (Rumelhart, Hinton & McClelland, 1986):

1. A set of nodes. These are similar to neurons but not as complicated. In localist models, nodes represent something, such as a one's grandmother. In distributed models,

nodes represent basic features. There is no grandmother node; rather one's grandmother is represented by the nodes coding her features. Distributed models often yield better results but very quickly get very complicated. I have used localist terminology for purposes of clarity.

2. A state of activation. If some nodes are activated enough, we are conscious of whatever they code. (Many nodes, such as those controlling motor behavior, operate outside the realm of consciousness.) The one or two most activated nodes correspond to whatever is in the focus of attention. Less activated nodes are in the fringe of awareness. Nodes differ in strength—that is, how strongly activated they can become (Martindale, 1981, 1991).

3. A pattern of connections among the nodes. These connections can be either excitatory or inhibitory. They comprise our long-term memory and the largely innate connections involved in sensation and perception.

4. Input and output rules concerning how a node adds up its inputs and how outputs relate to inputs and current activation. The best rule is that activation of a node is a sigmoidal function of its inputs. For example, as excitatory input increases, activation of a node increases in a sigmoidal fashion that reaches an asymptotic level. This is the way neurons work.

5. Learning rules. A variety of learning rules have been proposed. Many are variants of Hebb's (1949) idea that if two nodes are simultaneously activated, the strength of the positive connection between them is increased. This is too simple. At the very least, we have to add a rule that the strength of the inhibitory connection between two nodes is increased if one is activated and the other is inhibited.

6. An environment for the network. I have argued that the network should be partitioned into modules devoted to quite specific tasks (Martindale, 1981, 1991). The brain involves extreme division of labor. For example, perception of a colored moving form involves activation of neurons in quite discrete areas devoted to location, form, color, and motion (Treisman, 1992). We need to postulate a number of sensory and perceptual modules. We also need modules for semantic memory, episodic memory, and an action module that initiates response to a stimulus. I have also argued that each module is organized into several layers, with vertical connections being excitatory and lateral inhibition operating on each layer. Vertical connections are usually bidirectional as are lateral inhibitory connections, with amount of inhibition being proportional to distance between nodes. This is the way the brain

is organized. On any layer of a module I argue that nodes are arranged in terms of similarity. The more similar two things are, the closer the nodes coding them are. Such an arrangement allows us to explain a variety of cognitive phenomena.

Neural network theories ultimately have one explanation for everything: how activated the nodes involved in a phenomenon are. Why do we perceive something? Because a stimulus activated the relevant nodes. Why are we attending to this rather than that? Because the nodes coding this are more activated than the nodes coding that. Why do we remember something? Because the nodes coding it are sufficiently activated. Why do we forget something? Because the nodes coding the to-be-remembered item are not activated enough. Desirable cognitive outcomes are explained in terms of maximizing activation and minimizing inhibition. Undesirable outcomes such as forgetting or being confused are attributed to too much inhibition and not enough activation.

We can explain beauty and aesthetic pleasure in the same way (Martindale, 1984a, 1988): These phenomena result when activation is maximized and inhibition of activated nodes is minimized. On any layer of a module, lateral inhibition normalizes or keeps activation relatively constant. Given this, the crucial factor is often how the activated nodes are distributed on each layer. The laws of cognition and of aesthetic pleasure are isomorphic. We could repeat virtually any experiment in cognitive psychology for which it were reasonable to ask for preference judgments and get a pattern of results similar to that obtained by looking at, for example, reaction times. A corollary is that perception and cognition are, if successful, pleasurable or self-reinforcing. This is not surprising. Were they not self-reinforcing, we would not bother to think or perceive. It has proved impossible to come up with a list of objective features shared by beautiful objects. Beauty is not in the eye of the beholder, but in the brain of the beholder. According to the theory, stimuli will be judged as beautiful to the degree that they elicit similar states in the brain. Below, I enumerate a sample of 60 aesthetic effects for which the theory can account.

Aesthetic Effects

Simple Strength Effects

We find a number of cases in which preference for simple stimuli can be related to activation of nodes or neurons in a monotonic fashion.

1. Saturation of colors holding hue and lightness constant: Preference is related to color saturation in a positive monotonic fashion. This is easily explained if we make the plausible assumption that node strength is a positive function of saturation. Given that the output of a node is a sigmoidal function of its input, we should expect preference to be a sigmoidal function of saturation. Unpublished research from my laboratory shows this to be the case. Though they did not specifically remark upon it, sigmoidal relations between preference and saturation were found by Guilford (1939) and Martindale and Moore (1988).

2. Lightness of colors holding constant hue and saturation: Lightness is related to preference in a positive monotonic fashion (Guilford, 1939).

3. Hue preference: There is a fairly universal order of hue preference (Eysenck, 1941). Most people like blue or red best, than green, than orange. Yellow is most peoples' least favorite color. If we consider spectral colors, this makes preference a U-shaped function of hue. However, hues differ in their maximal saturation. Maximal saturation is also a U-shaped function of hue. If we plot hue preference as a function of saturation, we obtain a positive monotonic function.

4. Color typicality: The more typical of its hue a color is judged to be, the more it is liked (Martindale & Moore, 1988). However, typicality is almost perfectly correlated with saturation, so we can explain the typicality effect in terms of saturation.

5. Word frequency: Zajonc (1968) showed that there is a positive relationship between the frequency with which a word occurs and preference for the thing denoted by the word. There is a variety of experimental evidence that can best be explained by postulating that more frequent words are coded by stronger nodes with lower thresholds than are less frequent words.

Strength Effects Involving Distribution of Activation

A variety of aesthetic effects involve maximizing activation and minimizing inhibition of activated nodes by maximizing the distance among activated nodes.

6. Musical notes: A pure tone consists of sinusoidal vibrations at a single frequency. Pure tones induce a neutral reaction or slight displeasure because they do not produce enough activation. At the other end of the spectrum, white noise is composed of all possible frequencies. Because of this, it produces a lot of activation but also a lot of lateral inhibition. It thus results in displeasure. Musical notes consist of combinations of sine waves such that the upper partials (harmonics) are integer multiples of the fundamental frequency (Helmholtz, 1877). The first several upper partials of middle C are C', G', C'', E'', G'', etc. Note that these upper partials are all members of the C-major scale. The upper partials of C include the entire C-major scale, but the higher ones produce little activation. Consider a one dimensional array of nodes with each node representing a musical note and arrangement being the same as that found on a piano. Playing the note C activates not only the node for C but also the nodes for all the upper partials. Thus, activation is greater than for a pure tone, but the activated nodes are distant enough from one another to produce minimal lateral inhibition. The connections among nodes that are simultaneously activated are strengthened. Because we want to avoid positive connections among nodes on the same layer, we would want to postulate a higher level node that is activated by the fundamental and its upper partials. We could call such a chunking node the superordinate for middle C.

7. Musical consonance: Consider the chord C-E-G. The nodes coding E and G are partially activated by C. Specifically, C activates the nodes coding G' and E''. Via their

respective superordinate nodes, these nodes activate the nodes coding G and E. When actually played along with C, these nodes are thus more activated than if played alone. There is also enhanced activation of nodes coding other upper partials shared by C, E, and G.

8. Musical dissonance: Dissonance is produced by notes that are close to each other in frequency. Because of how we arranged the network, C and C# or B will be maximally displeasing because in this case we are maximizing rather than minimizing lateral inhibition.

9. The missing fundamental. Suppose that we remove the fundamental from a musical note. Common sense would lead us to expect us to hear a note an octave higher—for example, not C but C'. In fact, we hear C. This is easy to explain. The upper partials activate the superordinate middle-C node referred to above, and it activates the node coding the missing fundamental.

10. Color harmony of the first type: If people are asked which colors are most pleasing in combination, they choose two types of combinations. One type consists of colors that are opposite on the color circle (Granger, 1955). For example, they choose red and green. Let us take a slice of the color solid and represent it by neurons on a layer of cortex. Complementary colors are maximally distant. Thus, red and green neurons, for example, can become maximally activated and exert virtually no lateral inhibition upon each other.

11. Color harmony of the second type: Another type of pleasing color combination is shades of the same hue that are distant from one another—for example, two shades of blue (Kreidler & Kreidler, 1972). Because the shades are distant, they exert little lateral inhibition upon one another. However, because they are both connected to the same superordinate, we have three rather than two nodes activated. Furthermore, they set up a resonant feedback loop that further increases activation.

12. Color balance: Artists have long known that the lightness and saturation of colors must interact with area when combining them in order to produce the most pleasing combination. Goethe (1810) was the first to attempt a mathematical formulation of the problem of how to adjust the areas of colors differing in lightness in order to produce the most pleasing combination. Munsell (1905) extended Goethe's idea to include saturation. Munsell proposed that the area of hues must be inversely proportional to lightness multiplied by saturation. There is experimental evidence supportive of this contention, but saturation must be weighted much more than lightness (Morriss & Dunlap, 1988).

We can explain the laws of color balance in terms of asymptotic levels of activation. Let us focus upon saturation. Nodes coding more saturated colors are stronger. That is, they are capable of becoming more activated than nodes coding less saturated colors; however, they do have asymptotic levels of activation. Consider a vivid orange and a pale blue. Were the areas of the two colors equal, nodes coding orange would be maximally activated whereas nodes coding blue would not have reached full activation. Because the orange nodes cannot

become any more activated, stimulus input would be "wasted." To maximize activation, we want the area of orange to be only as large as it need be to achieve full activation of the orange nodes. Maximal total activation can be achieved by making the area of orange only as large as to achieve this and giving the rest of the area to the duller blue.

13. Category typicality: Whereas preference is a monotonic function of perceptual typicality, it is a J- or U-shaped function of category typicality (Martindale, Moore, & West, 1988). For example, we like very typical animals such as dogs and cats, but we also like very atypical animals such as kangaroos and are rather indifferent to animals, such as cows and sheep, of moderate typicality. We can explain this in terms of how strong nodes are, how nodes are arranged in terms of similarity, and the assumption that similarity must be represented on a two-dimensional slab of cortex. Typical exemplars are most similar to each other; moderately typical exemplars are moderately similar to typical exemplars; atypical exemplars are dissimilar to prototypes and also to each other.

Nodes coding exemplars of medium typicality are subject to lateral inhibition from both sides by a few strong nodes coding prototypes and many nodes coding atypical exemplars. Thus, if we are thinking of animals, the nodes coding typical and atypical exemplars will be subject to rather weak lateral inhibition from only one side. This does not happen with perceptual categories presumably because exemplars of moderate typicality may also be connected to other superordinates.

14. Novelty: A novel stimulus is by definition one that differs from preceding or surrounding stimuli. In the latter case, novelty is the analogue of the von Restorff (1932) effect: in a to-be-remembered list, an item that is markedly different from other items is almost certain to be remembered. In the former case, novelty is analogous to release from proactive inhibition (Wickens, 1973). In a Peterson and Peterson (1959) short-term memory task, three items are given and rehearsal is prevented in some way. If the items all belong to the same category, proactive inhibition caused by lateral inhibition builds up quickly across trials. The more similar things are, the closer the nodes coding them are and the more they laterally inhibit each other. By the third or fourth trial, there is so much proactive inhibition (lateral inhibition) that the items cannot be remembered even for 20 seconds. If items from another category are given on the next trial, recall increases. It increases as a function of how different the category is from the category used on the first several trials. Novelty, the von Restorff effect, and release from proactive inhibition can all be explained in the same way. One moves from a field of nodes all laterally inhibiting each other to uninhibited nodes. Hence, the remote node or nodes can become more activated than those inhibiting one another.

15. Surprise: In the case of surprise, one expects one thing. This corresponds to a set of nodes being primed. However, something quite different occurs. Thus, a different set of nodes is activated. Activation is greater than if the expected had happened, because the primed nodes and the fully activated nodes are both activated to some degree.

16. Figural symmetry: There are three types of figural symmetry. Forms with reflectional symmetry are identical when folded over a central axis. Forms with rotational symmetry remain identical when rotated around a central point. Finally, a form can have both reflectional and rotational symmetry. It is well established that people prefer symmetrical over asymmetrical forms. An explanation of this is that the Fourier spectra of symmetric forms are always simpler than those of asymmetric forms.

Fourier (1822) proved that any mathematical function can be created by or decomposed into sine waves combining (adding or subtracting) so that they create the function. Fourier's proof applied not only to one-way functions but to n -way functions. It was not until the 1960's that it was discovered that the visual system does something resembling a two-way Fourier analysis of its inputs (Ginsburg, 1986). Hubel and Wiesel (1963) discovered a huge number of what they called complex cells that are maximally activated by sine-wave gratings at various amplitudes, frequencies, and phases. Fourier proved that any two-way function— $z = f(x, y)$ —is composed of a set of sine-wave gratings at the correct amplitudes, phases, and orientations.

Any picture may be thought of as a two-way mathematical function: z corresponds to lightness, and x and y correspond to the abscissa and ordinate. Neglecting color, the Mona Lisa activates complex cells corresponding to the sine-wave gratings that compose it. By convention, low spatial frequencies are at the center of the Fourier spectrum of a form. As we move toward the edges of the spectrum, we deal with higher spatial frequencies. The orientation of the peaks corresponds to the orientations of the sine-wave gratings implicit in the stimulus. If we think of spectra as being represented by neurons on a slab of cortex, asymmetric forms produce a lot of activation and lateral inhibition. Figures showing the two-way spectra and the effects upon them discussed below may be found in Martindale (2000).

17. Band symmetry: Band or frieze symmetries are created by beginning with an asymmetric form. Three operations may be performed on the form: 1) repeat it along a straight line at equal distances, 2) reflect it horizontally or vertically, and 3) rotate it by 180 degrees. These operations may be performed as many times as wished. There are only seven possible outcomes. These rules were discovered by crystallographers. They describe the seven ways in which atoms may be arranged in one dimension to compose a crystal. Decorative artists had discovered and used band symmetries thousands of years before crystallographers discovered the rules. In the simplest bands, the asymmetric element is simply repeated. Thus, activated nodes are more distant. Activation is greater and lateral inhibition of activated nodes is thus less. In order to create the most "complex" band all possible operations are performed on the basic form. These bands have the simplest spectra. The more operations performed on the initial element the simpler the spectrum becomes. The reason for this is not far to find. If we are decomposing stimuli into repetitive sine wave gratings, the more repetition, the simpler the spectrum. Thus, a simple dot or spot—which has no aesthetic appeal—has an extremely complex spectrum, because the sine wave gratings have

to cancel except at a single point.

In collaboration with Frans Boselie, I have done a number of not yet published experiments on band symmetries. The general finding has been that preference for band symmetries is a function of the simplicity of their spectra. We have repeatedly found that The simplest bands are liked least and most complex bands are liked best. This is what we would expect if preference is a function of maximizing activation and minimizing inhibition of activated nodes. We have also found that people are displeased by bands that are "illegal"—for example, bands in which the elements are not repeated in an exactly straight line or in which the elements are not equally spaced or in which different forms rather than the same form are repeated. If we employ Fechner's method of use, we find that such bands are virtually never used in decorative art. The spectra of such illegal bands are quite complex. If we think in terms of neurons on a slab of cortex, such bands produce too much inhibition of activated neurons.

18. Plane symmetry: If repeating a form in one direction simplifies its spectrum, then repeating it in two dimensions should simplify its spectrum even more. This is true if one is careful as to how the repetition is done. As with band symmetries, a few simple rules generate all possible two-dimensional or plane symmetries. There are only 17 plane symmetries. Crystallographers first described the rules governing plane symmetry: they describe the 17 ways in which atoms can be arranged in two dimensions to form a crystal. As with band symmetry, artists had beat them to the punch. All 17 plane symmetries, for example, are found in the Alhambra. (Washburn & Crowe, 1992).

Repetition in one direction cuts channels through the spectrum of the elements—(See Martindale, 2000)—(i.e., distances activated nodes), whereas repetition in two dimensions cuts channels in two directions though the spectrum of the element (i.e., distances activated nodes even more. (See Martindale, 2000.)) Given this, why don't we stare in fascination at our wallpaper (all patterned wallpaper falls into one of the 17 plane symmetry groups) rather than regarding it as a nice background? The reason is that plane symmetry overdoes things. Inhibition is indeed minimized, but activation is not maximized.

19. Uniformity in variety of the first type: Virtually everyone agrees that beauty involves unity in variety. When philosophers deign to give examples of what they mean, they usually unknowingly describe one of the band symmetries. A favorite example is that a row of columns is more beautiful than a single column. A row of columns is an example of what are called $pm1s1$ band. I explained above why such bands are beautiful.

20. Uniformity in variety of the second type: If we move beyond simple forms, a higher type of uniformity in variety certainly is an aspect of beauty. A beautiful scientific theory provides one explanation for seemingly unrelated phenomena—e.g., why objects fall toward the earth and why planets orbit the sun. If the phenomena are seemingly unrelated, they will be coded by remote nodes. On a less abstract level, a still-life painting unifies quite diverse

flowers, fruits, and so on.

21. Clarity: Clarity was one of Fechner's (1876) aesthetic principles. As Lalo (1908) remarked, Fechner's description of what he meant is a "chef d'oeuvre de l'obscurité." Regardless of what Fechner was trying to say, so far as visual stimuli are concerned, I can attest that clarity is essential for the perception of beauty. Whilst writing this article I was plagued by an eye that could not see beauty. Because of an eye infection, everything seen through the infected eye was tremendously blurred. A beautiful flower viewed by the uninfected eye lost its beauty when viewed through the infected eye. In terms of spectra, the reason for this is apparent. Lack of clarity or blurring means that one can see global forms (low frequencies) but not details (high frequencies). As a consequence, nodes in the module for form perception are insufficiently activated.

22. Aesthetic effects of edge detection and edge enhancement. Ramachandrian and Hirstein (1999) argue that the detection of edges in a visual scene is intrinsically reinforcing or pleasurable. They note that there are strong connections from regions of the brain where edge extraction occurs to the limbic system. Furthermore, edge extraction is adaptive. If edges were not extracted from a visual scene, we would not be able to see objects in the first place. If we monitor eye fixations, almost all are on edges as opposed to areas of uniform lightness. The brain is uninterested in uniform visual fields, as these contain no useful information. Rather, the brain responds to edges and contrasts, which contain information. To insure that such information is sought out, evolution would make detection of edges reinforcing.

23. The aesthetic threshold: It has long been known (Beebe-Center, 1932) that aesthetic thresholds (when we can first perceive beauty) are close to sensory thresholds. Edge detection begins before we know what it is that we are looking at. It has to, as edges define objects. Ramachandrian and Hirstein do not point this out, but a corollary of their conjecture is that the aesthetic threshold could in fact be subliminal—that is, lower than sensory or perceptual thresholds. This seems counterintuitive, but we are currently investigating the question in my laboratory.

24. Successive hedonic contrast. According to Fechner (1876), a pleasant stimulus is even more pleasant if it follows a less pleasant stimulus and a less pleasant stimulus is even less pleasant if it follows a more pleasant stimulus. Fechner was explicit that stimuli must be similar to produce successive hedonic contrast, but he was not explicit as to exactly how similar they must be. It has long been clear that stimuli in different sensory modalities do not produce hedonic contrast (Beebe-Center, 1932). In the case of colors, Martindale and Moore (1988) showed that only colors of the same hue produce hedonic contrast effects. A beautiful red, for example, has absolutely no effect on preference for an unpleasant blue and vice versa.

According to the theory developed in this article, hedonic contrast is a function of activation and inhibition rather than of pleasure per se. Nodes in different modules are too distant to laterally inhibit each other. So are nodes

belonging to different color categories. When we present a color chip, we activate the node coding it. In turn, this node activates a superordinate node that is positively connected to varying degrees with nodes coding all exemplars of a hue; in turn these laterally inhibit nodes coding surrounding exemplars.

If node *i* was presented first the result will be a function of the relative strengths of the nodes and connections. If node *i* is strong (capable of producing a lot of activation and, thus, a lot of pleasure), it will be strongly connected to the superordinate and exert a lot of inhibition on node *j*, which if it is weak (not capable of producing much activation or pleasure) will be weakly connected with the superordinate. If node *i* is activated before node *j*, we should expect node *j* to be in a state of relative inhibition when it is actually stimulated. Thus, it should produce less pleasure than normal. If node *j* is activated first, it will laterally inhibit node *i* weakly but indirectly activate node *i* via the superordinate. Thus, node *i* will become even more activated than usual and thus produce even more pleasure that if were not preceded by activation of node *j*. Martindale and Moore (1988), in a series of six experiments, showed that hedonic contrast is not due to pleasingness but to relative activation and inhibition. For example, if prime and target are not significantly different in pleasingness when shown in isolation, but we have reason to believe that the prime is coded by a strong node, preference for the target is decreased rather than unaffected. In short, successive hedonic contrast is not caused by differences in pleasingness but by relative activation and inhibition.

25. Aesthetic priming. A little thought suggests that we could influence preference for the colors coded by nodes *i* and *j* by activating the superordinate node. In the case of colors, we can do so simply by saying the color name before color chips are rated for preference. Doing so increases preference for high-typicality colors and decreases preference for low-typicality colors. This is isomorphic with Rosch's (1975) finding that category-name priming increases reaction time for cognitive decisions about low-typicality exemplars and decreases reaction time for such decisions about high-typicality exemplars.

26. Simultaneous hedonic contrast. Fechner's (1876) principle of simultaneous hedonic contrast is the same as the principle of successive contrast with the exception that the stimuli are shown at the same time. Martin (1906) guessed that simultaneous contrast may be purely subtractive. As yet unpublished research from my laboratory supports her contention. Preference for color chips of the same hue shown in pairs follow the laws of hedonic contrast exactly. The problem is that most of the stimuli are more preferred when shown in isolation than when shown with another color chip. Thus, simultaneous contrast seems to be mainly subtractive due to lateral inhibition. The reason for this is probably that influence from superordinate nodes will be constant across trials given the way experiments on simultaneous hedonic contrast must be performed.

27. Hedonic summation: Hedonic summation refers to the question of the degree to which preference for a stimulus can be predicted from preference for its components. The question concerns whether the components combine in a

simple or complex fashion. Though they did not phrase it in this way, Külpe (1893) and Titchener (1910) held that main effects are dominant and interaction terms are small, whereas Wundt (1905) held that interaction terms are dominant.

Empirical evidence is supportive of Külpe's and Titchener's views. For example, Martindale, Moore, and Borkum (1990) carried out an experiment in which color, color typicality, size, and complexity of polygons was factorially varied. Though interaction effects were present, main effects accounted for 86% of explained variance in preference.

28. Hedonic subtraction. Beebe-Centre (1932) cites preference for simultaneous tone pairs as an example where hedonic summation does not occur. Preference for C and C# sounded in unison clearly cannot be predicted from any kind of weighted sum involving only addition of preference for the two notes in isolation. However our theory handles this easily. A consonant tone pair activates nodes that are remote from one another and are connected to a common superordinate node so as to create resonance. On the other hand, dissonant tone pairs inhibit each other and are not connected to a common superordinate. Thus, we get "hedonic subtraction" rather than hedonic summation. We should speak of hedonic combination rather than hedonic summation.

29. Good form gestalts: Consider the three lines making up a triangle. Let us lay down the lines that could make up a triangle at random. Three line detecting nodes will be activated. Now consider the situation in which we have articulated the lines so as to compose a triangle. In this case, we shall have activated the three line detectors as well as nodes coding angles and a node coding the triangle we have created. We shall have clearly activated more nodes. Activation is thus greater than in the case of lines placed at random. Preference for any form must be greater than preference for the component lines placed at random.

30. Irregular forms: The same line of reasoning applies to irregular forms. Placing the lines at random so as not to create a form will produce less activation than combining them so that they create an articulated form. Berlyne (1971) presented some evidence that preference for random polygons is an inverted-U function of complexity as defined by number of angles and sides. Martindale, Moore, and Borkum (1990) were at first unable to replicate this finding. We found that preference was a monotonic function of complexity. Our initial experiments were carried out in a large room in which participants were distant from the stimuli. Thus, slightly disparate angles appeared to be identical. We eventually replicated Berlyne's results when we presented the polygons in a room about the size that Berlyne had used in his laboratory. The room was much smaller, so that the polygons were closer, and participants could discriminate slightly different angles. In this case, lateral inhibition came into play. Increasingly complex polygons activated increasingly similar angles which presumably activated closer and closer nodes. Rather than reactivating the same angle detectors, as in the case of distant stimuli, we were activating very similar angle de-

tectors which exerted more lateral inhibition upon one another. Note, though, that if preference were plotted as a function of net activation, a monotonic relationship between preference and net activation would emerge.

31. Peak shift: Consider an organism that is rewarded for responding to a 1000 Hz tone (S+). Unsurprisingly, it will respond maximally to the S+. Because of generalization, it will respond somewhat to tones with similar pitches. Now let us introduce a 980 Hz tone (S-). Responses to S- are never rewarded. After a few trials, if we test rate of response, we find maximal responding not to S+ but to a pitch of, say, 1020 Hz (S++). This is called peak shift (Hanson, 1959). There is a tendency to respond to S+ which generalizes to nearby pitches. There is also a tendency not to respond to the S- which also generalizes. Thus if S+ and S- are near enough, there will be a strong tendency to respond to S+ but also a tendency not to respond to it. Maximal responsiveness is shifted to S++ for which the tendency not to respond is weak. It is straightforward to apply this principle to preference (Staddon, 1975): we prefer what he calls supernormal stimuli. If you are complimented for wearing a skirt of a certain length and ignored or criticized for wearing an out-of-fashion skirt that is too long, you will prefer a skirt somewhat shorter than the one you were complimented for wearing.

32. Behavioral contrast: This phenomenon invariably accompanies peak shift. The organism responds more strongly to S++ than it had to S+ before discrimination training began. Grossberg (1975) argues that this is a consequence of the normalization caused by lateral inhibition: the amount of activation on a layer of nodes with recurrent lateral inhibition is kept relatively constant. To continue with the example of selecting a skirt, behavioral contrast means that you will not merely prefer the shorter skirt. You will like it more than the skirt you were complimented for wearing.

33. Simile and metaphor: To paraphrase Poincaré (1913), similes and metaphors join together mental elements previously thought to be strangers to one another. Consider the statement, "I climbed the stairs sadly." It induces no pleasure. Compare this with Victor Hugo's "I climbed the bitter stairs." Hugo's metaphor says the same thing but has activated more remote nodes and elicits pleasure.

34. Truth, falsehood, and beauty: Simple truths such as 'a duck goes quack' set up a resonant feedback loop between the duck and quack nodes. As soon as activation is high enough, we agree but feel no special pleasure. Blatant falsehoods such as 'a duck is a toasted cheese sandwich' produce no resonance at all. We quickly note that this statement is false; we may even feel some pleasure because such remote nodes have been activated. Any mathematical function passed through layers of nodes with recurrent lateral inhibition will end up being approximately Fourier transformed. If we understand recurrent lateral inhibition and Fourier analysis, the reason for this will be fairly obvious, and we shall feel pleasure when informed of the fact. Two things we thought were unrelated turn out to be intimately related. Recall the infamous phrase in books on

mathematics: "It should be obvious to the reader that..." Think of the joy we feel on the rare occasions when it is in fact obvious and the displeasure we feel when, as is more usual, it is not at all obvious.

Effects due to Activating Nodes in Different Modules

If aesthetic preference or beauty is a function of maximizing activation and minimizing inhibition of activated nodes, then the more modules that are activated, the greater pleasure should be. In general, different modules exert no inhibition upon one another. Thus, the more modules activated, the greater activation should be.

35. Aesthetic effects of binding. When we see a visual scene, form, location, color, motion and so on are computed in different modules. Binding refers to the process whereby the correct form is connected to the correct location and so on. Ramachandrian and Hirstein (1999) argue that binding must be reinforcing or pleasurable for the same reasons that they argue edge detection is reinforcing. Were binding not reinforcing, the brain would not do it, and we would not see correctly.

36. Preference for paintings over drawings. Even the simplest visual stimulus will activate nodes in modules for form, location, and color. So long as form and location are equal, colored stimuli should be preferred over black and white stimuli for the simple reason that the latter activate nodes in two modules, whereas the former activate nodes in three modules.

37. The dominance of meaningfulness. A large number of studies indicate that meaningfulness is by far the most important determinant of pleasure (Martindale, Moore, & Borkum, 1990). Mind tries to understand the meaning of its inputs. Pleasure can be induced by simple perception, but greater pleasure will be induced if the semantic module is also activated if only because more nodes will be activated.

38. Association effects involving episodic memory. If nodes in episodic memory as well as in semantic memory are activated, then net activation will be greater. Such effects are probably rather negligible in determining aesthetic preference. However, the aesthetic theory of the person in the street is mainly an associationistic one. Consider an experiment on color preference. Saturation is the main determinant of color preference. However, if one asks people why they like a given color, they tend to give episodic associations as the reason: e.g., this green reminds me of my father's favorite necktie. Such naive explanations overlook the question of why one's father bought that particular necktie: saturation.

39. Association effects involving self-concept: No one wants to be thought to have bad taste. Much of art education is propaganda. Students are told what they should and should not like. Peer pressure is also important. As a teenager in the late 1950's, I learned that I should like modern jazz were I to be considered "cool." I dutifully bought the requisite albums and tried to convince myself that I liked such music. I failed. Perhaps because of high

self esteem, I concluded that I did not merely dislike modern jazz. I absolutely detested it. I didn't even attempt to like rock and roll.

40. Association effects involving knowledge concerning a genre. Here is where art education plays a legitimate role. In this sort of art education, one is trying to program a neural network to understand what artists were trying to accomplish and why. For example, why did Matisse remove shadows and shading from his paintings? Such associations may lead to a greater appreciation of the works of Matisse. Inhibition due to the relative lack of beauty of his paintings is compensated for by increased activation of nodes concerning the meaning of what he was trying to accomplish.

41. Empathy or Einfühlung: A number of theorists such as Lipps (1891) have argued that empathy is important in appreciating the arts. This makes sense. In our model, empathy means activation of nodes in the action system. This is merely another case of maximizing activation by maximizing the number of activated modules.

42. Concreteness, imagery, and detail in literature. It is well known that abstract concepts are not good material for poetry or any type of literature. Rather, literature—and especially poetry—deals with concrete objects even at the cost of saying things that may not make much sense. The reason is that references to concrete objects will activate nodes in modules devoted to visual imagery. Again, activation is maximized by maximizing the number of modules that are active.

Repetition Effects

There are several well replicated aesthetic repetition effects. Repetition of a stimulus has several effects upon the nodes coding it. Repetitions affect the threshold and activation of nodes. A decrease in threshold or an increase in resting activation level make a node easier to activate. It is reasonable to assume that the resting level of activation and activation produced by directly stimulating the node add together. Thus, a higher resting level of activation will result in greater activation when the node is actually stimulated. A decrease in resting activation or an increase in threshold has an opposite effect.

43. Habituation: Massed repetition of the same stimulus. There is a large body of non-hedonic work on habituation. For simple stimuli, responsiveness declines with each repetition, whereas for complex stimuli, responsiveness increases for several trials and then decreases. Groves and Thompson's (1970) dual process model is that repetition elicits two effects: habituation (fatigue or decline in firing rate of neurons) and sensitization of associated neurons. Once sensitized, these neurons also begin to fatigue. Complex stimuli have many associations, so sensitization dominates at first, and responsiveness to the stimulus at first increases. Simple stimuli have few associations, so habituation dominates, and there is a monotonic decrease in response to the stimulus. Berlyne (1971) reviews studies showing analogous results for preference. For ex-

ample, preference for popular music, which is quite simple, declines monotonically with repeated exposures. On the other hand, preference for classical music at first increases and then decreases with repeated exposures.

44. **Mere-exposure effects:** Distributed repetition of the same stimulus leads to increases rather than decreases in preference (Zajonc, 1980). This is not due to the fact that repetition of a stimulus increases recognition of it, and this is pleasurable in the sense of seeing an old friend. Moreland and Zajonc (1977) showed that the relationship between number of exposures and preference is present when people fail to recognize that they have in fact seen the stimuli before. Kunst-Wilson and Zajonc (1980) presented polygons at subliminal levels. The polygons were presented for one millisecond, so that all people consciously saw were flashes of light. Preference was again a function of number of exposures even though recognition memory for the polygons was at chance levels. The mere-exposure effect is in fact stronger with subliminal than with supraliminal stimuli (Bornstein & Pittman, 1992).

If we assume that every time a node is activated, it is subjected to both a fatigue and a sensitization process, we can explain the mere-exposure effect. Because presentation of stimuli is distributed, fatigue can dissipate while sensitization and resting level of activation cumulate. We know that activation and/or decline in threshold of a node does not go to zero as soon as the stimulus that turned it on is no longer present. In word-recognition studies, the second time a word is presented, it is easier to recognize. This effect can last for up to two weeks. Martindale (1991) explained this in terms of resting activation and threshold very slowly returning to pre-stimulation levels. It makes sense that the mere-exposure effect is stronger for subliminal stimuli. For such stimuli, there should be little or no fatigue, but resting activation can cumulate.

45. **Poetic rhyme:** The same set of phonemes is repeated at the end of a line with an interval long enough to allow fatigue to dissipate. We can explain its pleasure-inducing properties in the same way that we explained the mere-exposure effect.

46. **Poetic alliteration:** Alliteration involves repetition of the same phoneme or syllable usually at the beginnings of words. If the repetition is not overdone, the effect is pleasing. Extended alliteration is rather displeasing. Because the sounds are repeated too quickly, fatigue cumulates rather than dissipates.

47. **Poetic assonance:** Assonance involves repetition of vowels in, usually, stressed syllables. Like alliteration, it must be used so as to allow sensitization to cumulate and fatigue to dissipate.

48. **Poetic consonance:** This refers to repetition of consonants in words whose main vowels differ (e.g., 'pad' - 'red'). It is another mere exposure effect.

49. **Musical melody:** In a musical melody, the same notes are repeated in such a way that fatigue dissipates but left-over activation cumulates. I do not have the formula for how this is done so as to maximize beauty, but I think that the formula is knowable.

50. **Hedonic time-order error.** If two equally pleasing stimuli are presented in a paired comparison task, the first is preferred if the inter-stimulus interval is short, but the second is preferred if the inter-stimulus interval is long

(Beebe-Center, 1932). We may explain this in the same way that Köhler (1923) explained time-order errors concerning intensity. When the inter-stimulus interval is short, the nodes coding the first stimulus will have reached their asymptotic levels, whereas activation of nodes coding the second stimulus will not yet have reached asymptotic levels. When the inter-stimulus interval is long, activation of nodes coding the first stimulus will have begun to decay, whereas activation of nodes coding the second stimulus will be at or near asymptotic levels.

Attentional Effects

51. **Aesthetic overshadowing:** At least for naive observers, the most striking aspect of an aesthetic stimulus tends to be by far the most important determinant of preference for it. For example, Martindale and Moore (1990) obtained preference ratings for tone pairs varying in intensity (20dB-100dB) and consonance. Intensity accounted for 96% of explained variance whereas consonance accounted for only about 1%. Martindale, Moore, and Borkum (1990) obtained preference ratings for random polygons varying in size and complexity (number of turns). Of explained variance, 52% was due to complexity and 11% to size. In another experiment, they studied preference for polygons varying in color typicality, color, size and complexity. In this case, color typicality accounted for 79% of explained variance, color for 6%, size for 2% and complexity for 1%. Martindale, Moore, and West (1990) compared meaningfulness and the mere-exposure effect. Of explained variance in preference, meaning accounted for 86% and the mere-exposure effect for 4%. The general rule is that the most salient determinant included in a study of preference almost completely overshadows other determinants included in the experiment.

In aesthetic overshadowing people focus their attention so much on the most salient determinant that there is no activation left over for nodes coding other determinants. Aesthetic overshadowing means that most of an artist's efforts are wasted in that people do not attend to them. A poet wants readers to attend to the musical qualities of his or her verse, but overshadowing suggests that ordinary readers probably ignore it almost as much as they ignore type face and attend only to meaning.

52. **Aesthetic compensation:** One of Fechner's (1876) principles was that of compensation. A defect in one aspect of an aesthetic stimulus can be compensated for by other aspects of the stimulus. Given the strength of aesthetic overshadowing, the defect probably receives little or no attention.

53. **Distraction effects.** The presence of distracting stimuli seems to decimate aesthetic appreciation. When I visited the Tretyakov Gallery in Moscow, apparently a group of finalists in a beauty contest were also visiting it. Suffice to say that I think that there may be a lot of paintings in the gallery. If the reader wants less anecdotal evidence, Martindale (1984b) used the polygons varying in size, complexity, color, and color typicality that were reported upon by Martindale, Moore, and Borkum (1990). In the 1990 experiment, the polygons were shown in silence; and a number of effects were significant at $p < .001$ or better. Martindale (1984b) presented the polygons to one group

of subjects in the presence of 65 dB white noise and to another group of subjects in the presence of 90 dB white noise. Presence of either moderately intense or intense white noise had similar effects: it more or less randomized preference ratings. Highly significant effects in the 1990 experiment were vastly reduced in significance or rendered insignificant.

There is only so much attention available. If attention is involuntarily seized by pretty women or white noise, we may loosely say that the modules processing these distractors has drawn enough activation from the central pool of attentional capacity that the modules processing the supposed target stimuli are not allocated enough activation to function effectively.

54. Aesthetic succession: Fechner (1876) argued that if a pleasant stimulus is preceded by a less pleasing stimulus, it will be more preferred than normal, whereas if an unpleasant stimulus is preceded by a more pleasant stimulus, it will be less preferred than normal. If we go through a museum in which each painting is more beautiful than the previous one, pleasure will be maximal; if the paintings have been arranged in the opposite way, then pleasure will be minimal. How does a neural network know when activation has been maximized and inhibition minimized. The present state of the network must be compared with something. The most reasonable thing to compare it to is the immediately prior state of the network (compare Titchener, 1910).

55. Aesthetic resolution: Fechner (1876) held that movement from a state of displeasure to a state of greater pleasure induces more pleasure and that movement from a state of pleasure to a state of displeasure induces more displeasure than would be expected had movement been from a neutral state. For example, resolution of a dissonant chord produces pleasure, whereas movement from consonance to dissonance produces displeasure. This is almost identical with his principle of aesthetic succession and can be explained in the same way. A neural network sometimes "likes" to increase inhibition in anticipation of a future achievement of a state of maximal activation and minimal inhibition. The network has learned that such a state may lead to reaching a very pleasurable state.

Iteration Effects

56. Iterated peak shift: A number of animals, such as peacocks, have traits that are clearly maladaptive. The brilliant colors of male peacocks serve as signals to predators. Darwin (1871) pointed out that animals with such traits do not form pair bonds and that only one sex, usually the males, shows the maladaptive trait, whereas the other sex is suitably camouflaged. If, for whatever reason, females of a species have a preference for, say, red, they will prefer to mate with males that are more vividly red because of peak shift. Thus, these males will leave more offspring. The same thing will happen the next generation, and so on. This will lead to a runaway trend toward more and more vividly red colored males across time. Because males in such species do not help in raising offspring, they are dispensable once they have mated. Staddon (1975) pointed out that this is an example of peak shift iterated across generations. Martindale (1990) in-

voled iterated peak shift to explain trends in fashion and the arts.

57. Iterated habituation. Martindale (1990) invoked iterated habituation as a basis for his theory of literary and artistic change. Because artists are more or less continually exposed to art, they tire of the old and are under a continual pressure to seek novelty. The theory, the details of which need not concern us, attributes the cause of artistic change mainly to artists. If the audience had much say in matters, we might expect iterated mere-exposure and thus little systematic change in the arts. The audience does not have much say, as I have demonstrated that literature and the arts show continual change of the type predicted by the theory.

Remarks upon the Delicacy of Taste

Any theory of aesthetic preference must explain why some people have good taste and others have bad taste. Bad taste can concern a sin of commission (e.g., buying and displaying Hummel figurines) or a sin of omission (e.g., having a messy house).

58. Bad taste of the first type: Neural nets differ in their complexity. One type of bad taste consists of applying the correct rules in an incorrect way. Consider someone who paints his house purple and orange. These are complementary colors that are in fact preferred in isolation. For a simple network, this may overshadow the fact that they do not look nice when it comes to painting a house.

59. Bad taste of the second type: Another cause of bad taste has to do with how a network is 'tuned'. If it is tuned toward comfort or utility, this may result in a house, say, that is filled with comfortable furniture and cluttered with magazines and other things that are strewn about so that they will be within easy reach. The furniture may not go together in an aesthetically pleasing way, but the person was aiming for comfort rather than beauty.

60. Bad taste of the third type: Kitsch arouses strong and maudlin emotions. Because of this, the brain is swamped by emotion. Thus, the aesthetic principles I listed will be overshadowed. Art is supposed to arouse an aesthetic rather than an emotional response, so we could say that kitsch is not art at all. Those who like it are tuned toward sentiment rather than beauty.

Concluding Remarks

I hope that I have distributed my words so as to maximize activation and minimize inhibition in the reader. For those aware of my neural-network theory of creativity (Martindale, 1995), I may have induced some confusion. In that theory, I explain having a creative idea as reaching an energy minimum in what is called a Hopfield (1982) net. On the face of it, my theory of creativity and my theory of aesthetics may seem to be contradictory. In fact, they are identical. The seeming contradiction arises from the way energy and energy minima are defined in Hopfield nets. An energy minimum does not correspond to a minimum of activation. It corresponds to maximizing activation and minimizing inhibition of activated nodes. Thus, the act of creation and the perception of beauty are essentially identical.

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Has Psychology Become the Science of Questionnaires?

A Survey of Research Outcome Measures At The Close of The 20th Century

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A survey of articles from seven of psychology's most widely subscribed journals revealed that a broad range of outcome measures are used by research psychologists today, the most common of which are questionnaires (used in 65% of studies surveyed), measures of test performance (35% of studies), and behavioral measures (27% of studies). The least common measures were projective tests and health status indices, each of which were used in 1% of studies. Follow-up analysis indicated that 40% of all studies surveyed relied exclusively on questionnaire outcome measures. Implications of these findings for contemporary psychological science are discussed.

Psychology is the scientific study of behavior and mental processes.

--Robert S. Feldman (1999)
Understanding Psychology

Psychology is the study of mind and behavior.

--American Psychological Association (2000)

Consensus in psychology is hard to come by, but in recent years, opinion has converged regarding the key elements of our discipline: Psychology is the study of behavior and mental processes. We may quibble about the details (Should animal behavior be included in the definition? Does neural activity qualify as a "mental process"?), but at the close of the 20th century, psychology's empirical identity is relatively clear—at least for the moment.

It was not always this way. Since Wilhelm Wundt established the first psychological research laboratory in 1879, scientific psychology has been characterized by an array of competing theoretical perspectives, including structuralism, functionalism, and the Gestalt and "depth" viewpoints. Each perspective has its own set of assumptions regarding human behavior and mental life (Rychlak, 1998; Wertz, 1994), its own set of empirical methods (Bornstein, 1999; Mahoney, 1987), and its own views regarding what outcome measures are best used in research studies (Nichols, 1993; Skinner, 1987). Behaviorism, with its unwavering emphasis on observable, measurable behavior, defines one pole of the outcome measure dimension. Introspectionism—with its emphasis on self-reports of internal mental states—represents an opposing viewpoint common to several psychological "schools" (e.g., cognitive psychology, psychoanalytic psychology, humanistic psychology).

Developing psychometrically sound measures of internal mental states has been an ongoing challenge for those who use introspectionist methods (see, e.g., Campbell & Fiske, 1959; Cronbach & Meehl, 1955; McClelland, Koestner & Weinberger, 1989; Messick, 1995). For the most part, researchers have relied on various indices of verbal or written self-reports of internal mental states, but studies show that these self-reports are compromised by myriad factors including limitations on people's ability to describe accurately their current mental processes (Jacoby, Toth, Lindsay & Debnar, 1992; Nisbett & Wilson, 1977), as well as unavoidable memory distortions that diminish the accuracy of retrospective reports (Eich, 1995; Schacter, 1999). Unintentional self-presentation biases (Bargh & Chartrand, 1999; Shedler, Mayman & Manis, 1993), and outright faking on the part of participants (Bornstein, 1996; Schwarz, 1999) are additional challenges confronting those who seek to quantify aspects of our internal mental states.

A comparatively small proportion of contemporary psychologists—less than 10% overall—adhere to a purely behavioral framework in their empirical and applied work (Gibson, 2000; Prochaska & Norcross, 1994; Robins, Gosling & Craik, 1999). Thus, the majority of scientific psychologists today are grappling with the question of how best to assess participants' internal mental states in empirical studies. What measures do these researchers use in their investigations?

Unfortunately (and somewhat surprisingly), there have been no systematic surveys of outcome measure use in contemporary psychology. This paper attempts to fill that gap by surveying seven of scientific psychology's most widely read journals at the end of the 20th century, and asking two related questions: a) What are the most common outcome measures used by scientific psychologists today?; and b) Do these measures differ systematically across psychology's subdisciplines.

Method

Study Selection

In early 1999, articles were collected from the seven APA journals with the highest institutional subscription rates during 1997 (see APA, 1998): *Journal of Abnormal Psychology*, *Journal of Educational Psychology*, *Journal of Consulting and Clinical Psychology*, *Journal of Personality and Social Psychology*, *Journal of Applied Psychology*, *Developmental Psychology*, and *Journal of Experimental Psychology: General*. Working backward from the last issue of 1998, one article per issue was obtained from each journal. Selection continued until 30 articles from each journal had been obtained. For quarterly journals, this represented 7.5 years' worth of studies; for journals published six times per year, it represented 5 years' worth of studies.¹

A table of 16 random numbers was used to ensure

nonbiased article selection (1 = first article in the issue, 2 = second article, etc.). If there was no article in a given journal issue corresponding to the number in the table, the next number in the table was used, until a match was obtained.

To ensure that each journal contributed the same amount of data to the final sample, only one study per article was coded. For multi-study articles, a table of 8 random numbers was used to select the study for coding. If there was no study in a given article corresponding to the number in the table, the next number in the table was used, until a match was obtained.

Variable Coding

The following variables were coded for each study by two independent raters unaware of each others' codings: number of authors, first author gender, date of publication, number of studies, participant number, participant gender, participant age, and outcome measures used. Coding categories for these variables are summarized in Tables 1 and 2.

For most variables, coding was straightforward. However, because many studies used multiple outcome measures, even within a single experiment, coding for this variable was more complex, and took place in four stages. First, each rater independently listed every outcome measure used in a study. Second, each rater independently assigned each outcome measure to one of the categories in the left portion of Table 2. Third, each rater independently tallied the total number of outcome measures used in that study. Fourth, each rater independently tallied the total number of outcome measure categories used in that study.

Reliability in coding continuous variables was assessed by calculating Pearson correlation coefficients between the two sets of ratings. These ranged from .88 to .99 (mean $r = .94$). Reliability in coding categorical variables was assessed by calculating percentages of agreement, which ranged from 87 to 100 (mean = 93%). Disagreements in coding were resolved through discussion.

Results

The results of this study are summarized in Tables 1 and 2. In the following sections, key findings are highlighted.²

1) Although this sampling strategy had the disadvantage of covering different time frames for different journals, it had the advantage of including one article from each journal issue. Analyses of outcome measure use as a function of publication date (reported in detail in the Results section) confirmed that these variables were unrelated.

Preliminary Analyses

Before examining use of outcome measures directly, preliminary analyses were conducted to provide context for the main analyses.

Author data There were significant differences in number of authors per article among the seven journals examined ($F = 6.38, p < .001$), with number of authors per article being higher for the *Journal of Consulting and Clinical Psychology* than for any other journal.

Table 1

Article Characteristics

Journal	First Author Gender	Number of Authors	Number of Studies	Participant		
				Number	Gender	Age
DevPsy	40	1.03 1.00 1.07	1.27 1.24 1.30	107-87 89-11 20-220	7/3/40/8	22.78 8.28 0.74-19.9
JAbPsy	40	1.78 1.87	1.18 1.37	218-50 20-220	7/17/70/7	29.84 12.7-46.1
JExpPsy	38	1.83 1.87	1.10 1.3	402-28 20-220	7/7/63/7	28.88 10.88 0.73-50.5
JCCP	47	1.37 1.19 1.56	1.63 1.38 1.2	238-80 120-70 17-80/7	3/15/80/7	28.88 19.88 11.7-45.9
JAPPsy	37	1.37 1.4	1.40 1.37	678-74 20-220	7/3/37/37	32.87 4.3-24.0
JEP	37	1.47 1.33 1.6	1.35 1.37	116-11 140-80 1-80	8/3/40/37	31.84 17.88 0.3-58.0
JPIP	37	1.31 1.23 1.4	1.18 1.3	187-87 80-15 20-220	10/15/47/37	22.78 8.28 11.7-45.9
Overall	36	1.48 1.4 1.56	1.34 1.37	180-12 407-20 1-80/7	5/8/47/37	24.58 12.78 0.01-79.9

Note. DevPsy = *Developmental Psychology*, JAbPsy = *Journal of Abnormal Psychology*, JAPPsy = *Journal of Applied Psychology*, JCCP = *Journal of Consulting and Clinical Psychology*, JEdPsy = *Journal of Educational Psychology*, JEP = *Journal of Experimental Psychology: General*, JPIP = *Journal of Personality and Social Psychology*. Numbers for **First Author Gender** are the percentage of female first authors. Numbers for **Participant Gender** are percentages of studies that used: females only/males only/mixed-gender samples/no information (i.e., authors provided no information regarding participant gender). For all other columns, figures are (in order) means, standard deviations, and ranges. **Overall** data are collapsed across journal.

Overall, 36% of articles had women as first authors. There were significant differences among journals on this dimension as well ($F = 2.41, p < .05$): The percentage of women first authors was higher in *Developmental Psychology*, and lower in the *Journal of Abnormal Psychology*, than in the other five journals assessed.

Studies per article. There were significant differences among the seven journals with respect to number of studies per article ($F = 25.40, p < .001$): The number of studies per article for the *Journal of Experimental Psychology* was higher than that for the *Journal of Personality and Social Psychology*, which was in turn higher than that for the other five journals.

2) One-way ANOVAs with identical degrees of freedom (6, 203) were used throughout the analyses. Tukey HSD tests were used for all follow-up analyses, with alpha level set at .05. For ease of communication, F values are reported omitting degrees of freedom for all one-way ANOVAs in the Results

Participant characteristics. Number of participants per study did not differ across journal ($F = 1.42$, NS). However, there were significant differences in participant age ($F = 7.57$, $p < .001$): Participants in studies from *Developmental Psychology* and the *Journal of Educational Psychology* were younger than those from every other journal except the *Journal of Personality and Social Psychology*.

Studies did not differ with respect to the proportion of female and male participants, nor with respect to use of mixed-gender samples (all F 's < 2.00). However, studies from the *Journal of Educational Psychology* and *Journal of Experimental Psychology* provided no information regarding participant gender more frequently than did studies from the other five journals ($F = 5.41$, $p < .001$).

Outcome Measures

Table 2 summarizes the key outcome measure data gleaned from articles included in the survey.

The range of outcome measures in contemporary psychology As Table 2 shows, a wide variety of outcome measures are used by research psychologists today. The most common outcome measures are questionnaires (used in 65% of studies surveyed), followed by measures of test performance (35% of studies), and behavioral measures (27% of studies).³ The least common measures were projective tests and health status indices (e.g., chart-derived illness ratings), each of which were used in 1% of studies.

Number of outcome measures per study. The number of outcome measures per study differed significantly across journal ($F = 2.81$, $p = .01$), with studies published in *Journal of Consulting and Clinical Psychology* using a greater number of outcome measures than those in the *Journal of Experimental Psychology* and *Journal of Applied Psychology*. A similar analysis examining differences in number of outcome measure categories per study was also significant ($F = 5.80$, $p < .001$): Studies in the *Journal of Consulting and Clinical Psychology* used a greater number of outcome measure categories than those in every journal except the *Journal of Abnormal Psychology*.

Distribution of outcome measures across journals. Multivariate analysis of variance (MANOVA) indicated that—as the data in Table 2 suggest—outcome measures

3) Behavioral outcome measures involved rating one or more dimensions of participants' unstructured behavior (e.g., cooperativeness in classroom interactions), whereas performance outcome measures involved rating participants' behavior on a structured measure with pre-existing norms (e.g., the WAIS-III performance subscales).

were not distributed randomly across journals, $F(9, 200) = 16.52$, $p < .0001$. Follow-up one-way ANOVAs were used to examine the distribution of outcome measures across journal, with the following results:

- Studies in *Developmental Psychology* were more likely

Table 2

Outcome Measures

Journal	Measures Used									Total # of:		%Que Only
	Beh	Que	Pro	Int	Per	Di	Hi	Phy	Oth	Measures	Categories	
DevPsy	52	37	0	7	37	0	3	0	3	3.10 (1.81) R = 1-2	1.40 (0.82) R = 1-5	35
JExpPsy	17	51	3	20	17	0	23	7	7	3.80 (2.87) R = 1-13	1.67 (0.84) R = 1-3	35
JAppPsy	50	80	0	3	13	0	0	0	7	2.63 (2.61) R = 1-13	1.30 (0.47) R = 1-2	65
JCCP	20	87	3	23	7	43	3	23	0	3.20 (3.02) R = 1-13	2.10 (0.84) R = 1-4	25
JEdPsy	17	37	0	7	60	0	0	0	3	3.67 (5.39) R = 1-52	1.40 (0.58) R = 1-2	30
JEP	43	37	3	2	32	0	0	17	0	2.07 (1.68) R = 1-9	1.55 (0.63) R = 1-3	16
JFSP	13	93	0	0	17	0	0	0	3	3.43 (1.92) R = 1-10	1.27 (0.58) R = 1-3	80
Overall	27	65	1	6	30	0	1	0	3	3.35 (3.13) R = 1-32	1.52 (0.78) R = 1-4	40

Note: For *Measures Used*, Beh = behavioral, Que = questionnaire, Pro = projective test, Int = interview, Per = test performance, Di = psychiatric diagnosis/symptom rating, Hi = health measure, Phy = physiological measure, Oth = other. Numbers in these columns are percentages of studies that used a given outcome measure. **Total # of columns** report mean number of outcome measures per study, and mean number of outcome measure categories per study, followed by Standard Deviations and ranges. **%Que Only** column summarizes the percentage of studies from each journal that relied exclusively on questionnaire outcome measures. **Overall data** are collapsed across journal.

to use behavioral outcome measures than those in every other journal except the *Journal of Experimental Psychology* ($F = 3.81$, $p = .001$).⁴

- Studies in the *Journal of Personality and Social Psychology*, *Journal of Consulting and Clinical Psychology*, and *Journal of Applied Psychology* were more likely to use questionnaire outcome measures than those in the other four journals ($F = 4.19$, $p = .001$).

- Studies in the *Journal of Consulting and Clinical Psychology* and *Journal of Abnormal Psychology* were more likely to use interview outcome measures ($F = 3.45$, $p < .01$), and psychiatric diagnosis outcome measures ($F = 2.99$, $p < .01$) than those in any other journal.⁵

- Studies in the *Journal of Educational Psychology*

4) When this analysis was repeated, with behavioral and performance measures grouped, significant differences again emerged ($F = 7.18$, $p < .001$): Studies in *Developmental Psychology*, *Journal of Experimental Psychology*, and *Journal of Educational Psychology* were more likely to use behavioral/performance outcome measures than those in the other four journals.

5) Although many psychiatric diagnoses are based on interviews, these categories were examined separately. Interview outcome measures included any outcome measures (including diagnoses) that were derived from interview data. Diagnosis outcome measures were based on information other than interview (e.g., chart ratings, nursing notes, attending physician diagnoses), and included either diagnoses proper, or psychiatric symptom/severity ratings.

and *Journal of Experimental Psychology* were more likely to use performance outcome measures than the other five journals ($F = 2.41, p < .05$).

Exclusive reliance on questionnaire outcome measures. A final analysis was conducted to examine which journals were most likely to publish studies that relied exclusively on questionnaire outcome measures (these percentages are in the far right column of Table 2). The proportion of studies relying exclusively on questionnaire outcome measures differed significantly across journal ($F = 19.99, p < .001$): Studies that relied exclusively on questionnaire outcome measures were published more frequently in the *Journal of Personality and Social Psychology* (85% of studies), and *Journal of Applied Psychology* (63% of studies) than in the other five journals surveyed.

Correlational analyses examining the relationship of date of publication to the proportion of studies relying exclusively on questionnaire outcome measures revealed that publication date was unrelated to questionnaire use, both in individual journals (r 's ranged from $-.11$ to $.14$), and when these data were collapsed across journal ($r = .04$, NS).

Finally, as the bottom right portion of Table 2 shows, when these data were collapsed across both year and journal, 40% of all published studies surveyed relied exclusively on questionnaire outcome measures.

Discussion

Although a wide variety of outcome measures have been used in psychological studies during the several years, the present results suggest that three types of measures—questionnaire, performance, and behavioral—account for the majority of outcome measures used. Questionnaires and behavioral/performance measures (combined) are used at roughly equivalent rates, and each of these is used more than five times more frequently than the next most widely used measures.

Although psychology's extensive use of questionnaires is rooted in part in our introspectionist tradition, this research strategy is problematic in certain respects. Many questionnaires used by psychologists today do not address current mental states and ongoing mental processes (as introspectionists emphasize), but instead ask the respondent to recall past motives, feelings, thoughts, and behaviors (see, e.g., Groth-Marnat, 1999; Meyer, 1996; Shedler et al., 1993). In this sense, psychology's current questionnaire use may be more strongly linked with a retrospectionist than an introspectionist strategy—a strategy based more on recall and reconstruction of past events than immediate, "online" reporting of ongoing experience.

To the extent that psychology's most widely read journals publish studies that are representative of those in the broader subfields they represent, the present results indicate that exclusive reliance on questionnaire outcome measures is highest in social and applied psychology, and lowest in traditional experimental psychology. This suggests that social and applied research rely more heavily than do other types of research on participants'

self-reports. Whether these results generalize from the subdisciplines' most prestigious journals to other, less selective journals is an empirical question that warrants further attention from researchers.

Although a few years is an eyeblink in the world of science, follow-up analyses indicated that the degree to which psychologists have relied exclusively on questionnaire outcome measures has remained steady through the time periods covered in this survey. It would now be useful to examine trends in outcome measure use over longer periods, to assess the long-term stability and/or change in psychologists' reliance on questionnaires. In this context, it would also be useful to investigate whether the refinement of various neuroimaging techniques is beginning to produce changes along this dimension, with a decrease in reliance on self-reports, and a concomitant increase in neurophysiological outcome measures.

One might argue that exclusive reliance on questionnaires in some investigations is warranted when those questionnaires have been validated against overt behavioral criteria, in which case questionnaire score can be conceptualized as a sort of behavioral "proxy". Although questionnaire use can be justified in this way under certain circumstances (e.g., when direct behavioral assessment is impractical or impossible), such an approach has certain inherent limitations. Most importantly, because questionnaire scores are invariably imperfect indices of the behaviors or mental processes they are designed to assess, the external validity of an investigation (and the criterion validity of measures used in that investigation) can be seriously compromised by other seemingly minor aspects of the experimental situation and setting (Meyer, 1996; Schwarz, 1999). A set of well-validated but imperfect measures and manipulations, when combined, can easily add up to an investigation with limited ecological validity (see Messick, 1995; Bornstein, 1996).

Two subsidiary findings from this investigation warrant additional discussion. Twenty percent of all studies surveyed—and fully 57% of studies in one of psychology's most selective experimental journals—reported no information whatsoever regarding participant gender. Although this practice is sometimes justified in individual studies by the argument that a given phenomenon is theoretically unrelated to—and unlikely to be moderated by—participant gender, the history of science is replete with theoretically unpredicted relationships that evolved into truths. Researchers should report the gender breakdown of participants in their studies, and assess gender effects.

A second subsidiary finding concerns author gender. Although only 36% of articles in psychology's most widely subscribed journals had women first authors, the majority of articles in *Developmental Psychology* (60%) were authored by women. Women researchers have traditionally been more numerous (and more visible) in developmental psychology than in many of psychology's other subfields (see Hilgard, 1987; McGovern & Reich, 1996), and these data certainly reflect this. Whether the proportion of articles authored by women increases in psychology's other subfields during the coming years is an empirical question worthy of researchers' continued attention.

Although a consensus has emerged that psychology can be usefully defined as the study of behavior and mental processes, the present results indicate that at the close of the 20th century, psychologists assess behavior and ongoing (current) mental processes in a minority of their investigations. Numerous factors likely contribute to this phenomenon, including economic factors (questionnaires are inexpensive), career considerations (questionnaires yield quick results), and historical tradition (past questionnaire use begets continued questionnaire use). There is no question that reliance on self-reports in psychological research studies is warranted in certain circumstances, but we must take care to ensure that our choice of outcome measures is driven by scientific considerations rather than expediency.

With 40% of all studies in psychology's most widely subscribed journals relying exclusively on questionnaire outcome measures, psychology is not yet the science of questionnaires. It could easily become so, however, and if it does, psychology's rich introspectionist tradition would have been subtly replaced by a retrospectionist tradition born of convenience rather than rigor. Such an outcome would detract from our discipline, and diminish the usefulness and impact of our ideas and findings.

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Maier's Experiment Revisited: The Unsolved Mystery of Fixation and Seizure

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On the Lashley Jumping Stand, used to train rats in visual discrimination learning, Animals sometimes leap at a locked window rather than to an adjacent open window with a feeding platform. Maier (1949) suggested that these fixations, produced by exposing the animals to randomly locked windows, constitute the frustration instigated "behavior without a goal." Other psychologists, rejecting this apparent oxymoron, explained fixation with more conventional theories of animal behavior found in comparative psychology.

No theory of fixation is consistent with the published experimental data. This unsolved mystery of response fixation has been ignored for almost a half century.

In order to frustrate the rats' efforts at associative learning, Maier's controversial research (1949) adds randomly-locked windows to Lashley's experiments on rats' visual discrimination (1930, 1938; see diagram). As a result, the animals sometimes develop seizures (Maier & Glasser, 1940; Dewsbury, 1993). When they are again offered a learning experience, some correctly follow the positive card from window to window, but others continue jumping futilely at their habitual window, with the fixations proportionate to the number of days in the insoluble problem, and with seizures inversely related to fixations: Animals showing one abnormality are less likely to display the other, although the same animal may develop both. In 1938, because of his work with both fixations and seizures, Maier received the AAAS award.

Even when the other window is open and their habitual window permanently locked, fixated rats continue leaping at it (see photo). During their training, they are never punished for jumping to an open window: It poses no threat, yet they behave as if it does (Eglash, 1952). Provided with a walkway, they readily enter the open window, yet still will not jump there (Feldman, 1953).

Although the animals appear to be compelled to jump at the locked window, fixation is more an inhibition than a compulsion. The animals jump to their habitual window only because they are unable to jump to the open window (Eglash, 1954). When the fixated rats' options are increased from the traditional two to three windows (Ellen, 1956), the animals, still avoiding the taboo open window, freely choose between the other two. This procedure breaks a fixation.

Paradoxically, this inhibition, the fixated rat avoiding an open window, persists long after frustration subsides; otherwise we would be dealing with emotional, not fix-

ated, behavior. Solomon and his colleagues compare animal behavior similar to fixation with a posttraumatic stress disorder, whose symptoms persist long after the trauma (Solomon et al, 1953; Solomon & Wynne, 1954; Wynne & Solomon, 1955). "Whence comes the element of permanency in these responses to danger" (Freud, 1936, p. 91)?

However, with intervention, fixation quickly ends. When a fixated rat is prevented from leaping at its habitual window and is forced to leap to the open window, initially it resists, but then loses its fixation and becomes resistant to future fixation (Maier, pp. 53-54). Fixated rats are responsive to this guidance, while fixated dogs (learned helplessness), extremely apathetic with a complete loss of motivations, are not (Maier, v. & Seligman, 1970;

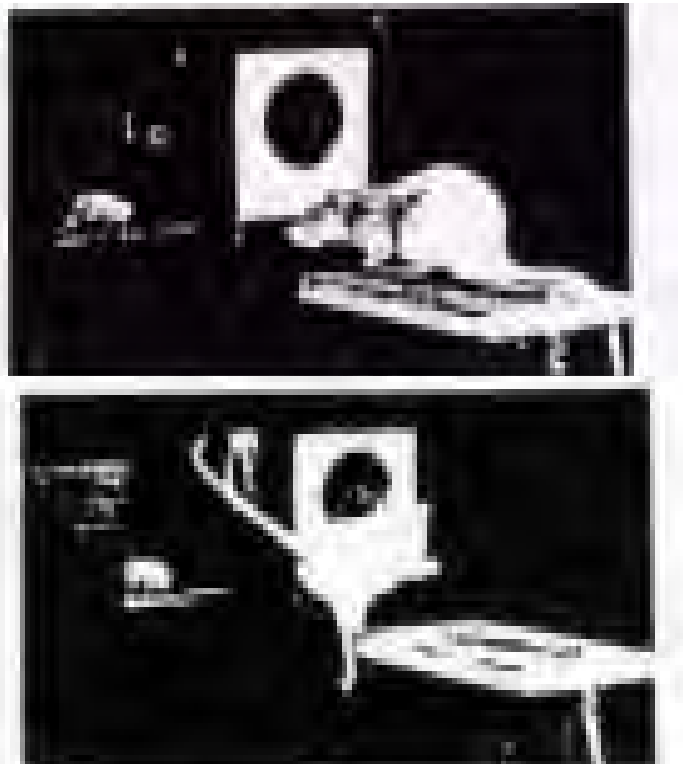


Figure 1. The behavior of a fixated rat. Even when the rat can see the food in the left window, it persists in jumping to the right. (Photo courtesy Dr. N. R. F. Maier)

1. I would like to thank Dr. W. J. McKeachie of Michigan for his patient encouragement during 5 years and 9 rejections, and Dr. R. Isaacson, Binghamton University for his help of like duration.

Seligman, 1975; Peterson, 1993).

Frustration theory. At the core of his theory to explain why fixation is proportionate to punishment, Maier developed his most important concept, a threshold of frustration tolerance. Because fixated rats appear motivated to leap to the open window, yet jump at the locked window, Maier terms these fixations as abnormal and compulsive, labeling them “behavior without a goal,” frustration-instigated rather than motivated.

Alternative Views of Fixation

To the challenge of “behavior without a goal,” psychologists, dissatisfied with an apparent oxymoron, responded with the more conventional views of comparative psychology.

1. Fixation as failure to learn. Although Tolman (1949) describes fixation as the “antithesis and nemesis” of learning (p. 154) and as learning “gone bad” (p. 445), fixated animals’ longer latencies and abortive jumps when confronted with the negative card in their habitual window suggest that they have acquired the learned association.

When the fixated animal learns that in its habitual window the positive card is always unlocked and the negative card always locked, it may fail to generalize this association to the other window, and assumes it is still randomly locked (Hilgard, 1948). Of 8 experimental findings which Maier cites in support of his theory, this view of fixation explains seven (Eglash, 1951). It does not explain the rat’s failure to jump to the open window.

2. Fixation as emotion. Contradicting Maier’s dichotomy of fixation and motivation, denying any qualitative difference between them, DeValois (1954) identifies fixation with a lack of variable trail-and-error behavior in maze-running, his rats frustrated by intense hunger and by severe electric shock.

Under strong emotion or motivation, behavior becomes rigid, repetitive, and unadaptive, as Maier notes in describing Patrick’s (1934) finding of “purely repetitious ... highly stereotyped behavior” (Maier, p. 85) when normal adults are frustrated; but, unlike fixated responses, this emotional response is temporary.

3. Fixation as reinforcement. The most widely held view of fixation was that the rat has been reinforced so often at its habitual window — by partial primary reinforcement (Wilcoxon, 1952) and by the secondary reinforcement of anxiety-reduction (Farber, 1948; Hilgard, 1950; McClelland, 1950; Miller, 1948; Mowrer, 1940, 1950; Wolpe, 1953) — that the animal is compelled to jump there.

However, the number of fixations is not proportionate to the amount of reinforcement, but to the amount of punishment; 70% punishment produces more fixations than 30% (Maier, 1956, p. 375), 100% more than 50% (Maier & Klee, 1943), 16 days in an insoluble problem more than 8 days (Maier & Feldman, 1948).

Psychology’s Neglect of Fixation

When Maier and his students refuted these three alternative theories of fixation, as failure to learn (Eglash, 1951) or as reinforcement (Feldman, 1953, 1957), either partial rein-

forcement (Maier, 1956) or anxiety-reduction (Maier & Ellen, 1951), the articles were ignored. No public debate in the journals ensued, only silence. No critic responded, and the controversy disappeared.

Church (1963) discusses fixations as one of the consequences of frustration or punishment, and Lawson (1965) offers a similar discussion. Yates’ (1965) book of readings includes fixation as one of the “enduring problems in psychology.” Instead of enduring, this challenging problem disappeared.

When Hill (1968) published “An attempted clarification of frustration theory,” with related articles by Hug & Amsel (1969) and by Dunham (1971), none mentioned fixation. During successive decades, the problem — except for Seligman (1975) — from 1970 to 2000 failed to reappear. Denny & Ratner (1970), Dickinson (1980), Toates (1986), Ansel (1992), Peterson et al (1993) and even N. Maier (1998) — none of their texts on animal behavior recognizes fixation.

Over the years and the decades, articles and books frequently discuss frustration, usually relating it to aggression, less often to regression, never to fixation. Although Isaacson (2000), who had been at Michigan with Maier, submitted a poster, information about this puzzling bit of behavior has, during these intervening decades, been missing. A challenging mystery mysteriously disappeared. It is not vital to our science that we solve the mystery, but surely it is vital that we recognize and acknowledge it. Perhaps this brief article will rectify the situation.

Conclusion

Why does a fixated rat fail to leap to an open window? In 1999, I can no more explain this photo than in 1949. “After decades of analytic effort, this problem rises up before us, as untouched as at the beginning” (Freud, 1936, p. 92).

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GENERAL BUSINESS

A Message from President Bourne

Dear Members of the Society for General Psychology:

Each year, our esteemed newsletter editor allows the current President of the Society to address the membership through this medium. I am delighted to have this opportunity to tell you briefly about my experiences through the first half year of my presidency, to make note of recent developments, and to invite you join the effort to enhance the usefulness of the Society to all members.

This has been a year of changes. Here are some examples. Through the good efforts of our Past President, Lew Lipsitt, we now have a functioning listserv which can be used by all to "get out the word" rapidly on matters of concern to the membership. You are encouraged to join the list, using the simple procedures outlined elsewhere in this newsletter. I know the messages you will find there will be well worth your time and I encourage you to use this system whenever you have something important that the rest of us should know about. As further evidence of the fact that your Society has finally arrived in the 21st century, we will soon have a new and improved web site (—address—) containing all the most recent information that anyone might need about the Society, thanks to the efforts of our Treasurer Lee Matthews. We will post there a statement of purpose of the Society, current officers, requirements for membership and fellowship status, and our Bylaws. This information should be useful not only to members but to all those who might wish to explore membership in our group. Speaking of bylaws, ours have recently been revised by Michael Wertheimer, current secretary of the Society, and are published elsewhere in this newsletter. Members of the Society will have a chance to vote on this revision at the Business meeting of the Society scheduled during the upcoming APA convention in San Francisco this August. If you plan to attend the convention, then by all means come to the Business meeting of our Society, meet your colleagues and the Society's officers, and exercise your rights as a member. We will also announce there the results of our latest election, and the names of your next president-elect and two new members of the Executive Committee of the Society.

The Society's substantive program for the convention this year is the joint effort of Robert Perloff, who volunteered to organize the program, and Lew Lipsitt, who stepped in to complete and finalize the program when Bob had an unfortunate health problem last fall. I am delighted to say that Bob is now fully recovered and that the program is one of the best ever arranged for the Society. The details of the program are presented elsewhere in this newsletter, and I encourage you to look it over. Its quality might convince you to attend the convention, even if you are doubtful at the moment. There are several invited lectures and symposium. But, in addition, as you probably know, the Society gives several awards annually and these awards are attached to one hour addresses by the award winners. Award lectures are always a highlight of the convention program but I believe that this year they will be especially captivating. Do come and enjoy.

As a final word, I implore you to become even more active than you have been in the affairs of the Society. There have been many changes in recent years in the APA and in our field. Most of these changes have advanced the interest of the discipline of psychology. But in my humble opinion, the trend toward dividing psychology into camps which have an increasingly difficult time talking to one another is not salutary, indeed not tolerable. The Society for General Psychology is the antithesis of this trend. The Society and its members tend to believe that there is a point to the experimental examination of behaving organisms and of the mental process that might be a part of or associated with their behavior, exclusive of brain maps, therapies and interventions, cultural milieu, and other ancillary considerations. If your position is consistent with the Society's perspective, please work with us. Larger groups like APA, striving not to offend or alienate their diverse members, cannot act against the often perceived inexorable division of our field. The Society can and will. I hope you'll pitch in and help.

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Letters to the Editor

To the Editor:

Robert Perloff's erudite article, July 1999, Letter to the Editor, "Three Cheers for Coherence (aka "Giving (General Psychology Away)") caught my eye just as I was about to put down my copy of *The General Psychologist* (Fall, 1999, Volume 34, Number 3). In general I liked what he had to say. However, since he espouses Coherence, why not go all the way and include other than General Psychologists who he feels should be in the forefront in this quest. I'd even risk being called a turncoat and ask that we invite a few interested Psychiatrists for their thoughts and suggestions.

I feel that Bob's proposed list of Illustrative Social Problems should be expanded and have indicated some 38 additional ones. I feel certain that there are many more yet to be added and welcome them.

- 1) Assassinations
- 2) Acceptance/rejection of disabled persons.
- 3) The myth of "The Golden Years"
- 4) Abortion
- 5) Prostitution/ infidelity, adultery, promiscuity
- 6) Illiteracy/genius/mental retardation.
- 7) Greedy Pharmaceutical Companies
- 8) The Stock Exchange/Traders, gamblers.
- 9) The Glass Ceiling
- 10) Empowering all minorities.
- 11) Road Rage
- 12) Government Cover-Ups. (Agent Orange, etc.)
- 13) White fear of some Afro-Americans
- 14) Public School Funding/ School Board Power.
- 15) The Death Penalty
- 16) War, genocide, Peace.
- 17) Rape, incest, divorce, marriage
- 18) The MD-as-God Myth.
- 19) Acceptance/rejection of Alternative Care
- 20) Humane care in animal research.
- 21) Destruction of the Rain Forests
- 22) Depletion of Ozone, pollutions (air, water, earth).
- 23) Banning of all land mines, nuclear arms
- 24) Psychological aspects of disease/health.
- 25) Hunting animals to extinction, fur coats
- 26) Tattooing, body piercing.
- 27) Boxing, wrestling, no holds barred events
- 28) Mental illness/Health.
- 29) Pornography, Pedophilia, Voyeurs
- 30) Liars, truth seekers, scam artists.
- 31) Riots, public demonstrations
- 32) Boycotts, sabotage, whistle blowers.
- 33) So-called Inner Cities
- 34) The criminal justice system, prisons.
- 35) Parenting, fatherhood, single families
- 36) God as being a male figure.
- 37) Belief systems affecting one's life
- 38) Prayer, Intercessory Prayer In Healing Practices.

Respectfully submitted,

William A. Fraenkel, PhD, FAPA
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To the Editor:

The spring, 2001, issue of *The General Psychologist* (Vol. 36:1) contained an article of mine, "Hedonism III:

An Elaboration and Extension of Hedonism." wherein there were three inadvertent—are they ever advertent?—errors. First, at the bottom of the first paragraph (page 1) of the article, reference was made to "redux" in the title. Actually, "redux" was omitted from the title—and into the woodshed with ye, editor Boneau!—whose original intent was to convey the idea of revisiting, or looking again, at hedonism.

At the end of the second paragraph (also on the first page of the article) I mistakenly attributed the phrase, "one more time, in the song, "April in Paris," to Louis (Satchmo) Armstrong. Actually, I should have credited "one more time" to William "Count" Basie, not to Louis Armstrong. Count Basie's famous rendition of "April in Paris" [lyrics by F.X. (Yip) Harburg and music by Vernon Duke] concludes with "one more time" and again with "one more once." (The "one more time" reference was made in the spirit of "redux," mentioned above.) For this mistake Perloff should join Boneau in the woodshed. (Thanks are due to James H. Korn and Donald A. Dewsbury for calling my attention to the fact that "one more time" was uttered by Count Basie, not Louis Armstrong. Korn and Dewsbury, both fellows of Division One, are generalists in areas transcending psychology!)

Finally, the reference to David Bakan was omitted from the "References" section. The reference is "Bakan, D. (1966). *The duality of human experience*. Chicago: Rand McNally."

Robert Perloff

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University of Pittsburgh

Society Listserv Service

Elsewhere in this issue, Society President Lyle Bourne mentions that the Society listserv is up and running. This service, using the internet, is intended to be a rapid form of communication with and between members of the society. In setting up the system, the Executive Committee intended that the listserv be used to provide news of the Division/Society to members and to permit members to promulgate messages to the other members of the Society. It was also intended that this Newsletter be transmitted on this system, thus creating the opportunity for an expanded effort not constrained by deadlines or the monotony of the black and white format. Let's have it for color! However, the listserv will become truly functional only when all or most members of the Society have subscribed to the service. Please do so at your earliest convenience. To subscribe, address an email to:

LISTSERV@LISTS.APA.ORG

with the following message:

SUBSCRIBE DIV1 *your-full-name-with-spaces*

You will then receive an acknowledgment message

Call for Nominations

Fellowship in the Division — As Much as You Ever Wanted to Know

Members of APA Division 1 (the Society for General Psychology, SGP) are now invited to nominate others (or themselves) for election as a fellow of SGP, based on their “unusual and outstanding contributions” to general psychology. Phone or write soon for a packet of forms for APA, and our Division’s twelve criteria. This year all completed materials must be submitted by 5 pm Friday, 14 December 2001 — including the nominee’s vita, personal statement, and endorsements from 3 current APA fellows. At least 2 of the 3 endorsers must be a fellow of Division 1. (Those who are already a fellow of another APA division can ask about a streamlined nomination procedure.) — Harold Takooshian, SGP Fellows, 314 Dartmouth, Paramus NJ 07652, USA. Contact 212-636-6393, or takoosh@aol.com.

2001 Fellowship Criteria for APA Division One — The Society for General Psychology

An individual may qualify for Fellow in Division One through any combination of the following. In preparing their supporting statements, both the candidate and the sponsors should cite (by number) which of these 12 criteria apply, and be sure to provide concrete, behavioral descriptions of the “outstanding and unusual” contributions (NOT a mere summary statement). Please follow these criteria for Fellow to organize materials; a vita organizing credentials in the form of a job application makes supporting statements from sponsors more difficult to prepare.

1. Author or editor of a major textbook in psychology, or a book which crosses a number of major areas of psychology.
2. Journal publications. Weight given to documentation of: a. Content — articles are “general” in nature (not specialized), or cut across many specialties. b. Single vs. multiple authors. (If one is not first author, is there some special reason?) c. Quality of the journals. (1) Established reputation? (2) Refereed? (3) Are articles abstracts or brief summaries, not full papers? d. Frequency of citation by others.
3. Publication of chapters or major sections of books. (Invited?) (Much-cited?)
4. Evidence of outstanding teaching of general psychology, such as: (a) Written reports by peers. (b) Distinguished teaching awards or appointments (such as Fulbright or invited professorships). (c) Critical impact on students — list of students who completed a PhD in psychology.
5. Production of a film, video, computer program, test with an impact on general psychology.
6. Evidence of public recognition as an “authority” on general psychology, such as: (a) Election to Fellow in

related, broad-based scientific or scholarly societies. (b) Selection as an editor or reviewer for scholarly journals or book publishers. (c) Selection as a reviewer for granting agencies. (d) Election to “leadership roles” in psychology — major committees, officerships, invited organizer, etc.

7. Development of innovative curricula, methods, or research in the teaching of general psychology, such as: (a) presentations or journal articles. (b) a “master teacher of teachers.” (c) New materials that effectively teach general psychology, including evidence of their effectiveness.
8. Evidence of frequent participation (not mere attendance) in professional meetings, such as: (a) Frequent invitations to chair sessions. (b) Organizer and participant in symposia. (c) Reading and/or sponsoring significant papers. (d) Citation by others of such participation. (e) Presentation of major invited addresses.
9. Evidence of impact on state, national, or international programs.
10. Evidence one has contributed to the promotion of psychology in the social-political scene, or improved the image of psychology.
11. Formation/development of a psychology department which provides broad, general training, evidenced by: (a) recognition by outside agencies or peers. (b) Graduates of the department who have attained status in the field.
12. Publication of papers in major non-psychological publications which reflect a national impact of work in general psychology (e.g. NY Times Magazine, Newsweek, etc.).

There must be others!

Society Homepage Now Online

Members should be aware that the Society now has its own Homepage on the World Wide Web. Society Treasurer Lee Matthews has undertaken the task of developing a functioning and informational package of Division-related materials and of making these available through the APA’s computer resources. Currently there is information about the goals of the Division?Society, its Bylaws and its Officers plus links to other related sites. It is planned that this and subsequent editions of the Newsletter and other Society-generated materials will find a place at that location. Try it out and Let Lee know of any suggestions you may have for content or format. Here’s the address:

<http://www.apa.org/divisions/div1/homepage.html>

Amendments to Society Bylaws

In January, the Executive Committee proposed a number of amendments to the current Society Bylaws to bring them up to date and clarify a number of minor points. Secretary Michael Wertheimer prepared a set of revisions that was printed in the Spring Issue of TGP, Unfortunately in going from Mac to PC a number of essential formatting details got lost. Here follows a complete set with all formatting now intact (It is devoutly to be hoped.). The noted changes will be voted on at the Business Meeting of the Society at the APA Convention in San Francisco this coming August.

Bracketed material to be added; crossed-out material to be deleted.

BYLAWS - THE SOCIETY FOR GENERAL PSYCHOLOGY,

A Division of the American Psychological Association
(Division I of the American Psychological Association)

ARTICLE I - Name and Purpose

1. The name of this organization shall be the Society for General Psychology, a Division of the American Psychological Association.
2. The Society shall concern itself with the general discipline of psychology considered both as a science and as a profession. ~~These~~ [Its concerns] include such areas as: (1) historical, systematic, and methodological aspects of psychology as a whole; (2) scientific and professional developments, especially as they cross specialty boundaries; (3) the relationships of psychology to other areas of human knowledge; and (4) relationships among specialties of psychology.
3. To promote the above, the Society shall initiate and encourage constructive interaction and integrative efforts.

ARTICLE II - Membership

1. The Society shall consist of five classes of members: Fellows, Members, Associates, Affiliates, and Student Affiliates.
2. Fellows must have made a significant contribution to one of the concerns of the Society as stated in Article I-2, must have been a Member of the Society for at least one year, and must meet the minimum standards [set] by APA Bylaws for Fellow status. (See also Articles II-6 and VII-4 of these Bylaws.)
3. Members must have an interest in the concerns of the Society as stated in Article I-2, and meet the minimum standards [set] by APA Bylaws for Member status. (See also Article II-7 of these Bylaws.)

4. Associates must have an interest in the concerns of the Society as stated in Article I-2, and meet the minimum standards prescribed by the APA Bylaws for Associate status. (See also Article II-7 of these Bylaws.)

5. Affiliates of the Society are individuals who are not members of APA [but] who meet qualifications established by the Executive Committee. (See also Article II-8 [of these Bylaws].)

6. Election as Fellow of the Society: (a) Members of the Society who are not Fellows of APA may be nominated to the APA as Fellows by the Executive Committee on recommendation of the Fellows Committee. If such Members are nominated by three APA Fellows and also qualify for Fellowship under Article II-2 of these Bylaws, subsequent election of such persons as Fellows by the Council of Representatives of the APA shall also constitute election as Fellows of the Society. (See also Article VII-4 [of these Bylaws]). (b) Members of the Society who are Fellows of APA but not Fellows of the Society may be elected as Fellows of the Society ~~Society~~ by the Executive Committee if such Members qualify for Fellowship under Article II-2 of these Bylaws, and are recommended by the Fellows Committee.

7. New Members and Associates: Those persons who already have been elected as Members or Associates of the APA shall be accepted by the Society as respectively Members or Associates within the Society on receipt of their request to this effect. Membership shall not become effective until the relevant dues requirements of the APA are satisfied. The ~~Secretary-Treasurer~~ [Treasurer] of the Society, directly or through the Central Office of the APA, shall notify new members of their acceptance.

8. Student Affiliates: Graduate and undergraduate students who are enrolled in a course of study in psychology and who are Student Affiliates of APA upon application will become Student Affiliates of the Society. If such students are not Student Affiliates of the APA, they may affiliate with the Society as Student Affiliates by applying with the endorsement of a faculty member in psychology of [at] their institution.

9. Members eligible to vote are the Fellows and Members of the Society. Except when otherwise specified in these Bylaws, all decisions on matters calling for action by the membership of the Society shall be by majority vote of the voting members at the annual Society Business Meeting or by mail ballot of such members. Voting by proxy shall not be allowed (except see Article IV-6 of these Bylaws).

ARTICLE III - Officers

1. The Officers of the organization shall be a Society President, a Society President-Elect, a Society Past-

President, ~~and a Secretary-Treasurer~~ [a Secretary, a Treasurer, an Historian, and a Newsletter Editor]. Terms of office of all Officers will begin at the beginning of the calendar year following their election[, except that the terms of the President-Elect, the President, and the Past-President begin at the end of the Society Business Meeting following their election].

2. The President-Elect shall be chosen by and only by members of the APA who are Fellows or

Members of the Society. ~~The Secretary-Treasurer shall be appointed by the Executive Committee for a renewable term of three years.~~

[3. The Secretary shall be appointed by the Executive Committee for a renewable term of three years.]

[4. The Treasurer shall be appointed by the Executive Committee for a renewable term of three years.]

~~3~~[5.] It shall be the duty of the Society President to preside at all meetings of the Society; to be Chair of the Executive Committee of the Society, and to exercise supervision over the affairs of the Society with the approval of the Executive Committee; to serve ex-officio as a member of the Nominations and Elections, Fellows, and Program Committees; and to perform such other duties as are incident to the office or as may properly be required of the President by vote of the Executive Committee. The outgoing Society President shall ~~designate~~ [appoint] for the ensuing year ~~one of the Members-at-large as~~ [a] member or Chair of the Nominations and Elections Committee and one as [a] member or Chair of the Fellows Committee.

~~4~~[6]. It shall be the duty of the Secretary-Treasurer to issue calls and notices of meetings; to receive and transmit applications for Society membership; to keep records of the Society; to cooperate with the Executive Officer of the APA; ~~to have custody of all funds and property of the Society, to collect any special dues that may be voted in accordance with Article VIII, Section 1, of these bylaws; to make disbursements as authorized by the Executive Committee;~~ to serve as Secretary and member of the Society Executive Committee; to serve ex-officio as a member of the Nominations and Elections, Fellows, and Program Committees; and, in the name of the Chair of the Nominations and Elections Committee, to issue calls for nominations of officers and Members-at-large of the Executive Committee, or to arrange with the Central Office for the issuing of such announcements.

[7. It shall be the duty of the Treasurer to have custody of all funds and property of the Society; to collect any special dues that may be voted in accordance with Article VIII, Section I, of these bylaws; to make disbursements as authorized by the Executive Commit-

tee; to serve as a voting member of the Society Executive Committee; to serve ex-officio as a member of the Nominations and Elections, Fellows, and Program Committees; and, directly or through the Central Office of the APA, to notify new members of the Society of their acceptance into the Society.]

5: [8]. It shall be the duty of the Society President-Elect to serve as a member of the Executive Committee of the Society, and to perform the duties of the Society President in the event of the absence or incapacity of the latter. The President-Elect shall automatically become President one year after assumption of office as President-Elect. Upon assuming office the President-Elect shall designate a person to serve on the Program Committee who, at the end of a year, will become Chair of that Committee.

~~6~~: [9]. It shall be the duty of the Society Past-President to serve as a member of the Executive Committee, and to perform the duties of the Society President in the event of the absence or incapacity of the latter and of the Society President-Elect. The President shall automatically become Past-President one year after ~~resumption~~ [assumption] of office as President. The outgoing Society President shall ~~designate~~ [appoint] for the ensuing year ~~one of the Members-at-Large as~~ [a] member or Chair of the Nominations and Elections Committee and ~~one as~~ [a] member or Chair of the Fellows Committee.

7: [10]. It shall be the duty of each Society Representative to perform the duties and accept the responsibilities specified in Article III of the Bylaws of the APA. The Representatives shall also serve as members of the Society Executive Committee.

[11. An Historian and a Newsletter Editor are each appointed to three-year renewable terms by the Executive Committee.]

8: [12]. In case of the death, incapacity, or resignation of any of these officers (excepting the Society President) the Executive Committee shall elect a successor to serve until the end of the Business Meeting following the next election.

ARTICLE IV - Executive Committee

1. There shall be an Executive Committee of the Society consisting of the Society President, the Society President-Elect, the Society Past-President, the ~~Secretary-Treasurer of the Society,~~ [Secretary of the Society, the Treasurer of the Society,] Society Representatives on the APA Council of Representatives, and ~~six~~ [three] Members-at-Large. [The Society Historian and Newsletter Editor are also ex-officio members of the Executive Committee.]

2. There will be as many Society Representatives on

the Council of Representatives as are provided for by the Bylaws of the APA. Council Representatives will be elected for three year terms and may succeed themselves. The seat of a Representative to APA Council shall be deemed vacant if the incumbent is elected to another office holding a seat on the Executive Committee. In that case, or in the case of resignation or incapacity, the President shall appoint the candidate with the next highest number of votes in the most recent election to fill the seat until the end of the Business meeting following the next election of the Society. It shall be the duty of each Society Representative to perform the duties and accept the responsibilities specified in Article III of the Bylaws of the APA. Society Representatives to the APA Council will report to the Executive Committee on matters of concern for the Society that are on the agenda of the Council and will seek counsel from the Executive Committee with respect to those matters. Representatives will report back to the Executive Committee the results of Council actions that affect the Society.

3. The Members-at-Large shall serve for terms of three years each, with elections so arranged that there [is one] ~~are two~~ new Member-at-Large elected each year. The seat of a Member-at-Large shall be deemed vacant if the incumbent is elected to another office holding a seat on the Executive Committee. In that case, or in the case of resignation or incapacity, the President shall appoint the candidate with the next highest number of votes in the most recent election to fill the seat until the end of the Business meeting following the next election of the Society.

4. The Executive Committee shall have general supervision of [over] the affairs of the Society, performing the duties and abiding by the limitations specified in these Bylaws. All actions of the Committee affecting Society policy shall be put to the vote of the members eligible to vote at the next annual Society Business [Meeting] or by special mail ballots.

5. All decisions of the Executive Committee shall be made by majority vote of the Committee members present, except that on a mail ballot a majority of those returning their ballots within 21 days of its mailing shall decide the issues.

6. When an Executive Committee member is present at the Annual Convention of the APA but is unable to attend the Committee meeting because of membership on either an Executive Committee of another APA Society or the APA Board of Directors, meeting at the same time, a written proxy vote on one or more issues before the Committee may be given to either the Society President or Secretary-Treasurer to be recorded.

ARTICLE V - Nominations and Elections

I. The Officers of the Society, Representatives to the APA Council of Representatives, and the Members-at-large of the Executive Committee shall be elected by a preferential vote of the Society Fellows and Members on a secret mail ballot.

2. The Secretary-Treasurer shall arrange to issue a call for nominations, in the name of the Chair of the Nominations and Elections Committee, for the office of Society President-Elect, for the offices of Representatives to the APA Council of Representatives in those years when a term of office expires or additional Representatives have been assigned to the Society, and for Members-at-large of the Society Executive Committee, in accordance with the procedures established by the APA Election Committee. The nomination ballot shall provide spaces for at least three names for President, and at least two spaces for each other person to be elected to other offices. The ballot shall be accompanied by a roster of all current officers, committee chairs and members of committees; those who have served in all those capacities for the preceding three years; and the names of all Past-Presidents of the Society.

3. The nominees for a given office shall be identified by the Nominations and Elections Committee from among those persons receiving the largest number of votes on the nomination ballot, and who have indicated to the Nominations and Elections Committee their willingness to serve. The Nominations and Elections Committee shall determine the number of nominees to be nominated for each office, providing that at least three nominees are named for the office of Society President-Elect and that there are at least twice as many nominees as there are persons to be elected for each other office. In the event that an insufficient number of candidates for a slate receives nominations, the committee may supplement the list with additional names.

4. The Nominations and Elections Committee of the Society shall count the nomination ballots and, through the Secretary-Treasurer, shall report a slate of names of the persons nominated for each office, and willing to serve, to the Central Office for inclusion in the election ballot issued by the APA, in accordance with the established APA procedures.

5. The preferential count of the votes for each office shall be obtained by the Society Secretary-Treasurer from the Election Committee of the APA, and these counts shall be referred to the Society. The Chair of the Nominations and Elections Committee shall indicate to all candidates the result of the election, and the Nominations and Elections Committee shall announce the election results at the Business Meeting of the Society.

6. All officers and members of the Executive Committee with the exception of the President-Elect shall assume office at the beginning of the calendar year in which their election is announced. The President-Elect will ~~take~~ [takes] office following the Business Meeting in the year in which elected.

ARTICLE VI – Meetings

1. The Business Meeting of the Society shall take place during the Annual Convention of the APA and in the same locality for the transaction of business, the presentation of scholarly papers, and the discussion of questions of interest to general psychology.

2. A quorum shall consist of those Fellows and Members of the Society attending the announced Business Meeting.

3. The Executive Committee will meet prior to the Business Meeting of the Society and at such other times as are agreed upon by the Executive Committee or are determined by the President.

ARTICLE VII – Committees

1. The Committees of the Society shall consist of three standing committees: a Nominations and Elections Committee, a Fellows Committee, and a Program Committee, and of such special committees as may be established by vote of the members of the Executive Committee.

2. The members of the Fellows Committee, the Nomination and Elections Committees, and the Program Committee shall serve for a term of three years. Appointments shall be made during and take effect at the end of the Annual Business Meeting of the Society.

3. The Fellows Committee and the Nomination and Elections Committee shall each consist of three members ~~appointed~~ [approved] by the Executive Committee. The Past-President will serve as[, or appoint a,] Chair of the Nominations and Elections Committee. The Chair of the Fellows Committee shall be designated by the President. Members of the Fellows Committee must be Fellows of the Society. The Program Committee shall consist of three members: (1) a Chair designated for that position the previous year by the prior President-Elect, (2) a member, designated by the President-Elect, who will serve as Chair the following year, and (3) the Past Chair of the Committee.

4. It shall be the duty of the Fellows Committee to receive or initiate nominations for Fellowship, to examine the credentials submitted, and to make recommendations, accompanied by necessary data regarding each applicant, to the Executive Committee in accordance with the requirements set forth in Article II-2 and II-6 of these Bylaws. The Chair of this

Committee shall ~~be directed by the Secretary~~ to inform all candidates of their status, once the Executive Committee, the APA Fellows Committee, and the APA Council of Representatives have acted on the recommendations.

5. It shall be the duty of the Program Committee to make arrangements for the program at the Annual Meeting of the Society in accordance with Article VI of these Bylaws, and to coordinate the program with the APA Convention Program Committee.

6. It shall be the duty of the Nominations and Elections Committee, in cooperation with the APA Election Committee, to conduct and supervise all nominations and elections of the Society, as provided in Article V of these Bylaws.

7. Committee Chairs shall present oral reports to the Executive Committee on committee activities during the preceding year. In the absence of the Chair, another member of the committee may appear to present the report. In either case, written copies of the report should be submitted to the Society's President and Secretary-~~Treasurer~~ by the time of the Executive Committee's meeting ~~at~~ [prior to] the Annual Business Meeting of the Society.

ARTICLE VIII – Dues

1. Changes in annual dues and assessments of any special kind shall be recommended by the Executive Committee and shall be voted on at the next Annual Business Meeting or by mail ballot of voting members.

ARTICLE IX – Amendments

1. The Society at any Annual Business Meeting by a vote of two-thirds of the members present, or by a majority vote of the members of the Society voting by a mail ballot, may adopt such amendments to these Bylaws as have been (a) presented and read at the preceding Annual Business Meeting, or (b) mailed to the last known post office address of each member or (c) published in the newsletter of the Society [at least] one month prior to the final vote on the proposed amendments.

The Society for General Psychology (aka Division One of APA)

Convention Program, San Francisco, August 24-26, 2001

Friday, August 24th, 2001

8:00a – 9:50a *Symposium. "Literature and Psychology: Theories of Memory in Autobiography."*

Chair: Raymond J. Shaw & Iseli K. Krauss

Participants:

John C. Cavanaugh. "Autobiographical Memory as a Literary Tool for Understanding Psychological Issues."

Jane M. Berry. "Psychological Science in Literature: 'The Memory of Old Jack'"

Iseli K. Krauss. "Automatic vs. Effortful Memory in Reminiscence: Proust vs. Nabokov"

Raymond J. Shaw. "Ebbinghaus, Bartlett, & Augustine: Thesis, Antithesis and Synthesis?"

Discussant: **James E. Birren**

Moscone Center - South Bldg., Rm 274

9:00a – 9:50: *William James Book Award Address.*

Chair: Michael Wertheimer

Participant: **Michael Tomasello.** "The Cultural Origins of Human Cognition."

Moscone Center - South Bldg., 228-230

10:00a – 10:50: *Ernest Hilgard Lifetime Achievement Award Address.*

Chair: Kurt Salzinger.

Participant: **Murray Sidman.** "Equivalence Relations: Generality and Significance."

Moscone Center - South Bldg., Rm 276

12:00p – 12:50p: *Conversation Hour.*

Chair: Linda Bartoshuk

Participant: **Lenny R. Vartanian.** "You Are What You Eat: Archaic Belief or Modern Truth?"

Moscone Center, South Bldg., Rm 270

1:00a – 2:50p: *Symposium. 23rd Annual Symposium on Eminent Women in Psychology. "Historical and Personal Perspectives"*

Chair & Discussant: Agnes O'Connell

Participants:

Judith E. N. Albino.

Patricia M. Bricklin.

Dorothy W. Cantor.

Lillian Comas-Diaz.

Phyllis A. Katz.

1:00p – 1:50p: *Invited Lecture.*

Chair: Lee Matthews.

Participant: **Kelly Brownell.** "Taking on Water With No Bucket: Policy vs. Treatment in Obesity."

Moscone Center - South Bldg., Rm 200

2:00p – 2:50p: *Invited Lecture.*

Chair: Lewis P. Lipsitt.

Participant: **Robert Sternberg.** "A Duplex Theory of Hate and its Application to Relationships, Massacres and Genocides."

Moscone Center - South Bldg., Rm 309

4:00p – 5:50p: *Symposium. "Research Evidence to Combat Misconceptions About Human Memory."*

Chair: Scott Brown.

Participants: **Claudia Alvarez & Scott Brown.** "What People Believe About Memory Despite the Research Evidence."

Bethany B. Silver. "Latent Support for Memory Beliefs: IRT and Structural Item Examination."

Joseph M. Fitzgerald. "Autobiographical Memory: Interdisciplinarity Realized."

Sheila M. Seelau. "Mock-Juror Gender and Beliefs Predict Responses to Recovered Memory Cases."

Thomas J. Kehle, Melissa A. Bray, & Sandra M. Chafouleas. "The Effectiveness of Self-Modeling as an Intervention for Behavioral Change: Or is it Really the Alteration of Memory?"

Discussant: **Kimberly A. Lawless**

Moscone Center - South Bldg., Rm 200

5:00p – 6:50: *Focus on Science Social Hour.*

SF Marriott, Golden Gate Salon B1

Saturday, August 25th, 2001

8:00a – 9:50a: *Symposium. "Life Through The Eyes of Children in Middle Childhood."*

Chair: Rosemarie Truglio

Susan Royer. "View from the Middle: Impressions on Life, Family and Media."

Grant McCracken. "Theatre of Violence: Eminem, Mooks and Intimidation in the World of Teens and the Implication for Children 'In the Middle'."

Michael Cohen. "The Myth of a Unified Childhood."

Faith Rogow. "What Does it All Mean? Media Literacy as a Modern Day Decoder."

Moscone Center - South Bldg., Rm 200

12:00p – 1:50p: *Symposium. "Let Us Now Praise General Psychology and General Psychologists: Following William Bevan"*

Chair: Frank Kessel

Participants:

Peter Nathan. "More on the Tragedy of the Commons."

Milton Grodsky. "Applications of General Psychology to Management."

C. Alan Boneau. "Whatever Happened to General Psychology?"

Moscone Center - South Bldg., Rm 200

3:00p – 3:50p: *Invited Lecture.*

Chair: Tiffany M. Field

Participant: **Jacob Gewirtz.** "Some Thoughts About the Competition Between Experiential and Nativistic Explanations."

Moscone Center - South Bldg., Rm 222

4:00p – 4:50p: *Presidential Address.*

Convention Program(Continued)

Division One The Society for General Psychology

Saturday August 25 (cont'd)

Chair: Lewis P. Lipsitt, Past President.

Participant: **Lyle E. Bourne, Jr.** "Terrorism and Military Conflict: General Psychology Informs International Relations."

SF Marriott - Yerba Buena Salon 5

5:00p - 5:50p: Division 1 Business Meeting.

Presiding: Lyle E. Bourne, Jr.

SF Marriott - Yerba Buena Salon 5

6:00p - 7:00p: Div 1 Social Hour with Divisions 3, 6
SF Marriott - Yerba Buena Salons 3 and 4

Sunday, August 26th, 2001

8:00a - 8:50a: Invited Lecture.

Chair: Linda M. Bartoshuk

Participant: **Kurt Salzinger.** "How Do I Measure Thee? Let Me Count The Ways."

SF Marriott - Yerba Buena Salon 3

8:00a - 9:50a: Paper Presentation:

Chair: Harold Takooshian

Participants:

Magoroh Maruyama. "Individual Epistemological Types: Developmental, Transcultural and Educational Views."

Lucy M. Reidl-Martinez, G.A. Sierra-Otero, A. Dominguez-Espinosa, & M. Gonzalez-Nava.

"Factorial Structure Comparison, Jealousy and Envy: Qualitative and Quantitative Approaches."

Hagop S. Pambookian. "The Binet-Simon Intelligence Scale in Psychology Publications."

Constance Dierickx, S.C. Kalichman, & F. Norris. "A Culturally Tailored Intervention for HIV Prevention With Deaf Adults."

Michael Kramer & G. Kose. "Holocaust Testimony, Media, and The Narrative Incorporation of Meaning."

Kristina Saltzman, G.W. Holden & C.J.

Holahan. "Psychobiology of Children Exposed to Marital Violence"

Moscone Center - South Bldg., Rm 220

9:00a - 10:50a: Symposium. "The Role of Psychological Theories in the Effort to Improve Medical Decision Making."

Chair: Robert M. Hamm.

Participants:

Robert M. Hamm. "Does Providing the Information for Rational Decision Making Help Patients Make Rational Decisions?"

Leslie Lenert. "The Use of Measurement of Patients' Utilities in Medical Decision Making."
Alan Schwartz. "Comparison of Physicians' Evidence-based Decisions with the Bayesian Use of the Evidence."

Frank Papa. "Case Instance (Exemplar) Versus Disease/Feature Association (Abstraction) Theories of Medical Diagnosis."

Valerie Reyna. "A Fuzzy Trace Theory of Medical Decision Making"

Moscone Center - South Bldg., Rm 262

11:00a - 11:50a: Symposium. "Whatever Happened To...?"

Chair: C. Alan Boneau

Participants:

Duncan Luce. "Information Theory."

Eddie Harmon-Jones. "Cognitive Dissonance."

Moscone Center - South Bldg., Rm 272

12:00p - 1:50p: Discussion Panel. "Succeeding in Graduate School: Getting into, Getting Through, Getting On."

Chair: Allen K. Hess.

Participants:

Harold Braithwaite. "Preparing All Students for Success: The Undergraduate Curriculum and Minorities."

David Glenwick & D.K. Mroczek. "Mastering Research Skills and Negotiating Thesis and Dissertation Challenges."

Allen K. Hess. "Succeeding in Graduate School: Becoming Clinically Skilled."

Kristin Schaaf. "Challenges for Women in Graduate School and Beginning a Career."

Steven Walfish. "Preparing for a Successful Career."

Moscone Center - South Bldg., Rm 310

2:00p - 2:50p: Symposium. "Reactive Insight Effects on Research Participants."

Chair: Eric L. Lang.

Participants:

Thomas Bradbury. "Unintended Effects of Marital Research on Marital Relationships."

Eric L. Lang. "Reactive Insight Effects on Participants in Two Panel Surveys."

Discussants: **Greg Koski & Theodore Sarbin**

Moscone Center - South Bldg., Rm 262

2:00p - 3:50p: Symposium. "Long-term Longitudinal Studies: Prospects & Pitfalls."

Chair & Discussant: Lewis P. Lipsitt

Participants:

Paul Satz. "The IQ-Achievement Discrepancy Index in Learning Disability: A 25-year Follow-up."

Stephen L. Buka. "The New England Family Study: Prenatal Origins of Adult Psychopathology"

Brenda Eskenazi. "Learning from the Past and Lessons for the Present and Future."

Moscone Center - South Bldg., Rm 236

4:00p - 4:50p: George Miller Award Address.

Chair: Lewis P. Lipsitt.

Participants: **Jack Martin & Jeff Sugarman.**

"Psychology's Reality Debate: A 'Levels of Reality' Approach."

SF Marriott - Yerba Buena Salons 14-15

5:00p - 5:50p: Arthur W. Staats Lecture for Unifying Psychology.

Presiding: Raymond D. Fowler

Participant: **Gregory Kimble.** "A General Theory of Psychology: Basic Categories & Principles."

SF Marriott - Yerba Buena Salons 14 and 15

6:00p - 7:00p: Div 1 Social Hour

SF Marriott - Yerba Buena Salon 12