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Biological Factors

Recent genetic and neurobiological studies lead to increasing emphasis upon biological determinants in the EDs. Heritability estimates range from 48% to 76% for AN and from 50% to 83% for BN, with 41% for a syndrome including binge eating without compensation (similar to BED) (see Streigel-Moore & Bulik, 2007). Hereditary effects could be enacted through various neurobiological systems. Putative pathophysiological roles have been suggested for several neurotransmitter (e.g., serotonin and dopamine), hormonal (e.g, estrogens), and other brain systems (e.g., brain-derived neurotropic factor)—which could all impact appetitive controls, body weight, anxiety, affect, and impulse controls (Steiger & Bruce, 2008).

Based on effects obtained in our research, we have proposed that vulnerability to bulimic syndromes, and especially to bulimic variants characterized by marked affective or behavioral dysregulation, may reflect the amplification of constitutional (serotonergic) vulnerabilities by developmental stressors (e.g., childhood abuse), and then activation by serotonergic sequelae of too much dieting (see Steiger & Bruce, 2008). With respect to AN, one plausible etiologic gene-environment interaction effect might implicate activation of genetic effects due to malnutrition, dieting, and/ or hormonal influences (Klump & Gobrogge, 2005, cited in Steiger & Bruce, 2008).

Treatment

Available data do not decisively support any one psychotherapeutic strategy for AN. However, findings inconsistently support application of cognitive-behavioral therapy (CBT) and the utility of family-based approaches with adolescent patients, and provide ambiguous indication of the utility of hospitalization (Fairburn, 2005). Overall, outcome indices suggest moderate response to treatment in younger patients, but weak response in older individuals.

Outcome for BN is characterized by moderate to favorable response to various treatments (Shapiro et al., 2007). CBT is the most strongly indicated psychotherapeutic treatment for BN, with use of adjunctive (usually serotonergic) medication suggested in some cases. Other psychotherapeutic approaches (including interpersonal psychotherapy or dialectical behavior therapy) seem also to yield demonstrable benefits. Research examining treatment for BED suggests that individual and group CBT is effective in treating psychiatric and eating symptoms in BED, but has limited or no effect on weight loss (Brownley, Berkman, Sedway, Lohr, & Bulik, 2007).

For BN, selective serotonin reuptake inhibitors (SSRIs) and mood stabilizers have been shown to yield reductions in binge-purge symptoms and associated psychopathological features (Shapiro et al., 2007). In AN, preliminary research suggests that SSRIs may be useful, but only after some weight restoration has occurred (Fairburn, 2005). Preliminary evidence also suggests that atypical antipsychotic agents (e.g., Olanzepine) may facilitate clinical gains in AN. In the treatment of BED, SSRIs, anticonvulsants, and certain antiobesity drugs have also shown short-term benefits (Brownley et al., 2007).

REFERENCES

Brownley, K. A., Berkman, N. D., Sedway, J. A., Lohr, K. N., & Bulik, C. M. (2007). Binge eating disorder: A systematic review of randomized controlled trials. *International Journal of Eating Disorders, 40,* 337–340.

Fairburn, C. G. (2005). Evidence-based treatment of anorexia nervosa. *International Journal of Eating Disorders, 37* suppl, S26–S30.

Hoek, H. W., & van Hoeken, D. (2003). Review of the prevalence and incidence of eating disorders. *International Journal of Eating Disorders, 34,* 383–396.

Keel, P. K., & Klump, K. L. (2003). Are eating disorders culture bound syndromes? Implications for conceptualizing their etiology. *Psychological Bulletin, 129,* 747–769.

Shapiro, J. R., Berkman, N. D., Brownley, K. A., Sedway, J. A., Lohr, K. N., & Bulik, C. M. (2007). Bulimia Nervosa Treatment: A systematic review of randomized controlled trials. *International Journal of Eating Disorders, 40,* 321–330.

Steiger, H., & Bruce, K. (2008). Eating Disorders: Anorexia nervosa and bulimia nervosa. In T. Millon, P. H. Blaney, & R. D. Davis (Eds.), *Oxford Textbook of Psychopathology* (2nd ed.). New York: Oxford University Press.

Streigel-Moore, R. H., & Bulik, C. M. (2007). Risk factors for eating disorders. *American Psychologist, 62,* 181–198.

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See also: **Anorexia Nervosa; Bulimia Nervosa; Obesity**

ECOLOGICAL PSYCHOLOGY

This article describes James J. Gibson's ecological approach to psychology as it developed. Gibson's system evolved as an approach to visual perception, but the consequences have extended far beyond vision—first to other modalities (Gibson, 1966; Turvey, 1996), then to action, cognition, social psychology, and movement science, to name a few. Part of the range of ecological psychology can be seen in the list of books in the series, *Resources for Ecological Psychology* (see Heft, 2001).

Perception and Reality

In popular speech it is common to hear perception contrasted with reality ("that's only your perception"), as

if one can experience reality in some way other than through perception. The research programs of well-known perceptual scientists commonly nourish this attitude by emphasizing illusions and the mismatch between experiences of the world and the "input" for perception. In vision, for example, the physical action on the receptors in the eye is through light and the receptors are arranged as a two-dimensional surface. Nevertheless, we experience a world filled with solid surfaces that reflect light, and the experience is three-dimensional. What gives rise to the extra dimension (depth), and why do we see solid surfaces when the light at the eye is just that, light? This failure of correspondence between what the scientist takes to be "given" and the final, full-blown psychological experience of the world, reinforces the notion that experience must be achieved by a great deal of "filling in" what was not there in the first place and that the perceptual grasp on reality is tenuous indeed. Research on illusions magnifies this attitude.

The ecological approach developed by Gibson takes the opposite approach. It seeks to understand how successful perception and action are possible. The changes required to fashion a science of realism, however, are so fundamental that the consequences ripple through most of psychology and related disciplines.

Very often, theories are built around laboratory experiments and data, without carefully making the connection back to the world and the experiences for which we ultimately want to account. Consider the Müller-Lyer illusion, a frequent topic of laboratory investigation. In this familiar amusement, equal lines do not look equal when they are presented with arrowheads pointing in opposite directions. Our eyes "fool" us. Should we then use this as a caution that "the senses cannot be trusted"? Now consider the laboratory setting more broadly. Why do we think there are two equal lines? To establish this, we need measurements. The measuring process is most commonly done visually by comparing the lines in the illusion to a ruler or to a single line of constant length to show that our two original lines are "really" equal. Thus, vision was used to establish the equality of the lines. The illusion is still present in the illusory context, of course. But the way we sort out what is illusion and what is not is still perceptual. The status of the lines was determined through more than visual perception.

When the experimenter walks through the hallway on the way to the laboratory, this is done by trusting vision, touch, and hearing to indicate walking upright, walking upright through the hallway, through the lab door, and guiding the body into a chair at the table with the computer on it, to a perceived state of being comfortably seated in front of the computer in the laboratory room. In discussing the upshot of the Müller-Lyer experiment, it is not usual to ask how the experimenter perceived his or her surroundings and the pathway through them, or how the experimental observer got to the room. From the standpoint of ecological psychology, these are very pertinent questions. It is important to recognize that perceptual research should address these capacities. Illusions are interesting, but their role in understanding perceiving needs to be incorporated into the understanding of all of perceiving, which must include "normal," unquestioned guided activity in a real (perceived as such) environment.

The ecological approach is distinctive inasmuch as it takes objects of perception to be part of the theory. One fundamental "object," however, is the entire surface of the earth, and its contrast with the sky, meeting at the horizon. This earth-sky pair forms an immense envelope within which all other structures and events of an animal's lifetime occur. As an envelope, it is something that we always are inside of (except for space travelers) and always perceiving to some extent (even when asleep, we are actively adjusting to the surfaces supporting us—and that is an example of perceiving the environment).

Not only is the structure of what there is to be perceived "environing" (called "ambient"), but it has structure at many levels. Some of those levels are too large or too small to be relevant to a given animal, but any material surface has structure at many spatial and temporal scales. This means that what is available in the environment to be perceived is far richer than any animal ever could apprehend in its total lifetime. It makes no sense to say that any part of the environment ever is completely perceived. Perceiving the environment successfully, in the ecological view, means to be "in touch with it," to have a stable orientation to relevant portions of the environment and to be able to explore, in order to extend the portions of the environment apprehended. As with the illustration of the illusion in the laboratory setting, what is tentatively perceived, unclearly perceived, or even incorrectly perceived is brought into a stable awareness by more perceiving.

An area of the desert that looks like shimmering water can be clarified by approaching the area. Real water in a real location can be approached, with more and more detail specific to water coming into view. A mirage will stay in the distance and can be perceived as such. The two can be distinguished if exploration over time is allowed. The perception of persistence is not based on the persistence of a percept.

The key to saying that an extended, persisting, surface can be perceived as such lies in Gibson's analysis of the optics of what he called "the occluding edge." Research reported in Gibson, Kaplan, Reynolds, and Wheeler (1969) shows examples of different ways that something seen can disappear from view. Occlusion occurs when the texture of one opaque surface hides another. The occluding edge is the boundary between the hiding surface and the hidden. In locomoting through a stable, but cluttered, environment, surfaces that previously were hidden come into view, and surfaces that were visible go out of view. Optically, there is a sharp substitution of texture at the boundary. It

is important to recognize that the pattern of change itself can be an object of perception. The change specific to occlusion entails that the covered or uncovered surfaces are not going out of existence or coming into existence. There is an optical test for reality. A surface that goes out of sight by occlusion can be brought back into sight by an opposite motion. One could do that repeatedly if necessary. As long as the reversibility holds, the persistence and connectivity of the surface is specified. The significance of occlusion as a type of change is underscored by comparison to other changes—for example, disintegration, explosion, burning, or evaporating. Those are changes that do not preserve surfaces. If one sees those changes, no opposite movement can bring them back into view.

The limiting case of an occluding edge would be an eye socket. The edges of the eyes, face, and body, hide what can be seen at a given moment. Rotations of the head bring parts of a surround into view, and hide previously seen parts. Gibson argued that if a head rotation can be seen as such (which occlusion allows), then the underlying persistence of surrounding surfaces can also be revealed. The stress here is on the fact that the body can be seen at the same time as the scene and that underlying invariances can be separated from specific changes (that also can be apprehended as such). Perceiving is seen as a constant expansion of how much of an environment is perceived.

Scaling to Size and Skill—Affordances

It has been noted that the environment of an animal extends indefinitely in space, time, and scale. Animal life is adjusted to the scales appropriate to the kind of animal it is. Gibson realized that this involved more than mere linear size. An animal's weight and skill will determine what it can stand on, what it can sit on (if it sits at all), and what it can climb on (if it climbs at all). Surfaces must have a certain strength and a certain arrangement to allow these activities. The opportunities for action, for a given animal, in a given environment, are what Gibson called affordances. What an environment affords an animal is an objective feature (an elephant can walk across that surface, or it cannot) of the world. An affordance is an unusual entity because it involves an animal, an environment, and their relation—all considered as a unit. But such entities are not all that mysterious. An occluding edge, including the horizon, has the same logic. They are entities defined as relations between animal and environmental arrangements. Like the occluding edge or the horizon, affordances are perceivable entities if there is structure (say, optical structure) to specify them.

Implications

If perceiving a persisting environment requires exploration over time, what happens to the boundary between perception and memory? Gibson argued that time *per se* was a misleading way to segregate coherent topics. He argued that the perception of persisting surfaces would make for a coherent topic; and could usefully be distinguished from the apprehension of surfaces that previously existed but no longer exist. Surfaces that do not yet exist but can brought into existence. What Gibson argued was that persistence perception depended on the detection of specific structure, invariant over time. Persistence in the mind does not create persistence in the world. By the same token, certain types of meaning can be defined in such a way that they can be said to be objects of perception, where perception is extraction of structure over time, and the structure is specific to the environment and to the self in the environment.

For samples of the range of scientists in vision, movement, comparative psychology, and nonlinear dynamics modeling who were influenced by Gibson's work, see Warren (1998). For social psychology implications, see McArthur and Baron (1983) and Baron and Hodges (2007). For an ecological appreciation of Gibson's impact on film studies, see Anderson and Anderson (2005).

REFERENCES

Anderson, J. D., & Anderson, B. F. (Eds.). (2005). *Moving image theory: Ecological considerations*. Carbondale: Southern Illinois University Press.

Baron, R. M., & Hodges, B. H. (Eds.). (2007). Updating J. J. Gibson's social psychology legacy: Making social psychology more ecological and ecological psychology more social. *Ecological Psychology, 19*, 79–199.

Gibson, James J. (1950). *The perception of the visual world*. Boston: Houghton Mifflin.

Gibson, James J. (1966). *The senses considered as perceptual systems*. Boston: Houghton Mifflin.

Gibson, J., Kaplan, G., Reynolds, H., & Wheeler, K. (1969). The change from visible to invisible: A study of optical transitions. *Perception & Psychophysics, 5*, 113–116.

Gibson, James J. (1986). *The ecological approach to visual perception*. Mahwah, NJ: Lawrence Erlbaum. (Original work published 1979)

Heft, H. (2001). *Ecological psychology in context*. Mahwah, NJ: Lawrence Erlbaum.

McArthur, L. Z., & Baron, R. M. (1983). Toward an ecological theory of social perception. *Psychological Review, 90*, 215–238.

Turvey, M. T. (1996). Dynamic touch. *American Psychologist, 51*, 1134–1152.

Warren, W. H., Jr. (Ed.). (1998). Visually controlled locomotion and orientation. *Ecological Psychology, 10*, 157–346.

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See also: **Environmental Psychology; Perception; Social Climate Research**