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## OAXACA, RONALD 1944–

Ronald Oaxaca is the McClelland Professor of Economics and faculty associate at the Economics Science Laboratory at the University of Arizona. Best known to many economists as the developer of the Oaxaca wage decomposition technique for examining wage differentials, he has conducted research and published extensively since the 1970s on topics such as labor economics, applied econometrics, and applied microeconomics including sex, union, and race differentials and discrimination; unemployment and unemployment insurance; and the minimum wage.

Oaxaca is perhaps best known for developing one of the most important methods used in the field of labor economics to study wage discrimination based on sex and race known as the wage gap decomposition, which he outlined in his 1973 article “Male-Female Wage Differentials in Urban Labor Markets.” Also influenced by economist Alan S. Blinder, the wage gap decomposition provides a means for identifying residual differences between observed and predicted wages that are not accounted for by characteristics associated with productivity, such as education and skill, and can thus be attributed to labor market discrimination and other omitted variables. The seminal method has since been refined and elaborated upon to add other elements of analysis, such as the use of alternative wage structures as reference points for comparison; selectivity bias; comparative analysis across countries and time; the explanation of penalties associated with motherhood; and analysis of discrimination across the income distribution rather than using means. Oaxaca has also continued to utilize and improve upon the wage

decomposition, notably with Michael R. Ransom in two studies conducted in 1994 and 1999 (as mentioned in Yana van der Meulen Rodgers’s 2006 article “A Primer on Wage Gap Decompositions in the Analysis of Labor Market Discrimination”), further refining methods for developing the nondiscriminatory wage structure and emphasizing the importance of the reference group for estimating the unexplained or discriminatory portion of the wage gap.

More recently Oaxaca has focused on topics such as the influences of ability and family background on optimal schooling levels; the effects of dual job holding; statistical discrimination; and consistent estimators of linear probability models. His continued study of gender differentials in wages includes work to examine the impact of technology and to compare trends in the United States and Denmark. Further he is conducting research on such disparate subjects as determinants of faculty salaries, the production of engineering degrees, optimal sick pay schemes, gender bias in the criminal justice system, and measurement error in work experience. He currently serves as the coeditor of *American Economic Review*, and he is on the editorial board of the *Journal of Economic Inequality*. From 1986 to 1989 he was on the editorial board of the *Journal of Urban Economics*, and he previously coedited *Economic Inquiry*. To date he has published over seventy articles, working papers, and book reviews.

Oaxaca is also a teacher who has been a member of over seventy thesis committees since 1978. He joined the faculty of the University of Arizona in 1976 (after teaching at the University of Massachusetts from 1973 to 1976) and has been a visiting professor at a number of institutions, including Smith College (1975); Princeton

University (1982); Stanford University (1983–1984); New Mexico State University (1991), where he was a Distinguished Visiting Professor; the University of Aarhus in Denmark (1997); and ERMES at the University of Paris II (2003). He is an active member of the Association for Hispanic Economists.

Oaxaca was a fellow of the Udall Center at the University of Arizona from 1995 to 1996 and since 2001 has been a research fellow at the Institute for the Study of Labor (IZA) in Bonn, Germany. In 2005 *Hispanic Business* magazine selected Oaxaca to appear on the list of the 100 most influential Hispanics.

Oaxaca earned a bachelor's of science (summa cum laude with honors) from California State University at Fresno (1965) and a master's (1969) and doctorate (1971) in economics from Princeton University.

SEE ALSO *Blinder-Oaxaca Decomposition Technique*;  
*Econometric Decomposition*

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## OBEDIENCE, DESTRUCTIVE

Obedience is the act of compliance to the commands of a legitimate authority. In destructive obedience the acquiescence is to a command to harm another person. The phrase was first introduced into the social sciences in 1963 by Stanley Milgram in his article “Behavioral Study of Obedience” in the *Journal of Abnormal and Social Psychology* describing the first of a series of experiments on obedience he conducted at Yale University from 1961 to 1962.

In those experiments the subject was told to teach a learner a series of word pairs, using increasingly painful electric shocks—up to 450 volts—as punishment for each error. Although the shocks were fake and the learner was an actor who feigned his suffering, the experiment was stressful for most of the subjects. Sixty-five percent of the subjects were fully obedient to the experimenter's com-

mands, progressing to the maximum shock. The unexpectedly high rate of destructive obedience was the central and most dramatic finding in Milgram's experiments. While we did not need Milgram to tell us that people tend to obey authorities, the sheer power of that finding was revelatory: that ordinary people would act contrary to conscience and hurt an innocent person at the bidding of an authority without coercive means to enforce his or her commands.

Milgram conducted over twenty different variations in his series of experiments on destructive obedience. A second important insight is provided by a subset of those variations. In that series Milgram varied the distance between the teacher and the learner. As the distance was reduced, so was the percentage of obedient subjects. The morality of shocking an innocent victim did not change from condition to condition, but the tendency to obey the destructive orders did, demonstrating that the immediate situation can have powerful effects on behavior even at the expense of the subject's personal inclinations.

Milgram undertook his research to shed light on the Holocaust in an attempt to explain how normal people could become complicit in carrying out the murderous commands of Nazi leaders. Although early twenty-first century regulations in the United States and other countries make it virtually impossible to replicate Milgram's experiments, experiences in real life continue to affirm his findings.

For example, in 2004 two male students at a Georgia high school obeyed their teacher's orders to throw an unruly female classmate out the window. Real-life events also have broadened the scope of destructive obedience in several ways. For instance, it is known that destructive obedience can take place even when the self is the victim. A review of airplane accidents between 1978 and 1990 found that in about 25 percent of cases the first officer's reluctance to correct an error made by his or her captain was a contributing factor. Also the power of destructive obedience when the action is damaging in a nonphysical manner is as strong as or stronger than is the case when the obedient act is physically destructive, strong enough to override a person's moral or ethical principles. As a teaching exercise, a University of San Diego law professor, Steven Hartwell, had his students advise a client on how best to present her side of a rent dispute in court. Hartwell told them to advise the client to lie under oath and say that she had paid her rent. Twenty-three of twenty-four subjects complied and told the woman to perjure herself.

SEE ALSO *Authoritarianism*; *Authority*; *Conformity*;  
*Holocaust, The*; *Milgram, Stanley*; *Nazism*

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*Thomas Blass*

## OBESE EXTERNALITY

In the late 1960s, the social psychologist Stanley Schachter (1922–1997) proposed that obese people eat (and overeat) not because of hunger, stress, or boredom, but in response to external (i.e., environmental) food cues, which drive eating in the obese until those cues are removed (or consumed). External food cues include the sight or smell of palatable food and other salient cues in the situation indicating that eating is appropriate. When external cues are absent, the obese are not motivated to eat, even if they are substantially food-deprived. This focus on internal and external cues is often seen as originating in Schachter's earlier research on emotion, although a close reading reveals significant differences in Schachter's analyses of these two domains.

Schachter's obese-externality theory achieved widespread attention because it challenged long-standing ideas about the causes of obesity by means of several innovative and dramatic experiments. These experiments showed that obese people's food intake is less affected by manipulations of food deprivation and distress than is that of normal-weight people. Obese individuals, for instance, are less disturbed by time-zone changes or by the requirements of religious fasting, as long as food cues are not prominent. These clever studies, written with great flair, were complemented by studies demonstrating that obese people are differentially affected by manipulations of external cues, ranging from varying the visual prominence of food cues (by, for example, altering the lighting or providing nuts either shelled or unshelled) to doctoring a clock (so that dinnertime arrived either early or late) to offering experimental subjects either one or three sandwiches to eat. These studies fascinated the research community, even if the data were not always robust.

Schachter's research was correlational, showing that obesity is associated with externality. He assumed that externality (in an environment rife with food cues) causes obesity. But what is the source of externality? Schachter postulated that impairment of the brain's ventromedial hypothalamus (VMH) was responsible; rats with VMH damage behaviorally resemble obese humans. This line of reasoning was extended by Schachter's student Richard Nisbett (1972), who argued that suppression of VMH functioning was a consequence of weight suppression by dieting or other means, which is common among the obese. This proposal led in turn to research by C. Peter Herman and Janet Polivy (1980) on restrained eating (dieting), which hinged on the notion that even normal-weight people who suppress their weight ought to be especially external. Work on restrained eating, however, quickly turned away from questions of internal versus external. The Eating Disorders Inventory contains a scale concerned with interoception, the perception of one's own internal states, which is weak in those with eating disorders; but again, the eating disorders literature pays scant attention to Schachter's internal/external distinction.

Challenges to the obese-externality theory include the argument that internal and external cues reciprocally influence each other and are thus inseparable. Research shows that external cues (such as social influence and portion size) exert such a powerful influence on food intake in everyone that it is misleading to identify external responsiveness exclusively with the obese. Still, Schachter's original proposal has not been disproved so much as superseded by subsequent formulations, all of which owe a debt to his groundbreaking demonstrations of how eating may be studied experimentally and creatively.

**SEE ALSO** *Nutrition; Obesity; Overeating; Schachter, Stanley*

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*C. Peter Herman*

## OBEISITY

Obesity results from chronic energy intake that exceeds energy expenditure and is characterized by “excessive” body fat. The precise assessment of an individual’s body fat is an expensive and complicated procedure. Instead, body mass index (BMI), though somewhat controversial, is used commonly because it is easy to assess and correlates highly with body fat. BMI is calculated by taking an individual’s weight in kilograms and dividing it by that individual’s height in meters squared ( $\text{kg}/\text{m}^2$ ). For adults a healthy BMI is between 18.5 and 24.9. A BMI of 25 to 29 is classified as overweight, obesity is defined as a BMI of 30 to 39, and clinically severe obesity is defined as a BMI of 40 or more. Because of the pervasive social stigma associated with the term *obesity*, it is avoided for children; *at risk for overweight* and *overweight* are the recommended terms. To account for normal age and sex differences in children’s body fat, at risk for overweight is defined as a BMI at or above the 85th percentile and overweight as a BMI at or above the 95th percentile of the sex-specific BMI-for-age growth charts.

### PREVALENCE OF OBEISITY

Health statistics for the United States reveal a dramatic upsurge in obesity prevalence during the early 1980s, and the rates have continued to rise. U.S. national health statistics in 2007 estimated that 34.1 percent of adults were overweight, 32.2 percent obese, and 4.8 percent clinically obese; 17.1 percent of children and adolescents age six to nineteen were estimated to be overweight, and 16.5 percent were at risk for overweight. Sociodemographic risk factors for obesity include being of a racial/ethnic minority and being of low socioeconomic status.

### CONSEQUENCES OF OBEISITY

Obesity is associated with high morbidity and mortality rates. The medical sequelae of obesity include type II diabetes, coronary heart disease, stroke, osteoarthritis, sleep apnea, and some cancers, including breast and colon cancer.

Among the most insidious and common adverse effects are the socioemotional consequences of obesity. Obese individuals are significantly more likely to experience social stigmatization and discrimination in all domains, including education, employment, social relationships, and health care. Also, obesity is associated with low self-esteem, body image disorders, anxiety, and depression. Associations between BMI and body satisfaction vary with race/ethnicity and gender. African Americans have a higher mean BMI than do European Americans but tend also to have greater body satisfaction. Generally, females report significantly lower body satisfaction than do males regardless of race/ethnicity.

### ENVIRONMENTAL EXPLANATIONS

The escalating rates of obesity since the 1980s are attributable to a complex interaction of environmental, socio-cultural, behavioral, and biological/genetic factors that is not well understood. At a macrosystemic level, U.S. food policy is fundamentally at odds with the goal of healthful eating. Food is overproduced, and as a result of the abundant supply, food companies must compete aggressively for market share. Cheap, palatable, and accessible energy-dense foods are mass-marketed and offered in portions vastly disproportionate to individuals’ caloric needs. A marked shift toward away-from-home and prepared food consumption probably has resulted from time constraints caused by a rise in dual-career and single-parent working families. In 1977, 9.6 percent of meals were eaten at restaurants and fast food outlets; by 1996 that proportion had risen to 23.5 percent.

Over roughly the same period consumption of high-fructose corn syrup (HFCS) increased 1000 percent or more. HFCS is used instead of sugar (glucose) as a caloric sweetener in many foods and all soft drinks; however, it is digested, absorbed, and metabolized differently than glucose is. Fructose, unlike glucose, distorts levels of insulin, leptin, and ghrelin, the hormones that act as key signals in food regulatory processes and body weight, making dietary fructose a prime suspect in the obesity epidemic.

A sedentary lifestyle is an important contributing factor, especially in light of the fact that decreased energy expenditure has been accompanied by increased energy consumption. A sedentary lifestyle is a natural consequence of a built environment characterized by urban sprawl that necessitates travel by car or mass transit and time-consuming commutes. Technological advancement that reduces energy output, low-energy office occupations, and leisure preferences such as television viewing and computer use increase the probability of a physically inactive lifestyle.

### EARLY PSYCHOLOGICAL THEORIES

Two classic psychological theories of obesity predate the onset of the obesity epidemic. To explain differences in the eating patterns of obese and normal-weight individuals, in 1968 Stanley Schacter proposed the internal-external theory of obesity and in 1972 Richard Nesbitt proposed the set point theory. Schacter hypothesized that obese individuals are more likely to be responsive to cues from the external environment such as the sight and palatability of food, whereas normal-weight individuals are more likely to eat in response to internal physiological cues. Nesbitt countered with the hypothesis that each individual has a unique, biologically determined ideal weight, with obese individuals having an above-average set point. He theorized further that societal ideals of thinness

cause obese individuals to restrain their intake and eat below their set points, essentially causing a chronic state of deprivation and hyperresponsiveness to external food cues. These models of obesity have faded in importance because of a lack of empirical support. However, the derivative construct of dietary restraint and its effect on individuals' eating patterns continues to generate much research and some controversy.

#### DIETARY RESTRAINT

Dietary restraint is defined as the deliberate and persistent restriction of food to promote weight loss. Restraint theory proposes that restrained eaters may develop disordered eating patterns as a result of the stress inherent in chronic appetitive self-control. Although research has supported a relationship between dietary restraint and disinhibited eating, the validity of the restraint measurement scales is at issue and further work on more definitive construct measurement and the role of dietary restraint in disordered eating is warranted.

#### BIOLOGICAL EXPLANATIONS

Obesity also is explained by reference to biological processes. Research indicates that neuroendocrinological processes, most centrally the hypothalamic-pituitary-adrenal (HPA) axis, figure prominently in obesity. The HPA axis, which consists of the hypothalamus and the pituitary and adrenal glands, is a key player in stress regulation as well as in physiological processes such as digestion, energy use, and mood. Stress, which is inherent in the daily demands of the twenty-first-century environment, causes elevated cortisol secretion by the HPA axis. Protracted stimulation of the HPA axis results in a flood of neuroendocrine-endocrine disturbances that in turn cause insulin resistance and visceral (abdominal) obesity. Visceral obesity carries the highest risk for comorbidities.

Genetic research is still in its early stages. There is substantial heritability of individual differences in BMI. However, more than twenty genes, hypothesized as working in conjunction with a wide range of environmental factors, have been linked to obesity: Clearly, obesity is causally very complex. Equally clearly, however, obesity is an urgent health problem that will continue to be a challenge for the foreseeable future.

SEE ALSO *Body Image; Body Mass Index; Disease; Overeating*

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## OBJECT-RELATIONS THEORY

SEE *Psychoanalytic Theory*.

## OBJECTIVE FUNCTION

In an optimization problem, there is a (real-valued) function that is to be maximized or minimized. This function is frequently called the *objective function*, a term that seems to have arisen in the realm of planning and programming, particularly linear programming, through the work of mathematician George Dantzig (1914–2005). Prior to 1947, when Dantzig invented the linear programming problem and the simplex method for its solution, military logistical plans, called “programs,” involved large-scale decision-making based on ground rules. Dantzig created mathematical models to capture the conditions that needed to be satisfied and a criterion for choosing one feasible solution over another. This made a significant contri-