THE DICTIONARY OF

Developmental and Educational Psychology

EDITED BY

Rom Harré and Roger Lamb

ADVISORY EDITORS

Peter Bryant
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PREFACE

The highly successful and comprehensive *Encyclopedic dictionary of psychology* included a dozen psychological specialities. The editors have selected, updated and supplemented material from the original dictionary to provide in this and similar volumes a compact but compendious coverage of the most widely studied of these specialities. In preparing the independent dictionaries we have had in mind the needs of both students and practitioners in many branches of psychology and allied fields. In addition to this volume which concentrates on developmental and educational psychology, three further volumes cover physiological and clinical psychology, personality and social psychology, and ethology and animal learning.

The selected articles have been brought up to date, and the bibliographies have been revised to include the most recent publications. Many new entries have been added to fill the inevitable gaps of the first edition. The number of biographies of great psychologists has been increased to help to bring the research process and its scientific findings to life.

Psychology has developed within several different conceptual frameworks, often treating the same subject matter with very different assumptions and methods. We have tried, we hope without being uncritically eclectic, to reflect a wide range of approaches to human thought and behavior, including those popular in academic, applied and clinical branches of psychology.

Rom Harré and Roger Lamb

CONTENTS

A

able children *See* gifted children.

absence from school and truancy

"Absence from school" is failure to attend school irrespective of reason whereas "truancy" is unjustifiable absence from school without parental knowledge or consent. In England parents are required by the 1981 Education Act to ensure that their children receive education 'suitable to their age, ability, and aptitude and special educational needs' between the ages of five and sixteen. In practice, most parents do this by registering their child at a school maintained or aided by the local education authority and ensuring that he or she attends regularly unless prevented by illness or religious observance. Similar laws exist in the United States and most other developed countries although the ages of compulsory schooling vary: children in the United States, for example, are not legally required to attend school before the age of six.

There are remarkable consistencies in rates of school attendance. Cutter and Jones (1971) found a 90 per cent attendance rate in a sample of American elementary schools. Rates in Britain are similar; indeed the proportion of pupils absent has remained stable throughout the twentieth century: 89 per cent attendance at London Board Schools in 1906 (Rubinstein 1969); 89 per cent attendance in the Inner London Education Authority's schools in 1970 (Hill 1971); and a Department of Education and Science survey reported that on a given day in January 1974 90.1 per cent of all pupils aged twelve or over in England and Wales were present. This survey also showed that absence rates were highest in the final year of compulsory education, and similar trends have been found in the United States.

There has been sharp disagreement about the proportion of absent pupils who are absent illegally. Estimates range from 4 per cent (DES 1967) to 75 per cent (Reynolds and Murgatroyd 1974). A study by Galloway (1982) showed that from a sample of British schools 4 per cent of pupils were recorded as absent illegally for at least 50 per cent of their final year. The difficulties in establishing the illegality of a pupil's absence are considerable; it is likely that many published figures have given an over-optimistic view.

Traditionally clinical practice has distinguished between SCHOOL PHOBIA, also known as school refusal, and truancy. Children referred to clinics for school phobia tend to be younger (Tyerman 1958; Hersov 1960). While Hersov and Tyerman both noted poor social adjustment, low average IQ and low educational attainments, Cooper (1966) found no evidence of educational retardation relative to IQ.

Truancy and school phobia together account for a very small proportion of absences from both primary and secondary schools. By far the most common explanations in Galloway's study (1982) were 'absence with parental knowledge, consent and approval', and 'parents unable or unwilling to insist on return'. It is clear that parents are aware of their children's absence in a large majority of cases, and in roughly half these cases the parents withhold their children from school. In the remainder, the child insists on remaining at home, with the parents unable or unwilling to insist on return.

Surprisingly little attention has been directed at reasons for parents condoning their children's absence from school. A high positive correlation has been demonstrated in Belfast and Sheffield between parental poverty and persistent absentee

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rates (Harbison and Caven 1977; G[...] way 1982). Harbison and Caven did [...] find this association in rural areas of Northern Ireland. It seems probable that absence from school and poverty may both arise from other variables associated with depressed inner city areas. (See also SOCIAL DISADVANTAGE.)

This suggestion received some support in a study of all persistent absentees in one area of Sheffield (Galloway 1982). Parents of absentees were significantly more likely to be unemployed than parents of good attenders selected from the same class in school and living in the same areas. More important, a health questionnaire revealed a high prevalence of probable psychiatric illness in the mothers of absent pupils. The most common symptoms were those associated with depression. Anxiety about parental health was frequently associated with absence, but social, educational and disciplinary problems at school became increasingly important in the secondary school years.

Several studies have reported poor attenders as being less successful on tests of educational attainment and general intelligence than regular attenders (see TESTS: EDUCATIONAL ATTAINMENT). There is disagreement about whether educational retardation is the cause or the result of poor attendance. May (1975) argued that poor attenders were performing badly at school before their irregular attendance started. It has also been demonstrated that poor attenders at the age of seven were not educationally retarded at the age of sixteen, compared with their peers, if they were attending regularly at fifteen. On the other hand, continued poor attendance at fifteen was related to poor attainment. This suggests that absentees who miss a considerable amount of schooling at an early age can catch up through subsequent regular attendance, and hence that the poor attainments of the continued absentees whose teachers did not regard them as truants may be causally related to that absence. Tennent (1971) listed twenty studies of juvenile or adult offenders which reported at least 20 per cent of the sample having a history of truancy. May

(1980) found that truants were more likely to have criminal records than absentees whose teachers did not regard them as truants. Galloway (1982) found that over 20 per cent of boys whose parents condoned their absence from school had criminal records; this also applied to 19 per cent of boys whose absence was attributed mainly to illness. The general picture is one of a consistent association between truancy and DELINQUENCY, and of a slightly less consistent association between absenteeism and delinquency. Nevertheless, it should be emphasized that a majority of poor attenders are not known to offend.

There appears to be a substantial overlap between school drop-out and truancy. Many American studies on individuals who leave school without qualifications show them to end up with low occupational status, higher likelihood of being unemployed, and decreased participation in adult education. Because truancy is associated with early school leaving, it is often difficult to tell whether it is the truancy per se or the lack of qualifications that leads directly to the adult outcome.

Robins and Ratcliff (1980) investigated the long-term effects of truancy on the lives of a large sample of black males, all of whom had attended ordinary state schools in St. Louis and had been above average in ability. The men were interviewed at 30–36 years of age while at the same time their records on education, housing, armed forces, police and hospital files were scrutinized. In this large group of men high truancy was found to be associated with school drop-out and later with low earnings and deviant behavior in adulthood. These poor adult outcomes were in part explained by the truants' dropping out of school and by their adolescent deviance, but the authors stress that the 'truancy itself continued to have predictive power even when these intermediary events were taken into account' (p.80). On the basis of their research Robins and Ratcliff urged measures to prevent truancy which, if successful, could be expected not only to affect truancy levels, but 'to forestall a variety of

related deviant acts that may otherwise appear later' (p.80).

Greater attention has been paid to family and social variables in poor school attenders than to the school's own contribution in promoting regular attendance. Reynolds and Murgatroyd (1977) reported consistent differences in attendance rates between Welsh secondary modern schools with similar catchment areas (see SCHOOL DIFFERENCES), differences associated with the school's rules and policies rather than with structural variables such as size or age of buildings. More recently Rutter et al. (1979) have reported significant differences in attendance rates between London schools, after controlling for intake variables. Galloway (1982) demonstrated significant changes in persistent absentee rates within individual schools over a period of three years. His evidence suggests that the school's influence on attendance is greatest in disadvantaged areas where the likelihood of absence is highest in the first place.

There have been few systematic studies on either the prognosis or the management of absence from school. Galloway (1985) reported that legal action is taken against only a very small proportion of persistent unauthorized absentees. The prognosis following legal action was extremely poor, but substantial improvement was associated with a change of school when this was arranged for some special reason, rather than as an ordinary age-related transfer (Galloway et al 1982). More recently many local education authorities have established special centers for poor attenders. However, these are only able to cater for a very small minority of the pupils in question, and systematic studies of their effect on subsequent attendance are conspicuously absent.

There is no simple explanation for absence from school. Variables within the individual and within his or her family, home neighborhood and school are all likely to be important. A comprehensive assessment is required in each case, focusing on the school's provision for the pupil as well as on the pupil and his or her background. Successful management requires parental cooperation with assistance from teachers and members of the educational and social work support services.   DMG

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accommodation In PIAGET's theory of cognitive development accommodation is adaptation as the result of pressures exerted by the environment. In Piaget's words (1936; 1952), 'mental life is accommodation to the environment'. In his view, however, 'adaptation is an equilibrium between assimilation and accommodation' (p. 18). Accommodation 'cannot be dissociated from progressive assimilation' (p. 45), and, in fact, presupposes it (p. 162). Flavell (1963) points out that the assimilation-accommodation model is basic to Piaget's theory, and provides 'the crucial link between biology and intelligence', since it is derived from 'more primitive activities' such as digestion. When digesting food the organism incorporates what it eats and thereby "assimilates" it. But the organism also accommodates to different foods, chewing some more than others and producing different chemical combinations to break different foods down. The accommodation-assimilation model therefore 'permits us to see intelligence in its proper context' as an extension of those activities (Flavell 1963).

Piaget describes the development of sensori-motor and cognitive SCHEMAS out of basic reflex actions. In sucking the nipple, the infant's 'contact with the object and repetitions of the action modify the activity of the reflex' (1936; 1952). After that 'sucking ... a new object such as the thumb ... transforms the schema' (sc. of sucking), since the infant has now learnt to apply an established action to a novel object. This produces a gain in control over the world by reducing (assimilating)

extra parts of the world to an established action-schema, and at the same time accommodating the action-schema to novel demands.

A similar process of adaptation occurs in cognitive growth. 'Intelligence is assimilation to the extent that it incorporates all the given data of experience within its framework' (p. 18), but 'assimilation can never be pure because by incorporating new elements into its earlier schemata the intelligence constantly modifies the latter in order to adjust them to new elements'. When an infant is acquiring its first habits, accommodation and assimilation are bound together in an undifferentiated way, since the attempts to assimilate novelty oblige the infant to accommodate to it. When the infant begins to explore its environment physically ("effective groping") and mentally, it develops an interest in novelty for its own sake, and 'accommodation becomes an end in itself'. The deliberate accommodation involved in experimentation and search for new means to solve problems then becomes differentiated from assimilation of novel problems to old solutions. The two processes, however, alternate and remain interdependent. (See also ASSIMILATION.)

RL

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achievement motivation This concept was developed by McClelland (see McClelland et al. 1953) and refers to the motive to achieve some standard of accomplishment or proficiency. People with a strong achievement motive (which McClelland calls need for achievement) prefer moderate to easy or hard goals or

risks, want concrete feedback regarding task performance, prefer tasks where skill rather than luck determines the outcome, seek personal responsibility, have a future time perspective, and err somewhat on the side of optimism in estimating their chances for success, especially on new tasks. McClelland (1961) claims that the achievement motive is crucial in entrepreneurship and influences success in entrepreneurial occupations (e.g. selling); he has even claimed that cultural differences in achievement motivation account for differences in economic growth rates. It is argued that the need for achievement is fostered by child rearing practices which encourage independence. It is held by McClelland to be a subconscious motive, and therefore it can be measured more accurately by projective techniques, such as the Thematic Apperception Test, than by self reports. Research on achievement motivation has been criticized on numerous grounds, including: unreliability of the Thematic Apperception Test measures; inconsistency of results; excessive use of post hoc explanations when the results failed to turn out as predicted; and ethnocentrism. Heckhausen (1967) and Atkinson and Raynor (1978) have summarized much of the achievement motivation research.   EAL

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adaptation in infants Those characteristics and processes which, in the course of development, fit the infant to the environment. Some characteristics of the newborn are preadapted to the evolutionarily predictable structures of the physical and social milieu. Behaviors essential for survival, such as sucking, are well organized and may even have been "practiced" *in utero.* Other behavior such as neonatal imitation, reaching for objects or looking in the direction of sound may also be preadapted, although they undoubtedly undergo further development. The process of adaptation may depend upon a considerable degree of plasticity in the nervous system (see PLASTICITY: PHYSIOLOGICAL CONCEPT). There is evidence that the nervous system adapts to repeatedly encountered characteristics of the environment during the early months of life. For example, cells in the visual cortex responsible for coding spatial orientation are subject to considerable modification in the first few weeks of life depending on the particular characteristics of the visual environment.   GEB

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Adler, Alfred (1870–1937) After graduating in medicine in 1895, Adler soon took up psychoanalytical theory and became one of its most authoritative representatives. In 1910 he was president of the Psychoanalytical Society of Vienna but resigned the following year, thereby demonstrating his split with Freud. In 1926 he visited the United States where he became professor first at Columbia University (1927), and then at Long Island Medical College, New York (1932). Adler's theory of "individual psychology" is based on the concepts of "striving for superiority" and "inferiority feelings". Individuals from their childhood are led by a dominant drive to compensate and overcome their biological inferiority feelings (only symbiosis with the mother protects the child from the environment). Inferiority feelings sometimes continue into adult life because of psychological or social deprivations. The individual is therefore committed to a continuous process of self-realization in a social context.

"Style of life" is the term used for the forms of behavior through which individuals strive to affirm themselves. By moving the emphasis from the biological determinants of behavior to the psychosocial processes of self-affirmation, social interests and style of life, Adler's work has been very influential in post-Freudian psychoanalytical theory. (See also NEO-FREUDIAN THEORY.)   LM

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adolescence A transitional period of life between childhood and adulthood. There is more controversy than agreement among psychologists regarding the exact beginning and end of adolescence. Various physiological changes (e.g. growth spurts, maturation of reproductive organs, emergence of secondary sex characteristics – see PUBERTY) and psychological changes (e.g. emergence of logical thinking); increased interest in sexuality and the opposite sex; preoccupation with issues of identity, increased peer-conformity and increased responsibility have been identified as indicators of adolescence. However, no consensus exists on which changes define adolescence and which are frequent but non-essential characteristics of adolescents.

Adolescence is as much a social construction as an attribute of the individual. Some cultures and subcultures recognize a transitional period of a decade or more between childhood and adulthood while other cultures view the transition as occurring in the course of a brief initiation rite which may last only a few days or hours. The social construction of a lengthy adolescence has been traced to the creation of a juvenile justice system, child labor laws, and compulsory education laws during the nineteenth century emergence of an urban/industrial culture (Bakan 1971).

In practice, the study of adolescence encompasses all individuals who are psychosocially neither unambiguously children nor adults. An individual may be said to enter adolescence when he or she no longer views him/herself as a child (nor wants or expects to be treated as such), or when others begin to expect more mature behavior from him or her than they do from a child. Physical changes *or* psychological changes either in oneself *or* one's peers (or simply reaching a culturally specified chronological age) may precipitate this change in psychosocial status, which may then bring with it further psychological adjustments and modifications of social relations. An individual eventually achieves adult psychosocial status and leaves adolescence by successfully adopting some culturally specified adult role. This requires both the psychological capacity and willingness to perform the role on the part of the individual, and the culture's confirmation of the individual as a successful role-occupant. Historical factors often influence the difficulty of resolving the adolescent transition (e.g. high unemployment may decrease a culture's willingness to confer adult status).

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adolescence: development in The period of human development beginning with puberty and culminating in the attainment of adult maturity. It cannot be given any precise limits, but in general it it covers the age-span from twelve to eighteen years.

It is a time of rapid physiological and psychological change, of intensive readjustment to family, school, work and social life and of preparation for adult roles. The processes of adolescent socialization and role-change are potentially stressful. Phase-specific maturational tasks can be identified, associated with these changes, particularly the physical, cognitive and emotional development. The sequence of physical changes at puberty involve an increased rate of growth in stature and weight (see ADOLESCENT GROWTH SPURT), development of the secondary sexual characteristics and the reproductive system (see MENARCHE) (Tanner 1962). The timing and effects of physical maturation have a number of psychological correlates and, in particular, rapid bodily change can have a powerful effect on self-concept. The variation in the age of onset and rate of the "growth spurt" and the impact of both early and late development have far-reaching effects. In boys, delayed maturation may lead to a feeling of low self-confidence and inferiority. Although the effects in girls are less marked, early menarche may be associated with negative feelings. Following puberty there is an upsurge of sexuality and an increase in heterosexual interests and behavior (Schofield 1965). There may be a passing phase of intense attachment to persons of the same sex but this does not appear to be related to adult homosexuality. The comfortable acceptance of appropriate sex-roles is an important part of identity development. Despite changing social attitudes toward sexual behavior in recent decades, in the direction of greater sexual freedom, and the pressures for early sexual experience, there is no evidence of increasing promiscuity and sexual behavior remains a major source of anxiety and uncertainty for young people. The value of sex education, and the effectiveness of different approaches, is difficult to assess. The majority of adolescents, however, favor sex education in a responsible way. Changes in intellectual function have far-reaching implications for behavior and attitudes. PIAGET described the transition from the stage of "concrete operations" to formal operational thinking following PUBERTY, enabling the adolescent to think in an abstract way, to construct hypotheses and to adopt a deductive approach in solving problems (see Inhelder and Piaget 1958; Elkind 1968). These changes in adolescent reasoning are reflected in scholastic learning, in personality development, in the growth of moral judgment (see Kohlberg 1969) and political thinking. (There are now some doubts about the psychological reality of alleged adolescent cognitive developments in moral reasoning (see Murphy and Gilligan 1980). They may be a reflection of socially defined norms of behavior.) The move toward maturity requires gradual emancipation from the home, the establishment of an independent life-style, a conscious sense of individual uniqueness, commitment to a sexual orientation and a vocational direction and the development of self-control. Self-concept development in adolescence is a complex process (see Coleman 1980). Erikson's contribution to the understanding of identity formation in adolescence has had a major influence (1968; see also Marcia 1980). He described the adolescent tasks of establishing a coherent identity and overcoming identity diffusion, but went further to indicate that some form of crisis was a necessary and expected phase in this process. This concept of a "normative crisis" has, nevertheless, been the most controversial part of Erikson's work and it has not been supported by research.

The course and successful completion of adolescence is influenced by a wide variety of factors. The function of parents is crucial in providing models of adult roles and in facilitating the individuation of adolescents (see Grotevant and Cooper 1985). Despite popular views to the contrary and frequent reference to the "generation gap", conflict between adolescents and parents is rarely substantial or longstanding (see Rutter et al. 1976; White et al. 1983) and parents remain a significant influence throughout adolescence. However, the adolescent's quest for independence and challenge of parental stan-

dards, values and attainments can pose a major threat and adolescent behavior can have a disequilibrating effect on marital and family homeostasis. Further, adolescence is often a time of idealism, when society's standards and morals are examined, challenged or rejected. Outside the home, adolescence is shaped by the school, the immediate peer group and contemporary youth culture. Wider social, cultural and political factors also have direct consequences, including increasing social complexity and moral confusion (Kitwood 1980), the ambiguity in the status and role prescription for adolescents, the prolonged dependence of adolescents engaged in further and higher education, the consequences of unemployment and the effects of mixed racial society. Friendships with other young people play an important part in adolescence particularly during the period of detachment from the family. The pattern of these relationships changes during early, middle and late adolescence (Coleman 1974). The peer group has a supportive function and a powerful influence on behavior, particularly in its pressure for conformity and social popularity and, in this way, it plays an important part in adolescent socialization. The relative attractiveness of the peer group is influenced by the quality of relationships within the home, parental attitudes toward it, and the nature of the adolescent problems, since adolescents perceive parents and peers as useful guides in different areas of experience.

Some degree of anxiety and the experience of tension is likely to be related to coping with maturational changes, and the acquisition of new roles, particularly since there are no clear-cut rules about how to progress to adulthood or when the process is complete. Disturbance is most likely to occur at times of transition and the extent of the anxiety is partly a reflection of the adolescent's perception of the balance of stress and support. The idea that adolescence is characterized by "storm and stress" has been a consistent feature of major theories of adolescence. The psychoanalytic view, expressed by Anna Freud (1958), was that 'adolescence is by its nature an interruption of peaceful growth' and this notion was in keeping with Erikson's concept of identity crisis. There is substantial evidence, however, that although rapid mood swings, feelings of misery, self-doubts and self-consciousness are common in adolescence and may lead to personal suffering, only a small number show emotional distress or do experience a disturbance of identity relating to their sense of self in the present. Psychiatric disorders occurring during adolescence include those present since childhood and those arising initially in this age-period (see Rutter and Hersov 1977). The full range of disorders occurring in later age-periods may be found. The key task in diagnosis is the differentiation of psychiatric disorders from age-appropriate reactions that may settle when stress is reduced or eliminated with further development and the passage of time.   WLIP-J

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adolescent growth spurt

The period of acceleration in the rate of increase in height and weight associated with puberty. Changes in body composition take place in the adipose and lean body masses, bodily strength increases and the physique takes on an adult configuration. The growth spurt follows a phase of stable growth in late childhood and culminates in decelerating growth. It begins earlier in girls than in boys, who continue to grow at pre-pubertal rates for two years after the initiation of the growth spurt in girls. According to Frisch and Revelle (1971), the mean ages at the initiation of height and weight growth spurts in girls are 9.6 years, and 9.5 years, and in boys 11.7 years and 11.6 years respectively. Tanner et al. (1966) have indicated that peak height and weight velocities are reached at 12.1 and 12.9 years respectively in girls, and at 14.1 and 14.3 years in boys. Between growth spurt initiation and eighteen years approximately one-third of the growth precedes the peak height velocity and the rest occurs during the phase of growth deceleration. There is wide individual variation in the age of onset and this has psychological correlates. Early maturing boys have more favorable personalities than late maturers.   WLIP-J

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aggression

Aggression is one of those unfortunate terms in the behavioral sciences that have been taken over from everyday language and have a variety of meanings. Furthermore people tend to assume that the different uses of the term must have something in common since they are all covered by the same word. Most research-oriented psychologists define aggression as the intentional injury of another, and regard this form of behavior as quite different (i.e. governed by different processes) from the other actions often given the same label in ordinary speech (such as assertiveness, attempts to achieve mastery, or ritualized threat displays). What is most important about aggression is that the aggressor wants to hurt or perhaps even destroy the victim, either physically or psychologically, and is reinforced when this particular goal is achieved. Aggression in this sense has very little in common with the forcefulness shown by an "aggressive" salesman or the boastfulness demonstrated by a youthful male who is trying to impress someone by acting tough.

Distinctions have to be drawn among different types of aggression even within this somewhat limited definition. It is especially important to differentiate between instrumental aggression and what many psychologists refer to as hostile aggression. In both cases the aggressor seeks to injure someone, but when he is acting instrumentally the aggressive behavior is carried out for another, non-aggressive purpose (such as for money or

social approval). The person who attacks his victim because he believes the rules of his group require him to do so is engaging in instrumental aggression, since compliance brings rewards and avoids punishment. Hostile aggression, on the other hand, is primarily directed toward the injury of the victim, and is typically a response to aversive stimulation, whether in the form of an insult, some illegitimate treatment, a frustration or a foul odor. Such behavior can be affected by learning. Inhibitions prompted by social norms often govern the intensity of open hostile aggression and frequently affect its exact nature. Moreover, this behavior can also be influenced by anticipated rewards and punishments independently of the group's rules. Nevertheless, the basic instigation to the hostile action stems from the aversive stimulation. A good many of the homicides or serious violent assaults in everyday life appear to be instances of hostile aggression; they are explosive outbursts resulting from an argument or perceived insult in which the violence is often more intense than the aggressor had initially intended. The threat of capital punishment is usually ineffective as a deterrent to this form of violence because the aggressors generally do not think of any possible consequences beyond their desire to hurt (or destroy) their antagonist.

It is clear that aggression does not always arise in the same manner. Learning influences all aggression to some extent, and it is especially important in human instrumental aggression. As is the case with other instrumental actions, people use aggression to obtain their objectives if they have found that this form of behavior gets them what they want. On the other hand, many animals, including humans, may have an inborn capacity for aversively stimulated aggression, so this form of aggression can occur without prior learning, although it can be modified, strengthened or weakened by experience. Aversively stimulated aggression (the term is substituted henceforth for hostile aggression) is also more apt to be affected in an involuntary fashion by environmental stimuli. In such instances a particular stimulus in the surrounding situation facilitates the occurrence of overt aggression. One example is the "weapons effect" in which the mere presence of a weapon elicits stronger aggression than would otherwise have occurred, particularly if inhibitions against aggression are weak at the time (see Turner et al. 1977). While it is not altogether certain what causes the "weapons effect", the stimulus's associations with either previously reinforced aggression or aversive events seem to be especially important.

The theoretical perspective taken here helps to explain the now frequently observed effects of violent movies and also the repeated failures to demonstrate a "hostility catharsis" as a result of engaging in either realistic or fantasy aggression. In regard to the former, scores of well-controlled studies in both laboratory and natural settings have shown that scenes of violence on the television or movie screen can increase the probability that children as well as adult viewers will behave aggressively themselves. This increased likelihood of aggression arises from several processes involving short-term influences or long-lasting learning. The temporary effects include a weakening of inhibitions due to screen-induced ideas that aggression can be rewarding or is morally justified under particular circumstances, and also the stimulation of aggression-facilitating ideas, feelings and motor reactions by the aggressive material on the screen (see Berkowitz 1973). As for hostility catharsis, a good many experiments have now contradicted the widely accepted notion that the display of either realistic or make-believe aggression "drains" a reservoir of supposedly pent-up aggressive "energy" somewhere within the person, thereby lessening the probability of further aggression. The aggressor may feel good when he finds that his intended victim has been appropriately injured and may even cease his attacks on this target for some time afterwards. However the accomplishment of this objective is reinforcing so that in the long run aggressive behavior is now more, not less, likely. We do not diminish the level of violence in

society by encouraging people to act aggressively, even if this behavior takes place only in their imagination. LB

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aggression: in developmental research

A term which has several partially overlapping meanings, ranging from assertion of the self or forcefulness, to the motivation, feelings, or intent behind acts of violence, i.e., physical force used against another. These various facets have been studied developmentally by systematically observing the aggressive behavior of preschool and school children, by laboratory experiments involving aggressive play, by tests involving fantasy play, or by ratings of aggression by parents, children or peers.

Major areas of development research on aggression concern:
(a) The processes whereby children acquire specific aggressive actions, e.g. by reinforcement or imitation (Bandura 1973; see SOCIAL LEARNING THEORY; BANDURA).
(b) Socializing influences which may enhance aggression (e.g. the family, the school, television). Aggressive and punishing parents have aggressive children. Watching a great deal of violence on television is associated with increased aggression, particularly in boys (Huesmann et al. 1984a).
(c) The developmental continuity of aggression. There is evidence of great stability in individuals' (especially males') aggression from childhood to adulthood. Childhood aggression may also predict adult criminality (Huesmann et al. 1984b).
(d) The social rules and consequences of aggressive actions. Socialized aggression may be one of the role requirements in some adolescent SUBCULTURES (e.g. Marsh et al. 1978; Akamatsu and Farudi 1978). JA

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aging The general term for the study of old age. Gerontologists may be biochemists, physiologists, neurologists, psychologists or social scientists who attempt to discover how the body, brain and central nervous system change with age, how these changes affect mental abilities and behavior, and how the lives of people within society change as they grow old.

Social psychological and social studies have included, for example, how elderly people regard themselves and their changing role in society; how they feel that younger people regard them, and how they

are in fact regarded; whether elderly people gradually withdraw from social contacts of all kinds ("disengagement theory") or whether they merely change the nature, and the pattern, of their social contacts.

A general question for gerontologists has always been whether old age can be indefinitely postponed, and human life indefinitely prolonged, or whether advances in medicine and social care cannot increase the maximum span of human life, though they can ensure that larger numbers of us manage to live out our full spans in good health and with our wits about us. There have been encouraging reports of spectacular longevity in isolated peasant societies such as those in Georgia in the USSR or Vilcanbanba in Ecuador, claiming that large proportions of the population are alive (and even achieve parenthood) at ages exceeding 160 or 170 years. Sadly these tales are myths. Reported ages greater than 123 years have never been satisfactorily documented. It is, of course, not impossible that science may yet find ways of prolonging life, but for the present most gerontologists believe that the overwhelming majority of us cannot expect to survive beyond our mid-eighties. The most reasonable social and scientific goals are to ensure that as many of us as possible happily live out our maximum spans.

The experience of western industrialized societies bears out these hopes, and also vividly brings home the enormous social adjustments which their realization will entail. In the west, most people now aged sixteen can expect to live, in good health, until they are about seventy-two years (if they are men) and about seventy-seven years (if they are women). While techniques for treating the illnesses of old age are increasingly effective, they are also increasingly costly and unlikely to be available to all. Realistic hopes rest on much cheaper, and more effective, techniques in preventative medicine and in personal health care and maintenance of fitness. Such techniques have already been almost embarrassingly successful. In the rich west one person in every five alive today is over sixty years old. This propor-

tion will grow, increasing the age gap, as well as the gap of prosperity, between rich societies and third world countries where average life expectancies range from forty to fifty-five years. Apart from the long-term consequences of such a painful disparity of human prospects, the rich west faces urgent problems in adjusting social and economic systems to this massive, quiet, geriatric revolution.

Experiments to study changes in human mental abilities with age date from mass observations carried out by Francis Galton on visitors to the International Exhibition of 1883. Galton's results on changes in efficiency of memory and speed of reaction time illustrate the fundamental, unsolved question in this science. Galton could only test each of the people who visited his booth at the exhibition once. He could thus only collect *average* data for age-groups, and found that these *average* scores steadily deteriorated with age. This finding occurs with depressing regularity in all similar comparisons, though some abilities (e.g. verbal ability and verbal IQ) change much less than others (e.g. memory test scores and performance IQ scores) as older groups are sampled. However, data obtained from separate successive "cross-sectional" samples of aged people do not allow us to conclude that every individual inevitably experiences a sad trajectory of progressive intellectual decline ending in senility. Recent work shows that when we look more closely at large cross-sectional samples we find that substantial numbers of people in groups aged from seventy-five to eighty-five perform as well as the average for young people aged from twenty to forty. This may mean that the clock runs faster for some of us than others, and that while some lucky people show little change in mental efficiency until they reach an advanced age, most show earlier declines. Unfortunately the only studies that can resolve this question are longitudinal surveys in which large numbers of individuals are each repeatedly tested over periods of twenty to thirty years as they pass beyond their comparatively youthful fourth and fifth decades. The evidence slowly accu-