

The individual continues to develop across the total life course and thus educational opportunities must be provided to facilitate and optimize the development of older adults.

Concepts from Life Span Developmental Psychology: Implications for Programming

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During the past two decades, increasing attention has been given to a life span orientation within both developmental psychology and education. In the field of education, a life span perspective has been discussed under rubrics such as lifelong learning, recurrent education, nontraditional education, and continuing education. While never a dominant approach, the life span perspective has had its proponents throughout the history of psychology (see Baltes, 1979). It may be of particular interest to educators that Sidney Pressey, known for his pioneering work on teaching machines, coauthored one of the earliest life span texts in American psychology (Pressey, Janney, and Kuhlen, 1939). Even slightly earlier was E. L. Thorndike's (1928) major work on adult learning.

The recent revival of interest in a life span approach can be linked to a number of contemporaneous events. First, there is the shift in the age structure of Western industrialized societies. As the average life expectancy has increased in this century, the number of persons over sixty-five years in the United States has doubled from 1950 to 1980. Second, during the last three decades findings from a number of longitudinal studies focusing on the adult years have been reported. These longitudinal studies include both research

specifically on development across the adult years (Palmore, 1974) and also follow-up studies on aging participants from several child-growth studies (Bayley, 1968). These longitudinal studies have contributed significantly to our understanding of development and change during adulthood. Thus, both sociocultural trends and a more comprehensive knowledge base regarding adult development have added to the renewed interest in a life span approach to development and education.

In this chapter, we will begin by discussing several critical features of a life span developmental perspective. Then, the issue of the modifiability of cognitive functioning in later adulthood will be explored. Finally, implications of a life span perspective for educational research and practice will be considered.

Critical Features of a Life Span Developmental Orientation

Life span developmental psychology is best characterized as a perspective or an approach to the study of development, rather than as a specific theory or model of development. The life span perspective is not linked to a specific area of development (for example, cognition) or age period (adulthood), nor is it necessarily aligned with one particular theoretical persuasion (for example, cognitive developmental or behavioral). Rather, a life span perspective seeks to understand the developing individual across the entire life course within a changing sociocultural context. A life span perspective seeks to define the pattern or sequences of developmental change across the life course. It examines the interrelationships among developmental periods. One could, for example, study changes in achievement motivation from childhood through adulthood. The interrelationship between achievement motivation in childhood and patterns of achievement in adulthood could be examined. In addition, the impact of cultural change on achievement motivation in different generations (cohorts) can be considered. Functioning in later adulthood reflects cumulative developmental change and experiences across the life course. Thus, an understanding of patterns and interrelationships in life span development would appear particularly important to those providing educational programs for older adults.

A life span perspective assumes that (1) significant developmental change occurs across the total life course (Baltes and Willis, 1979a, 1979b; Brim and Kagan, 1980); (2) developmental change is both quantitative (change in level, rate, degree) and qualitative (change in nature, type) (Labouvie-Vief, 1977); and (3) developmental change across the life course is multidirectional. It is critical that continuing educators take into account multidirectional patterns of development in adulthood in developing appropriate instructional strategies. For example, the educator may need to adapt the pac-

ing of instruction in consideration of behavioral slowing with age. However, the educator should not infer a necessary decline or deficit in verbal ability although the older adult may write or speak more slowly.

Increasing Individual Differences. A major theme focuses on the increasing range of differences between individuals across the life span (Baltes and Willis, 1979a). In many areas of physical, cognitive, and social development, the range of variability or differences between individuals of the same chronological age is greater in adulthood than in childhood. For example, most normal children achieve developmental milestones such as walking, talking, and entering school within a relatively restricted age range; children do not differ greatly in the age at which these tasks are accomplished. However, adults vary considerably in the chronological age associated with such events as marriage, birth of first child, graying of hair, and menopause. Moreover, there appear to be far fewer developmental events in adulthood that could be considered universal for all or most adults. Only a portion of the adult population encounters even such so-called normative events as marriage and parenting.

The increase in the degree of variability among individuals in adulthood has several implications for adult development and education. First, it becomes more difficult to define developmental stages or norms that can be used to describe most adults. Some psychologists seriously question whether such adult stages of development can be identified at all. Moreover, even if such stages or developmental tasks can be defined, the age at which people experience a stage is much more variable. Chronological age, then, becomes a less useful index of development in adulthood. Intellectual abilities or levels of verbal ability, for example, appear to be more closely related to educational level or sociocultural experience than with chronological age per se. Within the educational context, instructional grouping by chronological age (as practiced with children) may be a less efficient instructional procedure than grouping by initial ability level, relevant life experiences, or adult interests.

It is likely that the narrow age band within which individual differences occur in childhood is associated with the greater isomorphy between biological and behavioral development in the early years. The rate and sequence of physiological development imposes a timetable on many aspects of behavior development in childhood. In addition, age-graded cultural institutions (ages for compulsory schooling, driver's license, and so on) may promote a close alignment between chronological age and certain developmental events in childhood (Riley, 1977). In contrast, once biological maturity has been achieved, behavioral development is less closely linked to biologically determined processes until, perhaps, very old age. Environmental and experiential factors come to play a far more pervasive role in adult development. Such environmental factors become not only more influential, but also more diverse in

adulthood. This diversity of experiences contributes to the increasing individual differences in adulthood. Environmental influences may range from specific experiences unique to a given individual (for example, great wealth, death of parent in childhood) to broad-scale, historically significant events, such as war or depression, which affect an entire generation. This focus on environmental influences in adulthood leads to consideration of a third critical issue in a life span perspective.

Age Change Versus Sociocultural Change. Another major theme is that individuals experience dramatic cultural change throughout life. Cultural change becomes more extensive and significant as the individual grows older and the impact of change becomes cumulative. The term *cohort* refers to individuals who were born within a given time period and thus whose development may have been influenced by social and cultural events occurring during that period in history. Cohorts experience different environmental events and cultural change. For example, individuals born in 1917 (whose current age is sixty-five) were preschool children during World War I, experienced the Depression during adolescence, and were involved in World War II as young adults. In contrast, individuals born in 1947 (now thirty-five years old) were part of the postwar baby boom and grew up in a period of postwar affluence and rapid technological change. Whereas a high school education seemed a lofty goal for many of today's sixty-five-year-olds, current thirty-five-year-olds were often expected to complete college.

Different generations (cohorts) not only experience very different types of cultural change, but also experience them at different periods of development. War or depression may have quite different effects if experienced as a child rather than an adult. Given such diverse life experiences for various cohorts, we may expect that current thirty-five-year-olds will be quite different as sixty-five-year-olds in the year 2012 than today's sixty-five-year-olds. The adult educator or researcher studying only one such cohort of sixty-five-year-olds will develop a much different view of aging than the educator or researcher who studies and compares several cohorts of sixty-five-year-olds. It is important that educators and researchers differentiate between cohort differences and normative age changes—developmental changes that are common to and apply to adults of all cohorts. To differentiate cohort effects (unique to a particular cohort) from normative age change (common across cohorts), it is necessary to study several cohorts of adults at the same series of chronological ages. Relatively few such cohort-sequential studies have been conducted. However, one such study examining cohort differences versus age changes in adult intelligence is of particular interest with regard to adult educational endeavors. Schaie and Parham (1977) contrasted seven-year age changes with seven-year cohort differences. Results suggested that until the sixties there are

no age changes on power tests but substantial cohort differences prevail. On the other hand, for highly speeded tests, cohort differences are relatively unimportant, while decremental age changes are detected in the forties. In terms of significant age changes (decline) in mental abilities such as reasoning and vocabulary, they were not found until the late sixties or early seventies. Thus, throughout much of adulthood cohort differences in intellectual functioning maybe of greater importance to adult educators than age changes per se.

Such cohort effects can impact different aspects of educational programming for the older adult. For example, interviews with older cohorts suggests that there may be cohort differences in learning strategies that are associated with early schooling. Earlier cohorts' schooling may have emphasized rote memorization in contrast to emphasis on principles, rules, and discovery approaches advocated today in education for the young. Second, there appear to be cohort differences in subject matter taught in elementary and secondary grades. Courses in algebra, geometry, psychology, and so on, are relatively recent innovations in secondary education. Third, educational testing and assessment procedures have changed through the years. Extensive use of standardized achievement and intelligence tests common in elementary and secondary education today were less common prior to World War II.

Modifiability of Intellectual Functioning in Later Adulthood

The necessity of a lifelong approach to learning and education should be evident. However, until quite recently adult educational efforts in later adulthood were hampered by the myth of intellectual decline. It was assumed that learning ability was seriously limited in old age and that intellectual functioning showed a steep and pervasive decline. Stereotypic notions suggested that "you can't teach an old dog new tricks" or that adults become "set in their ways." This focus on decrement in adulthood has often been accompanied by the assumption that such cognitive change was irreversible. These assumptions have been largely based on correlations between physical changes in later adulthood and intellectual performance. While some decrement does occur, at least in very old age, and may be partially due to physical causes, assumptions regarding the pervasiveness of such decline and its irreversibility need to be re-examined. In contrast to the numerous cognitive intervention programs established for children, relatively few broad-based intervention programs have been conducted to modify and optimize intellectual functioning in old age. Therefore, we have limited knowledge of the extent to which areas of adult development could be modified and optimized.

Recall that longitudinal research, such as that by Schiae and Parham

(1977), suggests that intellectual functioning with regard to many mental abilities is relatively stable throughout much of adulthood with significant decline occurring in healthy older adults only in the sixties. In contrast, environmental and experiential factors, such as those associated with cohort effects, have been shown to impact intellectual functioning, even in young and middle adulthood. The lower level of performance noted for today's older adult when compared with today's young adult may then be less a function of intellectual decline with age, but rather a function of environmental differences experienced by the two cohorts in adulthood. To what extent can intellectual performance in later life be modified, then, through experiential and educational interventions? Some intellectual traits set down early in life may be relatively difficult to change. Other behaviors may be much more amenable to change at later stages in life. For firm conclusions to be reached, each cognitive ability of interest must be studied using several different training techniques.

A small but growing literature has reported successful modification of apparent low levels of performance in later adulthood for a variety of cognitive tasks (Hornblum and Overton, 1976; Willis, Blieszner, and Baltes, 1981). Moreover, in some studies such improvement in cognitive performance has been shown to be maintained up to six months following intervention and to generalize to related ability tasks. Such intervention programs have frequently been relatively brief (lasting only a few sessions) and less intensive than many cognitive intervention programs for young children. It has been suggested then that older adults may not be learning the cognitive skills *de novo* (as children do), but rather that such intervention programs activate cognitive skills and abilities already within the older adults' repertoire, but not spontaneously shown in their intellectual performance.

Significant improvement as a result of practice was shown in a recent study (Hofland, Willis, and Baltes, 1981). Older adults were asked to practice two types of problem-solving tasks on eight different occasions. These adults were given no feedback regarding the correctness of their answers or whether they were improving across sessions. For both of the problem-solving tasks, mean performance improved approximately 10 percent. Because the older adults were given no instruction on strategies for solving the tasks, such improvement reflects the adults' ability to activate and use cognitive skills already within their repertoire.

In addition, lower levels of intellectual performance have been associated with a variety of noncognitive factors (for example, lack of test sophistication, anxiety, slow behavioral responding, increased cautiousness). While such noncognitive factors are not intrinsic to intellectual abilities *per se*, they may affect intellectual performance. Intervention programs focusing on these factors have also been successful (Birkhill and Schaie, 1975; Hofland, Willis, and Baltes, 1981).

Implications of a Life Span Perspective for Educational Practice

Expanding the Concept and Goals of Education. A life span approach suggests that individual development must be studied in the context of socio-cultural change. Traditionally, education has tended to define goals in terms of either normative or differential views of individual development. Emphasis on normative patterns of development has led education to focus on developmental tasks. In contrast, emphasis on individual differences has resulted in a concern for differentiation and individualization of educational objectives. A life span perspective would consider both normative and differential developmental patterns in the context of social change, and thus would suggest three sources of educational goals. These are normative developmental tasks, individual variability, and sociocultural change. Individualization of educational goal setting becomes increasingly important with the wider range of individual differences in development during adulthood. Moreover, educational goals must be sensitive and adaptive to social change. This suggests not only that education must be responsive to social change but also that education can be involved in directing the nature of such change. It is evident that education can remediate for obsolescence due to social change and can also provide individuals with generic skills for coping, adapting to, and optimizing their development in relation to future change.

Instructional Methodology. Individual variability in almost every type of intellectual capacity increases across the life span. The greater range of individual differences in adulthood should be of primary concern to the educator. Extreme individual differences in an educational population usually require an individualized instructional approach. Such an individualized orientation would seem imperative in adult instruction. Variability in noncognitive factors related to learning, as well as in cognitive ability and motivation, must be considered in designing instructional approaches for the adult learner. Studies investigating the relationship between learner aptitudes and limitations and instructional approaches would appear particularly relevant in mapping out appropriate instructional strategies for the older adult learner.

The role of the instructor for participants across the life span appears to change from director of learning to that of a facilitator or resource person. Whereas society and the educator direct the education of the young, the content and method of learning in adulthood are largely determined by the learner. Developmental changes in the learner across the life span suggest the need for qualitatively different types of teacher training for educators working with different age groups. The techniques of the high school or even college instructor may be inappropriate in teaching middle-aged or older persons. Teacher training institutions must be involved in providing information concerning adult development and learning to continuing educators. Principles applying to the

older adult learner may equally apply to the teacher's own continued updating and learning endeavors.

In summary, a lifelong approach to learning broadens the concepts of education beyond the traditional youth-oriented preparation for adulthood. Education serves preventive, facilitative, remedial, and preparatory functions. The focus of educational intervention extends beyond the acquisition of academic and vocational skills to enable the individual to master developmental tasks associated with each period in the life span. Thus, a lifelong view of education suggests the need for a reallocation of educational opportunity across the life span. The individual continues to develop across the total life course, and thus educational opportunities must be provided to facilitate and optimize the development of older adults.

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