THE NEUROPSYCHOLOGY OF EVERYDAY LIFE:
ISSUES IN DEVELOPMENT AND REHABILITATION

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7. LIFE SPAN PERSPECTIVE ON PRACTICAL INTELLIGENCE

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INTRODUCTION

The relatively brief history of the study of human intelligence reflects a continuing tension between identifying the most basic processes or units of cognition, on the one hand, and describing and predicting complex human behavior, on the other. Some eight decades ago, Binet (Binet & Simon, 1905) sought to predict performance on complex academic tasks via the assessment of a small group of basic mental abilities. Since Binet's time, research and debate has continued unabated on the relationship between basic cognitive processes and complex forms of intelligence. During the past two decades, the study of basic skills and cognitive processes has been reflected in the information-processing approach to cognition (Newell & Simon, 1972; Rybash, Hoyer, & Roodin, 1986; Salthouse, 1985), in the study of artificial intelligence (Hillman, 1985), and in the development of componential models of intelligence (Sternberg, 1982). The study of complex forms of human performance has been reflected in recent research on topics, such as expertise (Hoyer, 1985), practical or everyday intelligence (Sternberg & Wagner, 1986), and ecological and construct validity concerns within clinical psychology and neuropsychology (Crook, 1979; Kasniak & Davis, 1986; West, 1986).

In this chapter, we will consider the relationship between basic and complex forms of cognition from a life span perspective. We will begin by presenting a conceptual framework for defining the relationship between basic and complex forms of intelligence. Second, we will selectively review research on changes in performance on basic cognitive abilities that have been studied within a life span perspective. Findings on basic mental ability performance are of particular importance in this chapter, since we will propose that the individual's levels of functioning on basic units of cognition are important precursors of performance on many complex cognitive tasks. Third, we will review the limited literature on adults's performance on tasks of daily living. Everyday task performance is the aspect of practical intelligence of particular concern in this chapter. Finally, we will consider the implications of a life span approach for the study of practical intelligence in adulthood.

MULTIPLE INTELLIGENCE THEORIES

Several theorists propose that intelligent behavior involves multiple forms of intelligence, including a practical intelligence domain and a mechanistic domain. Baltes, Dittman-Kohli, and Dixon (1984) distinguished between the "mechanics" of intelligence involving basic mental abilities and cognitive processes, and the "pragmatics" of intelligence concerned with everyday cognition. In Sternberg's (1982) triarchic theory, the contextual part of intelligence is concerned with adaptation to one's environment and the componential part with cognitive mechanisms and processes. Several of those proposing multiple intelligence models consider practical intelligence to be the most salient form of intelligence in adulthood.

Practical intelligence is said to involve intellectual competence in naturalistic settings or in worldly affairs (Neisser, 1976; Wagner, 1986). Charlesworth (1976) defined practical intelligence as "behavior under the control of cognitive processes and employed toward the solution of problems which challenge the well-being, needs, plans, and survival of the individual" (p. 150). Definitions of practical intelligence have often focused on its distinction from one form of mechanistic or componential intelligence, namely academic intelligence. Academic intelligence has been measured in terms of tasks found on IQ tests and in school settings, and thus has been closely associated with the psychometric intelligence approach. Psychometric intelligence tasks have been characterized as (1) being disembedded from an individual's ordinary experience; (2) having little intrinsic interest; (3) being well defined in that all needed information is available; (4) being formulated by other people; and (5) having only one correct answer and one method of correct solution (Neisser, 1976; Wagner & Sternberg, 1986).

The primary distinction between practical and psychometric intelligence is that psychometric intelligence is reflected by tasks associated with the academic or clinical setting whereas practical intelligence involves tasks encountered in the "real" world. However, we find some of the other characteristics attributed to psychometric intelligence to be less apt in differentiating psychometric and practical intelligence. For example, many tasks of daily living are formulated by society rather than by the individual (e.g., driving regulations, banking procedures). Moreover, many practical problems involve one correct or commonly agreed on solution or procedure (e.g., determining the correct departure time from an airline schedule, giving the correct currency when purchasing an item).

A major issue for multiple intelligence theories is the definition of the interrelationship among the various forms. Berg and Sternberg (1985) stated, "A mechanistic theory is needed to specify the cognitive processes by which contextually appropriate behavior is carried out" (p. 348). The question then arises whether the mechanistic constructs and measures (e.g., primary abilities, cognitive processes) traditionally studied by psychologists are relevant to the study of practical intelligence. Moreover, does the salience of different mechanistic constructs vary with age? Some contend that psychometric and practical intelligence are distinct, unrelated forms of intelligence (Ceci & Liker, 1986; Friedricksen, 1986), but others suggest a hierarchical relationship between psychometric intelligence and some forms of practical intelligence (Berry & Irvine, 1986; Willis & Schaie, 1986). Our view is similar to that of Berry and Irvine (1986) in that basic cognitive processes and abilities are believed to be universal across cultures. When nurtured and directed by a particular culture, cognitive processes and abilities develop into cognitive competencies that are manifested in daily life as cognitive performance.

Findings from our research suggest a hierarchical model of the relationship between psychometric and practical intelligence, as shown in figure 7–1. Our research based on this model has been guided by several hypotheses. First, basic abilities and cognitive processes are important precursors of certain forms of practical intelligence. That is, the skills and processes represented in basic abilities are involved in performance of many practical intelligence tasks. Second, practical intelligence tasks are complex, and practical intelligence dimensions will be related to more than one basic ability or process. Third, practical intelligence can be represented in terms of multiple general practical intelligence dimensions. Performance on various practical intelligence dimensions should be interrelated. The interrelationship among practical intelligence dimensions may be related to shared factual knowledge or task features, or to basic abilities and processes that are common to multiple practical intelligence dimensions. Finally, age-related change in performance on a practical intelligence dimension should also be reflected in a related pattern of change in underlying abilities and processes.

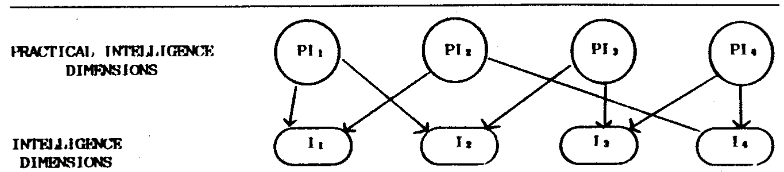

Figure 7–1. Hierarchical model of the relationship between basic abilities and processes (I) and dimensions of practical intelligence (PI).

DEVELOPMENTAL CHANGES IN BASIC MENTAL ABILITIES

Since in our conceptual framework, basic mental abilities and processes are hypothesized to underlie certain dimensions of practical intelligence performance, we will turn now to consideration of developmental changes in mental ability performance in adulthood. Within our model, changes in performance on basic cognitive abilities are of importance in understanding practical intelligence functioning in adulthood.

Much of the life span research on changes in basic cognitive processes has been conducted within a psychometric approach to the study of mental abilities (Botwinick, 1977; Schaie, 1983). Within the psychometric approach, intelligence is conceptualized in terms of a set of primary mental abilities. The question for the adult developmentalist is how performance on ability measures changes across adulthood.

Our understanding of developmental change in mental abilities is derived from findings of longitudinal studies, in which the same individuals are studied across time (Schaie, 1983). For the past decade we have have been involved in the Adult Development and Enrichment Project (ADEPT), a short-term longitudinal study of change in older adults' ability performance (Baltes et al., 1980; Willis, 1987). The ADEPT project has examined changes in mental ability functioning within the fluid-crystallized model of psychometric intelligence (Cattell, 1971).

According to this model, fluid intelligence is hypothesized to be the more elementary of the two intelligence dimensions and to be most closely associated with the neural substrate. Decline in fluid intelligence in old age is hypothesized, according to the model, to be associated with neural assaults or damage. Fluid intelligence involves the ability to reason with regard to novel and abstract problems. Fluid intelligence is a second-order dimension represented by primary abilities, such as Figural Relations and Inductive Reasoning. Measures of these abilities require the individual to determine a pattern of relationships in figural material or in a series of numbers or letters. Because the measures are administered under timed conditions, the individual is required to engage in abstract reasoning in a time-limited context.

In contrast to fluid intelligence, crystallized intelligence is hypothesized to reflect abilities and skills acquired within cultural institutions, such as schooling. In old age, crystallized intelligence is hypothesized to decline at a later age and at a slower rate than fluid intelligence. Crystallized intelligence is represented by primary abilities, such as verbal meaning and social intelligence. In addition, we have examined change in a third intelligence dimension, speed. The speed dimension assesses the individual's ability to make simple perceptual discriminations accurately under speeded conditions. The speed dimension is represented by the perceptual speed primary ability.

In the ADEPT project, we examined change in ability performance in older adults, 60 to 84 years of age. They were assessed at two occasions over a 7-year interval. Figure 7–2 presents short-term longitudinal data regarding change

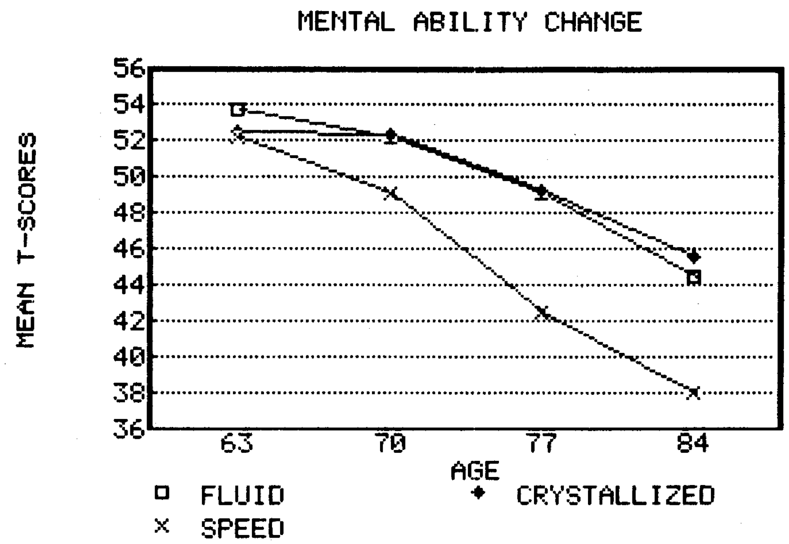

Figure 7–2. Age-related change for three dimensions: fluid intelligence, crystallized intelligence, and speed.

in performance on the fluid, crystallized, and speed dimensions for ADEPT participants.

Note that the pattern and rate of decline vary across the three intelligence dimensions. The steepest pattern of decline occurred for the speed dimension, as would be expected. There is considerable evidence within the gerontological aging literature regarding age-related decline in speed of responding (Salthouse, 1985). Across the age period studied, the magnitude of normative age-related decline on the speed dimension is approximately 2.50 standard deviation units. Note also that the magnitude of decline is less from 63 to 70 years than from 70 to 77 years.

On average, fluid intelligence also exhibits a relatively linear pattern of decline; however, the magnitude of decline from age 63 to 84 is approximately one standard deviation unit, much less than the magnitude of decline for the speed dimension. In contrast, note that decline does occur later, on average, for crystallized intelligence, as hypothesized by the $G_f - G_c$ model; there is no reliable decline from 63 to 70 years. The magnitude of decline for crystallized intelligence from age 63 to 84 is approximately one-half of a standard deviation unit.

Research from ADEPT and other longitudinal studies suggests several findings with regard to age-related change in basic abilities. First, the average

age of onset of decline varies across intelligence dimensions. For example, decline on crystallized abilities, such as vocabulary, has been shown to begin later, on average, than for abilities involving abstract reasoning and speeded responding. In contrast, the earliest onset of decline occurs, on average, for highly speeded tasks, as represented by the speed dimension.

Second, the magnitude of performance decline varies across abilities. The greatest magnitude of decline was found for the speed dimension. In contrast, the magnitude of decline for the crystallized intelligence dimension was approximately one-fifth the magnitude of decline for the speed dimension.

These two findings suggest that a *multidimensional* approach to the study of developmental change in mental abilities is required (Willis & Baltes, 1980). Since onset and rate of age-related decline vary for different abilities, it is useful to conceptualize cognitive functioning as a multidimensional construct rather than as a global, unitary phenomenon. Global assessments of intellectual ability, such as the total score on the Wechsler Adult Intelligence Scale (WAIS; Matarazzo, 1972), mask the pattern of differential developmental change occurring for various abilities. Neuropsychologists are sensitive to the importance of a multidimensional approach, since different cognitive processes are affected by different neural structures and areas of the brain.

In addition, longitudinal findings indicate that there are wide individual differences, not only in the level of ability performance, but in the onset and rate of ability change. Figure 7–3 presents the proportion of adults who declined, remained stable, or improved on the three intelligence dimensions (fluid, crystallized, speed) over a 7-year period. The top graph presents the proportion of individuals who declined, remained stable, or improved on each intelligence dimension from 63 to 70 years of age; the middle graphs from 70 to 77; the bottom graph from 77 to 84 years of age. Note that although the proportion of individuals exhibiting age-related decline increases across the age intervals, in most instances half or more of the individuals did not show reliable decline over the 7-year period. Only for the fluid dimension did the majority of the individuals exhibit decline from 77 to 84 years. Thus the widest range of individual differences in the pattern of ability change is shown for the oldest age group (77–84 years). There is considerable evidence that range of individual differences in ability performance increases with age (Willis, 1985).

DEVELOPMENTAL CHANGE IN TASKS OF DAILY LIVING

We turn now from consideration of basic cognitive skills and processes to a discussion of developmental change in forms of practical intelligence. Despite agreement that practical intelligence involves activities performed in real-world contexts, the specific tasks and measures employed to study practical intelligence have varied widely. Research on practical intelligence has included the study of expertise in various professions, including business managers and academic psychologists (Wagner & Sternberg, 1986), typists (Salthouse,

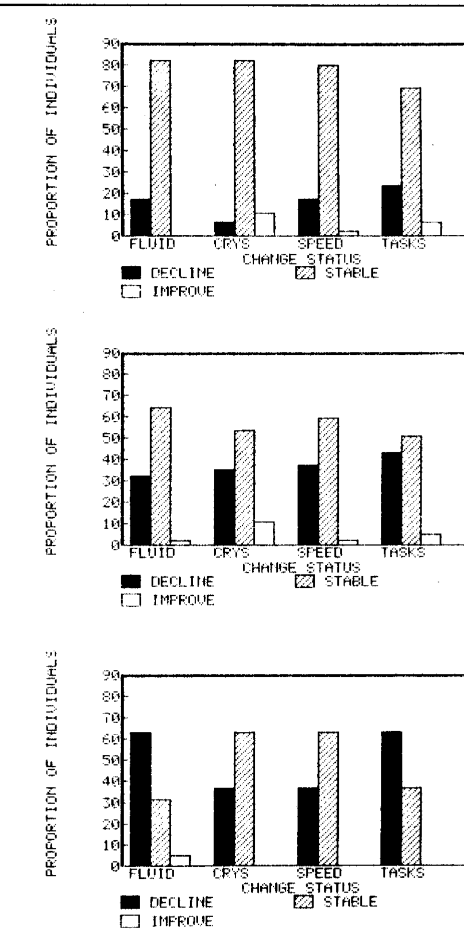

Figure 7–3. The proportion of individuals whose performance was categorized as having declined, remained stable, or improved on four intelligence dimensions: fluid intelligence, crystallized intelligence, speed, and everyday tasks. The top graph shows change status for age 63 to 70, the middle graph for 70 to 77, and the bottom graph for age 77 to 84.

1984), and lab technicians (Hoyer, 1985); expertise in leisure activities, such as chess and bridge (Charness, 1986); and the study of wisdom (Baltes, Dittman-Kohli, & Dixon, 1984).

Clinicians, however, are often concerned with the competence of patients to perform activities demanded in daily living within our society. Thus, in this chapter, we will consider practical intelligence in terms of activities of daily living. These activities are defined by the following characteristics: (1) the tasks involve cognitive problem solving; (2) they represent *common* activities experienced by "average" community-dwelling adults in their daily lives; (3) competency in many of these tasks is considered basic or essential to function effectively in our society; (4) the tasks may be defined by others (e.g., societal norms, legal regulations) rather than by the individual; and (5) many of these tasks involve one correct or commonly agreed on response.

In our research, we have studied adults' ability to perform everyday activities involving printed material. The tasks studied include (1) interpreting bottle labels, such as labels on prescription drugs or household cleaning products; (2) reading charts, schedules, and tables, such as bus schedules, employee benefit tables, or weight charts; (3) reading a road map; (4) interpreting advertisements, such as a "yellow page" ad; and (5) interpreting text material, such as the letter to the editor in a newspaper.

Previous research has shown that adults, particularly the elderly, have difficulty reading and interpreting printed material. Misinterpretation of printed material interferes with many adults' ability to carry out activities of daily living. Studies indicate that errors in self-administered medications are made by 40 to 60% of the elderly (Ouslander, 1981). Ability to comprehend prescription labels is a significant predictor of patient compliance; 24% of the elderly failed to understand the primary prescription label, and 39% misinterpreted the auxiliary label (Murray et al., 1986). In a national study 33% of adults could not comprehend a medicare form and 10% could not interpret a personal loan form (Robeck & Wilson, 1977). Studies indicate that adults also have difficulty with consumer-related tasks; only 33% of shoppers could determine the most economical size of product from information on the package (Capon & Kuhn, 1982).

Cross-sectional studies indicate that even young and middle-aged adults have difficulty with printed-material tasks, but there is the additional problem in later adulthood that performance may decline as a function of age-related change. In the following section, we will present data from our own research regarding age-related change in performance on everyday tasks involving printed materials.

Longitudinal Change in Everyday Task Performance

We examined 7-year change in performance of everyday tasks involving printed material in the same older adult population for which mental ability data were presented earlier in the chapter. Figure 7–4 presents average longitudinal change data for three groups: 63-year-olds retested at age 70; 70-year-olds retested at age 77; and 77-year-olds retested at age 84. Note that the pattern of age-related change is fairly linear but that the magnitude of change varies across the age groups. The 63-year-olds' decline was less than .2 of a

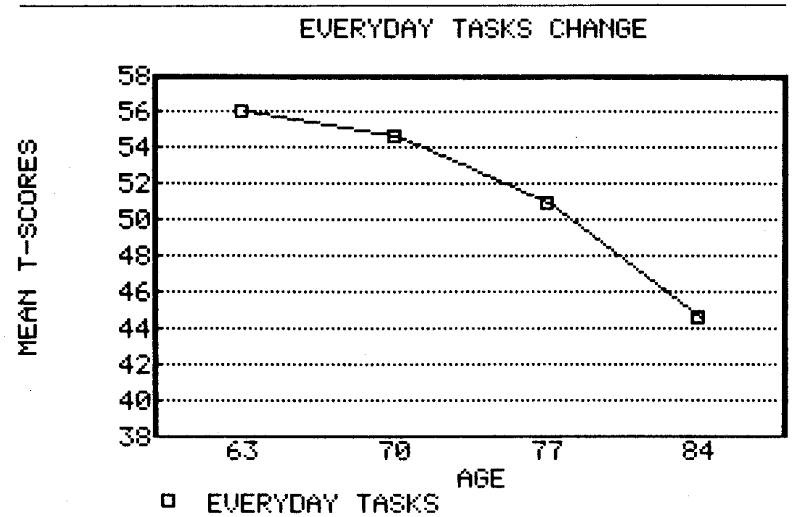

Figure 7–4. Age-related change in performance on everyday tasks involving printed material.

standard deviation over the 7-year interval. In contrast, the magnitude of decline was .40 and .60 standard deviation units for the 70- and 77-year-olds, respectively.

In our model of practical intelligence, we hypothesized that basic mental abilities and cognitive processes were some of the primary precursors of competence in everyday tasks performance. Therefore, it is of interest to compare patterns of age-related change for basic mental abilities (figure 7–2) with longitudinal change for everyday activities (figure 7–4). Comparison of the two figures suggests that change in everyday tasks involving printed materials most closely resembles the pattern of change exhibited by fluid intelligence. For both fluid intelligence and everyday tasks, age-related change is evident beginning at age 63, and the magnitude of decline increases over each 7-year age interval. The pattern of decline on everyday tasks differs from that for the other two mental ability dimensions, in that decline on everyday tasks begins somewhat earlier than decline shown for crystallized intelligence; however, decline on everyday tasks is less steep than that shown for speed.

Although figure 7–4 indicates a decline, *on average*, for older adults on everyday tasks involving printed material, further analyses of the data indicate wide individual differences in the rate and patterns of change. Each individual's scores were examined in terms of magnitude of change, and an individual's performance was categorized as having reliably declined, having remained stable, or having improved over the 7-year interval. On the right-hand side of figure 7–3, a bar graph shows the proportion of individuals in each of the three age groups exhibiting decline, stability, or improvement trajectories for everyday tasks. Note that approximately 70% of the subjects showed no reliable decline over the period from 63 to 70 years of age and that 38% showed reliable decline over this age period. Though 43% of the individuals showed reliable decline from 70 to 77 years, still half of those studied showed no decline. In the oldest age group, most individuals did show age-related decline from 77 to 84 years; however, the performance of 36% did not decline. These data demonstrate that comparison of group means, such as in figure 7–4, masks the wide individual differences in patterns and rate of change. Although the mean scores suggested decline, on average, across all age groups, scores of individuals indicate that at least half of the subjects showed no reliable decline from 63 to 70, or from 70 to 77 years of age.

Ability Correlates and Predictors of Everyday Task Performance

In our model, basic mental abilities and cognitive processes were hypothesized to be antecedents of performance on complex cognitive tasks. To test this hypothesis, we examined whether performance on basic mental abilities at the first assessment occasion was a significant predictor of everyday task performance 7 years later. The three mental abilities (fluid, crystallized, speed) at the first occasion of measurement were entered as independent variables in multiple regression analyses, conducted separately for each of the three age groups. Fluid and crystallized abilities were found to be significant predictors of everyday task performance for each of the three age groups. Substantial individual differences in everyday task performance were accounted for by the mental abilities for each of the three age groups: $R^2 = .80$; $R^2 = .61$; $R^2 = .69$.

To examine further the reciprocal relationship between abilities and everyday task performance, a series of structural equation analyses were conducted. That is, the directionality of the relationship between abilities and everyday tasks was examined by contrasting models of abilities as predictors of everyday task performance *versus* models of everyday task performance as predictors of abilities. Findings from the structural equation analyses indicated that fluid ability at the first assessment occasion predicted everyday task performance at the second assessment occasion 7 years later. However, subsequent analyses indicated that everyday task performance at the first assessment occasion predicted abilities at the second assessment occasion less well. Therefore, these findings provide strong support for our hypothesis that functioning on basic mental abilities is a significant antecedent of everyday task performance.

A significant relationship between basic abilities or cognitive processes and measures of daily activities has also been reported by several other investigators. Cavanaugh (1983) found verbal ability to be related to recall of TV program material. In a study examining differences in young and older adults' recall, he found no difference in recall for high verbal young and older adults; however, low verbal older adults recalled significantly less material. Furthermore, verbal ability was found to be particularly important for the initial comprehension of the TV program, thus influencing encoding rather than retrieval.

In a series of studies Kausler & Hakami (1983) examined age differences in recall of activities performed by subjects. Several laboratory measures of verbal learning (i.e., serial learning, paired-associates, verbal discrimination learning) were found to be significant predictors of older adults' ability to recall activities performed; however, no relationship between the verbal learning tasks and activity recall was found for younger adults. Camp and colleagues (1989) found inductive reasoning ability to be a significant correlate of older adults' performance on everyday problem-solving tasks (e.g., what to do when the refrigerator breaks down). Fluid and crystallized abilities were also related to solution of interpersonal conflict problems (Cornelius & Caspi, 1987; Cornelius, Kenny, & Caspi, 1989).

If everyday problem solving is broadly construed to include cognitively oriented leisure activities, the literature also indicates an association between frequency of game playing and performance on laboratory/clinical tasks. Rice, Meyer, and Miller (1988) examined the relationship between prose recall and the elderly's leisure activities. Over half of the variance in prose recall was explained by amount of time spent in playing word games; a positive association was found between recall and doing crossword puzzles; a negative relationship between recall and playing of bingo was found. Clark, Lanphear, and Riddick (1987) found that videogame playing resulted in significant improvement in the elderly's reaction time. Finally, our research also indicated self-reports of frequency of game playing to be predictive of mental ability performance (Tosti-Vasey et al., 1987).

On the other hand, several studies report little relationship between laboratory/clinical tasks and applied problems. Wagner and Sternberg (1986) found generally nonsignificant correlations between verbal ability and tacit knowledge regarding professional issues in academic psychology and business management for professionals in these disciplines. Ceci and Liker (1986) reported little relationship between a general IQ measure and race-track handicapping for expert racecourse bettors. Mercer, Gomez-Palacio, and Padilla (1986) reported nonsignificant relationships between social adaptive behavior and a general IQ measure.

The preceding discrepancies in research findings can be attributed to a number of factors. First, many of the studies reporting no relationship between laboratory tasks and everyday problem solving have focused on highly domain-specific tasks that involve a very specialized knowledge base (e.g., race-course handicapping). A second related problem is that a number of studies have in actuality been studies of expertise, in which performances of experts and novices in the same field have been compared. The expertise approach has focused on highly specialized domains of knowledge involving select occupational groups (e.g., senior management, psychology faculty) or activities (e.g., race-course handicapping) for which criteria regarding expertise can be documented. As Wagner (1986) acknowledged, it would be difficult to define expertise or to select experts for many aspects of everyday problem solving. Third, subjects have often represented very select samples (e.g., psychology faculty, MBA graduate students), such that there is likely to be a restriction in range for the laboratory or ability measures and/or for the criterion-practical intelligence tasks, resulting in lower correlations. Novices in the expertise studies are often graduate students in the same professional field. Fourth, many studies have measured academic intelligence in terms of a single laboratory measure (e.g., vocabulary test) or a global intelligence test (e.g., WISC). However, everyday problem-solving tasks are complex and would be expected to involve multiple abilities; thus the relationship between a wide array of abilities and a given task of daily living needs to be examined.

It is worth noting that a number of the studies reporting a significant relationship between laboratory ability tasks and everyday problem solving involve older adult samples and less select populations. In two studies (Cavanaugh, 1983; Kausler & Hakami, 1983) a significant relationship was found for the older adult group but not for the younger adult group. A larger correlation between ability measures and everyday problem solving in old age may be partially due to the fact that individual differences in cognitive functioning tend to increase in later adulthood, as some older adults begin to experience cognitive decline and others remain stable in performance (figure 7–3).

SUMMARY AND IMPLICATIONS

A life span approach to the study of practical intelligence involves a focus on three issues. First, the researcher and clinician must be attentive to developmental *change* occurring within the individual. Individuals continue to develop and change across the life course. The researcher and clinician must be knowledgeable regarding normative patterns of age-related change for various cognitive abilities and processes. Longitudinal research indicates that the rate and pattern of change differ across various abilities. As illustrated in our research, abilities and skills involving novel, abstract reasoning (e.g., fluid intelligence) and speeded responses show an earlier and steeper pattern of decline than abilities and skills (e.g., crystallized intelligence) that are more meaningful and routinely exercised. Our data indicated that decline in crystallized problems occurred later than for novel, fluid reasoning tasks. Many older adults function adequately in familiar, routinized contexts, but they function less effectively and are vulnerable to mishaps when required to reason and respond to unfamiliar, abstract problems that require quick (speeded) responses.

Second, a life span approach emphasizes the importance of *individual differences* in the study of development. Variability in cognitive performance often increases with increasing age, as illustrated in figure 7–3. For all of the abilities and skills examined, 70 to 80% of individuals remained stable from 63 to 70 years of age. However, over the age period of 70 to 77 years, an increasing proportion of individuals experience reliable decline, thus increasing the variability in performance within this age group. This pattern of increasing variability continued in the oldest age group (77–84 years). The implication of greater variability with age is that the study and treatment of the older adult needs to become increasingly individualized. Greater attention needs to be given to the prior developmental history of the individual in diagnoses and treatment, since in old-old age there is no one universal developmental pattern. For example, a low level of performance may indicate that the older adult has suffered significant decline, or it may be that the individual's performance is stable and that he or she has performed at a low level for many years; information on the individual's prior developmental history is needed to differentiate between the two diagnoses.

Third, a *multidimensional* approach to the study of both basic and complex forms of cognition is indicated within a life span perspective. That is, the basic units of cognition involve multiple abilities and skills that have different patterns and rates of change across the adult life course. Global or unitary measures of cognition mask the multidimensionality and multidirectionality of cognitive change. A multidimensional approach to the study of practical intelligence is indicated. Our model and research findings indicate that practical intelligence problems are complex and that multiple basic abilities serve as predictors or precursors of performance on complex cognitive tasks. For example, in the data presented in this chapter, both fluid and crystallized abilities were found to be predictors of everyday tasks involving printed material; both verbal ability and reasoning skills were required to perform tasks, such as interpreting medicine bottle labels or reading a bus schedule. The specific abilities and skills that underlie various complex tasks will vary with the nature of the tasks. However, we believe that most tasks of daily living will involve multiple basic abilities and skills.

Finally, we have presented data to suggest that significant relationships do exist between laboratory or clinical assessment measures and at least some tasks of daily living. In terms of multiple intelligence theories, our findings suggest a relationship between the "mechanics" and the "pragmatics" of intelligence. The challenge for the researcher and clinician lies in further examination of the interface between basic cognitive processes and practical intelligence activities required to function effectively in our society.

NOTE

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