CHAPTER 6

Everyday Competence and Everyday Problem Solving in Aging Adults: The Role of Physical and Social Context

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Although the concept of everyday competence has theoretical roots in different traditions in psychology and gerontology, in its broadest sense it refers to individuals' capacity to interact effectively with their environment (Bandura, 1997; White, 1959). This definition emphasizes that competence is shown in persons' transactions with their *physical-spatial* and *social-interpersonal* surroundings and that an examination of competent behavior needs to focus on at least two major factors. The first factor is the *person* with his or her skills, abilities, beliefs, developmental history, and other personal resources. The second factor is the *environment*, which can facilitate or impede the application of the person's skills, abilities, and resources. Thus, competent behavior in everyday life always reflects the confluence, or interaction, of personal and environmental factors and focuses on individuals' abilities to adapt to the challenges of different environmental conditions (Diehl, 1998; Lawton, 1989a; Lewin, 1935; Willis, 1991, 2000).

This chapter has several objectives:

1. We will define the conceptual space associated with the construct of everyday competence. In doing so, we will advocate for a transactional view of everyday competence and a conceptualization of person and environment as being multidimensional and dynamic.

2. We will discuss the physical-spatial and social-interpersonal features of the environment that facilitate or impede competent behavior in older adults.

3. We will review the literature on predictors of everyday competence. In this section, we will draw as much as possible on available research to show how personal and environmental variables interact to facilitate or impede the expression of competence in everyday life.

4. We will discuss some emerging trends and future directions in this area of aging research, including a focus on driving competence and associated aspects of person-environment (P-E) fit.

It needs to be noted that this chapter focuses on everyday competence and everyday problem solving in relatively healthy, community-residing, older adults. Thus, we will not discuss everyday competence in institutionalized older adults, although we may refer to this specific environmental context for illustration purposes (see M. Baltes & Horgas, 1997; Regnier & Pynoos, 1992).

DEFINING THE CONCEPTUAL SPACE

Several authors have presented models describing the conceptual components of everyday competence (e.g., M. Baltes, Maas, Wilms, & Borchelt, 1999; Willis, 1991). Building on this earlier work, Figure 6.1 displays the conceptual space that we consider of relevance in our discussion of everyday competence and everyday problem solving in adulthood and old age.

As can be seen in Figure 6.1, a person's everyday competence with regard to several domains of performance, ranging from basic, obligatory, self-care activities to expanded discretionary activities, emerges out of the confluence of characteristics of the person and the environment. On the person side, we distinguish biological/functional, social (see Section V, "Effects of the Social-Interpersonal Environment on Older Adults' Everyday Competence"), and psychological resources (see Section VI, "Predictors of Everyday Competence and Everyday Problem Solving in Late Adulthood"). These resources interact in complex ways with each other and the environment to produce a person's actual behavior in a given situation. For example, a person with some visual or motor impairment may apply his or her cognitive abilities, coping strategies, and social resources in a somewhat different way than a person without such limitations. At the same time, such a person may also consider features of the physical-spatial and social-interpersonal environment in different ways (e.g., avoiding nighttime driving or relying on public transportation or another person) than a person without limitations. Thus, competent behavior in everyday life does not exist in a vacuum, but is expressed and

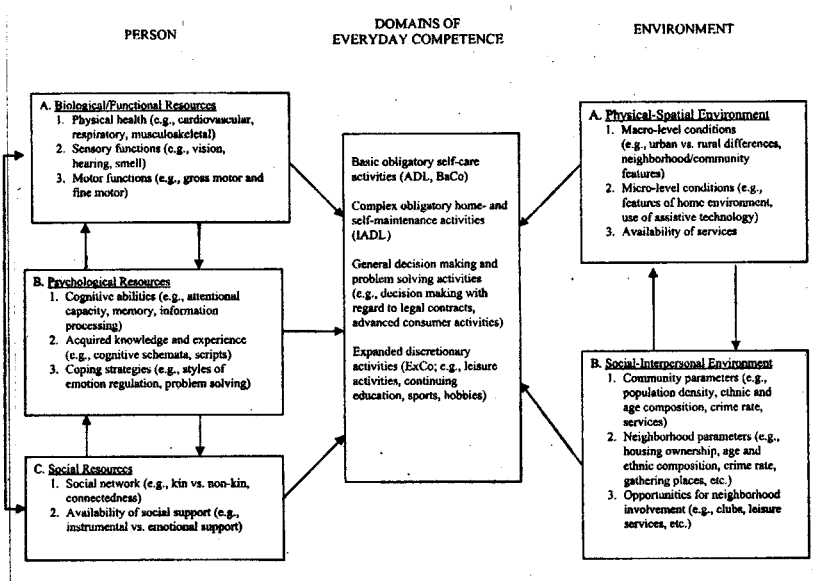

FIGURE 6.1 The conceptual space of everyday competence as a function of person and environment.

receives its validation in transactions with the actual physical and social environment. To say it differently, we propose that competent behavior resides neither within the person nor within the environment, but in the interaction between person and environment. Both person and environment have to be conceptualized as dynamic entities (see Willis, 2000).

Taking into account this conceptual space, we define everyday competence as a person's potential to perform a broad array of activities considered essential for independent living, even though the individual may not perform all of these activities on a regular basis (M. Baltes et al., 1999; Lawton, 1982; Willis, 1991, 1996a). Several aspects of this definition warrant further discussion:

1. Everyday competence refers to a person's potential, or capability, to perform certain tasks, not the actual daily behavior of the person (Salthouse, 1990). The distinction between potential and actual performance is consistent with the notions of intra-individual reserve capacity and behavioral plasticity and has received attention from lifespan developmental (P. Baltes, 1987; P. Baltes & M. Baltes, 1990) and cognitive researchers alike (Park, 1992; Salthouse, 1990, 1996). Furthermore, the distinction between performance potential and actual performance has become of interest to legal scholars in the context of competency assessment and guardianship decisions (Grisso, 1986; Sabatino, 1996; Smyer,

Schaie, & Kapp, 1996). It needs to be noted, however, that the emphasis on performance potential should not distract from the fact that adults' *actual* performance on tasks of daily living provides valuable baseline information from which the examination of their performance potential can be launched (P. Baltes, 1987).

2. Although most of the literature on everyday competence and everyday problem solving has focused on older adults' capacity to perform *activities of daily living* (ADLs) (Katz, Ford, Moskowitz, Jackson, & Jaffe, 1963; Katz & Stroud, 1989) and *instrumental activities of daily living* (IADLs) (Fillenbaum, 1985, 1988; Lawton & Brody, 1969), more recent conceptualizations have argued for the inclusion of discretionary activities as part of the competence construct. For example, M. Baltes et al. (1999) have presented a two-component model that distinguishes between a *basic* (BaCo) and an *expanded level of competence* (ExCo). The latter encompasses expanded discretionary activities such as leisure time and out-of-house activities (e.g., participation in continuing education, sports, travel, etc.) that are often indicative of successful aging (P. Baltes & M. Baltes, 1990; Horgas, Wilms, & M. Baltes, 1998). Indeed, some authors have argued that the role of the physical-spatial environment may play a more crucial role with regard to discretionary and out-of-house activities (Wahl, Oswald, & Zimprich, 1999).

3. Several authors have argued that everyday competence is a *multidimensional* and *dynamic* construct (Sansone & Berg, 1993; Willis, 1991). For example, Willis (1991) presented a model that distinguishes between antecedents, components, mechanisms, and outcomes of everyday competence. Two aspects of this model are of particular importance. First, Willis's (1991) conceptualization implies that everyday competence serves as a moderator between outcomes and age-related, health-related, and psychosocial losses (see also M. Baltes et al., 1999). Second, Willis's (1991) model also suggests that older adults' competencies and their application in different domains are best conceptualized as a dynamic and recursive process. That is, physical and psychological outcomes at one point in time are likely to affect a person's future competency beliefs, thus becoming the antecedents for future functioning. Moreover, a dynamic element is also introduced when environmental conditions change because a person may perform at a high level of competence in a familiar environmental condition (e.g., using public transportation in one's home town), but may behave at a lower level of competence in a less familiar environment (e.g., using public transportation in an unfamiliar city).

In summary, a transactional view of everyday competence emphasizes the mutual and reciprocal relations between person and environment (Lawton, 1982). The person side encompasses physical, psychological, and social resources, which interact with each other and the environmental

conditions (i.e., physical-spatial and social-interpersonal) and determine a person's potential to meet the diverse challenges of everyday life. Consistent with the focus of this volume, we will first discuss environmental and then personal factors that influence adults' everyday competence. Throughout the chapter, we will highlight interactions between personal and environmental factors as they affect adults' everyday competence and everyday problem solving.

ENVIRONMENTAL INFLUENCES ON EVERYDAY COMPETENCE: GENERAL FRAMEWORK

Environmental perspectives have a long-standing tradition in gerontology (Kleemeier, 1959; Lawton, 1977, 1983; Parmelee & Lawton, 1990; Wahl, 2001). Kleemeier (1959) already emphasized that the aging process is modified by the relations between person and external environment. He also coined the term *prosthetic environments* to indicate that environmental conditions can serve as "prosthetics" that compensate for aging-related impairments or losses, either naturally or by design. Similarly, Scheidt and Windley (1985) pointed out that research on the effects of the environment on the aging process has always been intervention oriented and has sought to improve the fit between person and environment, with the ultimate goal of enhancing older adults' quality of life.

A great deal of theorizing has focused on the *person-environment* (P-E) relations and the role of environmental conditions in the aging process, resulting in several elaborate theoretical models (see Wahl, 2001, Table 9.1, p. 227). One of the most widely recognized models is the *competence-press model* of Lawton and Nahemow (1973). In this model, an older person's level of adaptive behavior is seen as the result of environmental demands that are commensurate with the bio-behavioral competence of the person. Although the different models emphasize different aspects of the P-E relationship, they basically all focus on two main functions of the physical and psychosocial environment. Specifically, the physical and psychosocial environment is conceptualized either as serving a *supporting* or an *impeding* role as individuals deal with the challenges of later adulthood (Scheidt & Windley, 1985; Wahl, 2001). Conceptualizing the physical and social environment either as a source of stress or a source of support builds on the notion that stress challenges individuals' adaptive capacity, whereas support tends to stabilize adaptive behaviors (see Lazarus & Folkman, 1984).

How the planned design of the environment can facilitate desirable and reduce undesirable behavior has been specifically studied in the context of nursing homes and special care units (Parmelee & Lawton, 1990; Regnier & Pynoos, 1992; Wahl, 2001). Far less research has focused on the P-E rela-

tions in natural and unplanned surroundings. In the following, we will examine which ways the environment can either facilitate or impede older adults' everyday competence in natural settings. For clarity of presentation, we will review the literature separately for the physical-spatial and the social-interpersonal environment, although these two components of the environment often interact with each other.

EFFECTS OF THE PHYSICAL-SPATIAL ENVIRONMENT ON OLDER ADULTS' EVERYDAY COMPETENCE

The Physical-Spatial Environment as a Source of Stress

Physical-spatial features can become sources of stress in the immediate home environment (i.e., the microenvironment) or the extended environment, such as the neighborhood or community (i.e., the macroenvironment), in which older adults reside. With regard to features of the macroenvironment, extensive research by Lawton and his colleagues showed that attributes of neighborhoods, such as community size, accessibility of buildings, neighborhood resources, crime risk, and degree of age segregation, were significantly associated with older adults' activity level, motility, and well being (Lawton, Nahemow, & Yeh, 1980). Moreover, environmental features of neighborhoods, in more than half of the studies, accounted for more variance in well-being than did personal characteristics of the older adults (Lawton, 1983; Scheidt & Windley, 1985). Similarly, Regnier (1983) found that the cognitive representations of neighborhoods were significantly related to the percentage and frequency of trips taken by older adult residents. Specifically, environmental factors such as street traffic, topography, bus routes, accessibility of buildings, and number of services in the neighborhood, together with social factors such as population density, crime rates, and ethnic mix, were factors that affected older adults' motility and their activity radius (Regnier, 1976). More recent research has shown that these effects are exacerbated in older adults with vision and mobility impairments (Wahl, Schilling, Oswald, & Heyl, 1999). Moreover, research that focuses on the incorporation of human factors considerations into the design of more age-appropriate environments has shown that taking into account basic performance parameters, such as older adults' average walking speed, can be used to design more elderly-friendly environments (e.g., implementing more age-appropriate intersection crossing times; for a review see Charness & Bosman, 1990; Fisk & Rogers, 1997).

In summary, it is well documented that physical-spatial features of the macro-environment affect older adults' motility and consequently their radius of activities. Although research is limited, it can also be concluded

that the activities that are most affected by impeding conditions of the macro-environment are those that belong to an *expanded definition of everyday competence* (ExCo), such as leisure time activities, traveling, and outdoor activities (Wahl, 2001). Older adults often respond to unfavorable physical neighborhood conditions by voluntarily limiting their activities outside of their home, which also tends to reduce their personal contact with social interaction partners. Such self-chosen restrictions of the activity radius contain the risk of starting a slow but progressive erosion process due to the disuse of physical, social, and cognitive functions. Such a downward spiraling effect, resulting in progressive disuse and increased risk of injury, has been documented in the literature on falls in older adults (Friedman, Munoz, West, Rubin, & Fried, 2002; Tinetti, Speechley, & Ginter, 1988).

With regard to the micro-environment, many older adults seem to respond proactively to changes in their functional abilities with modifications to their home environment (Lawton, 1989b; Wahl, 2001). Despite such proactive and adaptive modifications, the home environment can nevertheless present certain risks. For example, for elderly adults for whom it becomes increasingly difficult to climb stairs due to arthritis in knees and hips, the presence of any stairs in their home environment is likely to increase the risk for falls and subsequent disability (Campbell, Borrie, & Spears, 1989; Tinetti et al., 1988). The height and depth of cupboards and countertops in the kitchen area (Charness & Bosman, 1990) may affect an older adult's ability and willingness to prepare meals and the lack of grab bars in bathtub and shower areas may affect a person's willingness to engage in activities related to personal hygiene (Pynoos, Cohen, Davis, & Bernhardt, 1987; Regnier & Pynoos, 1987). Similarly, inadequately lit spaces in entryways and hallways, slippery floor conditions, or the use of decorative items in the home, such as throw rugs, may increase visually or mobility-impaired elders' risk for falls and other injuries (Charness & Bosman, 1990; Gill, Williams, Robison, & Tinetti, 1999).

In a population-based study, Gill, Williams, Robison, and Tinetti (1999) found that the prevalence of environmental hazards in the homes of older adults was high. These researchers used a room-to-room assessment protocol to examine hazards related to transfers, balance, and gait in older adults' home environment. Findings showed that grab bars in the tub/shower were absent in 61 percent of homes; loose throw rugs and obstructed pathways were present in nearly 80 percent and 50 percent of homes, respectively. Similarly, dim lighting, shadows, or glare were identified in 44 percent of the rooms and nightlights were not present or not near 67.6 percent of the examined staircases. Overall, two or more hazards were identified in 59 percent of bathrooms and in 23 to 42 percent of the other rooms. Subsequently, Gill, Robison, Williams, and Tinetti (1999) showed that these environmental hazards did not only exist in the home environment of vigorous older adults but that they were equally, and in

some instances even more, prevalent in the home environment of physically impaired elders. The authors comment on these findings by stating that environmental hazards are highly prevalent in the homes of frail older adults and that the need for environment-focused interventions is vastly underestimated.

These assessments of the physical-spatial home environment of active and impaired older adults are consistent with findings from other studies. For example, Tinetti et al. (1988) reported findings from a one-year prospective study showing that the majority of reported falls (77 percent) occurred at home. A likely contribution of environmental factors was reported for 44 percent of the falls. The most frequently mentioned environmental factors were objects tripped over and stairs (Tinetti et al., 1988). From this and other studies, it can be concluded that conditions in the home environment that require an elderly person to displace their center of gravity, to bend over or reach up, or step up and step down will increase the risk for falls and the likelihood for subsequent declines in everyday competence (see also Charness & Bosman, 1990; Sterns, Barrett, & Alexander, 1985). In addition, inadequately lit spaces such as staircases and hallways in combination pose a risk to older adults with regard to falls or unintended injury (Gill et al., 1999).

In summary, certain aspects of the home environment can represent challenges or threats to older adults' everyday competence. Although many older adults proactively modify their home environment to adjust to diminishing functional abilities (Lawton, 1989b, 1990), current surveys suggest that a larger number of older adults could benefit from a systematic evaluation of the interior and exterior conditions of their environment with regard to the maintenance of their independent functioning (Charness & Bosman, 1990; Gill et al., 1999).

The Physical-Spatial Environment as a Source of Support

The physical environment, however, should not only be seen as a source of constraints and barriers to older adults' everyday competence. The physical environment can also facilitate older adults' day-to-day functioning and, especially in the home environment, can assume an important prosthetic function over an extended period of time (Gitlin, 1998; Regnier & Pynoos, 1992; Reschovsky & Newman, 1990; Wahl, 2001). In the following, we will elaborate on the supportive functions of older adults' physical-spatial environment. In particular, we will focus on older adults' proactive modifications of their environment (Lawton, 1989b, 1990) to optimize their P-E fit and to maximize their potential for living independently as long as possible.

Numerous authors have pointed out that the physical environment serves not only supportive functions in terms of its objective features, but also in terms of cognitive representations and feelings of belonging and attachment (Golant, 1984; Wahl, 2001). Rubinstein and Parmelee (1992), for

example, defined the construct of *place attachment* as "a set of feelings about a geographic location that emotionally binds a person to that place as a function of its role as a setting for experience" (p. 139). These authors consider place attachment as important as objective housing conditions in explaining older adults' P-E fit and view it as a central construct in explaining well-being in later life. Moreover, the concept of place attachment exemplifies that the physical and social environment are often inseparably connected because older adults' emotional bond to their place of living may not only be a function of the familiarity with the physical setting, but also a function of the social relations and the social support that exist in that setting.

From a macro-environmental perspective, place attachment relates to older adults' familiarity with and emotional bond to their community and neighborhood in which they may have lived for many years. As a consequence, they may have established a P-E fit that allows them to live independently even when physical and cognitive impairments begin to challenge their everyday competence (Oswald, Schilling, Wahl, & Gäng, 2002; Wahl, 2001). For example, having lived in a neighborhood for a long time may afford older adults with a number of formal community-based services (e.g., visits from a home health care nurse, meals at a senior center, transportation services) and informal services from family members, long-time neighbors, and other highly familiar individuals who watch out for them. Informal services from neighbors and long-time friends (e.g., weekly delivery from the neighborhood grocery store, transportation to doctor appointments, etc.) in the community may be particularly important for older adults with low income and for individuals who lack kin in close proximity. Thus, it is not surprising that older adults' sense of place attachment influences their decision to age in place and to not consider relocation until objective housing and neighborhood conditions change to their disadvantage (Krause, 1993; Speare, Avery, & Lawton, 1991; Thompson & Krause, 1998). In contrast, proactive home-to-home relocations, with the objective to maximize the supportive function of the home and the community environment, are more frequently considered by older adults with a higher socioeconomic status and higher educational level, and tend to occur early in the post-retirement years (Oswald et al., 2002; Wahl, 2001).

From a micro-environmental perspective, place attachment and the feeling of belonging refer to elderly adults' sense that their home is a "save haven" and a protective environment. Moreover, there is growing evidence that the protective role of the home environment becomes more important as physical and cognitive impairments become more severe (Gitlin, 1998; Lawton, 1990; Oswald et al., 2002; Wahl et al., 1999). Because the home environment takes on such a crucial role for the everyday competence of older adults, it is important to understand to what extent older adults engage in proactive modifications of their environment in order to main-

tain their independent life style (Gitlin, 1998; Lawton, 1989b, 1990). Although Gitlin (1998) points out that home safety inspections and environmental modifications have long been an integral part of occupational therapy practice, home care, geriatric rehabilitation, and, more recently, fall-prevention programs, similar systematic approaches have been lacking in the domain of everyday competence assessment.

With regard to everyday competence, home modifications are most often made with a focus on maintaining a person's ability to perform basic *self-care activities* (e.g., bathing, toileting, eating) and to move safely around the home (Gitlin, 1998). For example, data from several national surveys (see Table 7.1 in Gitlin, 1998) have shown that a large number of older adults use mobility aids and other assistive devices in order to be able to live in their own home. Gitlin (1998) also points out that environmental strategies are usually "adapted in a progressive, stepwise fashion, with behavioral change used as the primary coping mechanism, followed by the use of an adaptive device and possibly minor physical environmental adjustments" (p. 196). The progression of environmental modifications tends to be dictated by the experienced impairments or anticipated disabilities and ranges from the use of slip-resistant footwear to the installation of grab bars in tubs and showers, the reconstruction of kitchen countertops, and the installation of special stovetops and other aging-friendly appliances. Gitlin (1998) points out that modifications that involve alterations to the physical structure of the home (e.g., widening doors to accommodate a wheel chair, removal of walls, etc.) and/or the installation of special equipment (e.g., stair lift, alarm system) are less likely and tend to be the last or to be considered by older adults. In addition, frail older adults usually report the need for more home modifications to support their everyday activities (Gitlin, Schemm, Landsberg, & Burgh, 1996; Mann, Karuza, Hurren, & Tomita, 1993; Reschovsky & Newman, 1990). Thus, it does not come as a surprise that the best predictor of whether an individual will pursue an environmental modification is disability level, as manifested by the number of limitations in ADLs and IADLs (Gitlin, 1998).

Evidence that older adults actively restructure their living space to optimize its supportive features has been provided by intensive observational studies. For example, Rowles (1981) showed that older adults often intentionally restrict their physical-spatial environment to a residential *surveillance zone,* which includes the residence and the immediate spaces surrounding the residential unit. This surveillance zone serves as the primary source for social interactions but also provides the space in which the older adult can function safely. Within the home environment, older adults, especially when mobility or vision impaired, often tend to arrange special *functional spaces* as sort of command centers that allow them to perform certain tasks of daily living while providing them with a maximum amount of security and comfort (Oswald et al., 2002). Such functional

spaces seem to be of particular importance with regard to the performance of IADLs such as taking medications or using the telephone. For example, older adults may keep their medications in a prominent spot in the kitchen or the dining area as a reminder that they will take them with meals. In addition, elders may optimize the supportive nature of their environment through the use of external memory aids such as timers or other environmental cues (e.g., reminder notes posted in prominent places) to remind them to perform certain activities of daily living. Because researchers have recognized the importance of aging in place, there have been increased efforts to provide assistive devices to older adults helping them to maintain their functional independence (Fernie, 1997; Mann, Hurren, Tomita, & Charvat, 1995).

In summary, there is a good amount of evidence showing that older adults actively structure their home environment with the objective to maximize their everyday functioning. These efforts range from small modifications to the setting up of specific functional spaces and to the use of specific assistive devices. Although the use of assistive devices is a particularly promising approach to extending older adults' functional independence, currently little is known about the psychosocial factors that influence the acceptance and long-term use of such devices. Some studies, however, have shown that older adults with moderate to severe disabilities who used assistive devices in their homes reported greater self-efficacy in comparison to older adults who relied on personal assistance (Verbrugge, Rennert, & Madans, 1997). This suggests that the use of assistive devices may have positive psychological side effects.

EFFECTS OF THE SOCIAL-INTERPERSONAL ENVIRONMENT ON OLDER ADULTS' EVERYDAY COMPETENCE

We already pointed out that the physical-spatial and the social-interpersonal environment are often interrelated. For example, older adults' place attachment is not only a function of the familiarity with their physical-spatial surrounding, but also a function of the social relations that exist in that surrounding. Thus, it is also important to understand the contributions of the social-interpersonal environment to older adults' everyday competence and well-being (Antonucci & Akiyama, 1997). These contributions can be conceived in terms of stress and burden or in terms of resources and support.

The Social-Interpersonal Environment as a Source of Stress

Close interpersonal relationships involve a combination of positive and negative features (Rook, 1984; Rowe & Kahn, 1998). Although most of the research on social relations in old age has focused on their beneficial fea-

tures, researchers have increasingly recognized that the social-interpersonal environment can also be a source of stress and negative experiences (Lakey, Tardiff, & Drew, 1994; Manne & Zautra, 1989; Okun, Melichar, & Hill, 1990; Rook, 1984; Stephens, Kinney, Norris, & Ritchie, 1987). Negative social exchanges, for example, can take the form of criticizing, demanding, misunderstanding, or overprotecting and can undermine a person's sense of mastery and autonomy. Moreover, negative social relationships may add additional burden to older adults' lives by letting them know that their social support resources may not be available when bad things will happen (Ingersoll-Dayton, Morgan, & Antonucci, 1997; Okun et al., 1990). For example, Ingersoll-Dayton et al. (1997) found, in a national probability sample of adults aged 50 to 95, that negative social exchanges were associated with negative affect and that this relationship was significantly stronger in the subgroup that had experienced more negative life events. Okun et al. (1990) reported similar findings for a sample of community-residing older adults. Stephens et al. (1987) showed for a sample of elderly adults recovering from stroke that their social networks not only provided resources, but also created liabilities. These researchers showed that negative and positive social exchanges differentially accounted for variance in morale, psychiatric symptoms, and cognitive functioning in older adults recovering from stroke. In particular, negative social interactions were associated with poorer morale and more psychiatric symptoms. Interestingly, older adults who reported and those who did not report negative interactions did not differ significantly from each other on a variety of social and demographic variables previously shown to predict social interactions and well-being.

Several authors have suggested that unwanted social support may increase distress by inducing feelings of dependence and that negative social exchanges may erode older adults' sense of autonomy and mastery (Kuypers & Bengtson, 1973; Lawton, 1982; Silverstein, 1997). Smith and Goodnow (1999) conducted a study that addressed this general hypothesis with regard to *unasked-for support* and *unsolicited advice*. Findings from this study showed that at all ages, unasked-for support was experienced as more unpleasant than pleasant. Among the reasons why they perceived unsolicited support as unpleasant, study participants indicated most frequently that it implied incompetence. Moreover, the implication of incompetence ("it indicated that the other person saw me as incompetent or incapable") was most pronounced in life situations related to financial matters, cognitive performance, and general competence (Smith & Goodnow, 1999), areas in which older adults may be particularly vulnerable to declines in performance.

In summary, it is important to be mindful about the potential negative effects that unwanted support and unsolicited advice may have on older adults' everyday competence (Rowe & Kahn, 1998; Smith & Goodnow,

1999). Individuals who assist older adults with tasks of daily living should provide their assistance in a well-dosed manner and in a way that does not undermine older adults' sense of self-efficacy and autonomy. On the other hand, research by M. Baltes (1996) has shown that older adults' dependent behavior represents an effective way by which they seek social stimulation and attention from individuals in their environment.

The Social-Interpersonal Environment as a Source of Support

In contrast to the physical-spatial environment, the social-interpersonal environment is often automatically viewed as a source of support and assistance for older adults (Antonucci, 2001; Lang, 2001). Indeed, there is a large amount of sociological and epidemiological literature showing that the availability of social relations reliably predicts morbidity and mortality across the adult lifespan (Antonucci & Akiyama, 1997; Berkman & Syme, 1979; Blazer, 1982; House, Robbins, & Metzner, 1982). Although the positive effects of social relations on adults' physical and mental well-being is well established (Antonucci, 2001; Baumeister & Leary, 1995; Lang, 2001), similar data regarding the effects of social relations on elderly adults' everyday competence as a behavioral outcome are less sound.

Two theoretical models suggest that the provision of social support may be relevant for older adults' everyday competence. These two models are the *convoy model of social relations* by Kahn and Antonucci (1980) and the *socioemotional selectivity theory* by Carstensen (1993). The convoy model proposes that from childhood to old age individuals are surrounded by a number of persons with whom they interact and socialize on a regular basis (Kahn & Antonucci, 1980). This "social convoy" accompanies the person over time and across different life contexts and serves a number of functions. Among these functions is the provision of instrumental and emotional support in times of need (Antonucci, 2001; Antonucci & Akiyama, 1997). It is well known that social convoys are organized in a hierarchical fashion with family members and close friends being the ones that are most often drawn upon for support and assistance (Antonucci & Akiyama, 1997). Neighbors, acquaintances, and other individuals with whom the person interacts on a regular basis (e.g., church members) follow family members and close friends in importance.

A good deal of evidence suggests that individuals' social relationships are highly specialized (Antonucci, 1985; Carstensen, 1993). That is, older adults are not indiscriminant with regard to whom, when, and for what kind of support they ask. In addition, there is evidence suggesting that older adults monitor the provision and receipt of support from others to assure that their "support account" remains balanced (Antonucci, 1985; Silverstein, 1997). We suggest that the functions of the social-interpersonal environment with regard to older adults' everyday competence have to be studied within this context of hierarchical organization and specialization (Heller & Thompson, 1991; Messeri, Silverstein, & Litwak, 1993).

With regard to the tasks of daily living that are essential for independent living (i.e., instrumental support), the majority of support is provided by family members, such as spouses, adult children, or siblings (Antonucci, 1985; Gatz, Bengtson, & Blum, 1990; Hobfoll & Freedy, 1990). Thus, following a hierarchy of filial responsibility, spouses and adult children are most likely to help with the performance of ADLs and IADLs, such as self-care activities, preparing meals, managing finances, or providing transportation (Gatz et al., 1990; Horowitz, 1985). However, if family members do not live close by, these types of assistance may be provided by neighbors or acquaintances. The latter may be particularly the case if an older adult has lived for a long time in the same neighborhood and is well-known by his or her neighbors so that a non-family-based support network has emerged and is available to the elderly person as a social compensation mechanism. Antonucci and Akiyama (1997) emphasized that although supportive relationships tend to have a generalized positive effect on well-being (see also Pinquart & Sörensen, 2000), in the case of deficits in specific domains of competenc,e it is more reasonable to assume that supportive behaviors that directly address these specific deficits will be most beneficial (see also Carstensen & Lang, 1997; Silverstein, 1997).

The second theory that has focused on the role of social relations in old age and their effect on older adults' well-being is the *socioemotional selectivity theory* (SST) (Carstensen, 1993). Although SST emphasizes the instrumental purposes of social relationships during the early lifespan (i.e., the acquisition of knowledge), with regard to old age SST focuses primarily on the emotional functions of social relations (Carstensen & Lang, 1997). Specifically, Carstensen and her colleagues (Carstensen, Isaacowitz, & Charles, 1999; Lang & Carstensen, 1994) have shown in a series of studies that in late life social relationships are selected based on their degree of emotional closeness and in terms of the emotional gratification that they provide. Thus, from this perspective the influence of the social-interpersonal environment on older adults' everyday competence is conceptualized as being indirect via its effects on their psychological competence (Carstensen & Lang, 1997).

Consistent with Antonucci and Jackson's (1987) support-efficacy model, Carstensen and Lang (1997) have proposed that social relations can exert effects on older adults' everyday competence by enhancing their self-efficacy beliefs in three possible ways. First, the availability of social support provides older adults with the opportunity to decide when and from whom to accept assistance. This, in turn, may strengthen their sense of control and may allow them "to receive support without experiencing it as threatening to their self-competence" (Carstensen & Lang, 1997, p. 217). Second, if an elderly person has lost the capability to competently perform in a particular domain, a social proxy may be able to perform on his or her behalf, thus providing the older adult with a form of secondary control

(Heckhausen & Schulz, 1995). Third, older adults' experience with managing the positive and the negative aspects of their social ties over long periods of time provides them with a "database" on which they can draw to regulate the giving and receiving of social support. It is reasonable to assume that older adults draw on this database in order to avoid unwanted feelings of dependency or unwanted intrusions on their autonomy (Bandura, 1997).

In conclusion, the social-interpersonal environment can enhance older adults' everyday competence in multiple ways (Rowe & Kahn, 1998). First, family, close friends, and neighbors provide a great deal of support for daily functioning in the form of instrumental assistance (Antonucci, 1985, 2001). This instrumental assistance helps to compensate for declines in elderly adults' functioning and provides the social prosthetic that is necessary for independent living. Second, older adults tend to draw on their social relationships in ways that emphasize selection and reciprocity, thereby avoiding one-sidedness and dependency in their social relations (Lang, 2001). Third, social relationships also affect older adults' everyday competence indirectly by providing them with a sense of control and mastery over their interpersonal matters and thus giving them an opportunity to compensate for possible declines in other areas of functioning (Lang, 2001).

PREDICTORS OF EVERYDAY COMPETENCE AND EVERYDAY PROBLEM SOLVING IN LATE ADULTHOOD

A transactional conceptualization of everyday competence rests on the premise that a person's exchanges with the physical and social environment contribute to the development and maintenance of competence in different life domains. Although a person's level of performance may not be equally high in every life domain, it is important to understand the interactions that result in high levels of performance and to isolate the predictors that contribute to the maintenance of competent behavior into old age. Adopting Willis's (1991) model of everyday competence, we review findings on long-term antecedents of older adults' everyday competence. Whenever possible, our review will emphasize how these antecedents interact with environmental conditions.

Physical Health

Significant yet moderate associations between clinician ratings or self-ratings of physical health and self-reported everyday competence have been found in numerous studies (see Idler & Kasl, 1995). Fillenbaum (1985, 1988) reported the relationships between ratings of physical health and ratings of everyday competence to be on the order of .54. In a summary of sev-

eral studies, Lawton (1986) reported associations between self-reports of everyday competence and physical health in the range of .30 to .40. More recent studies have focused on specific medical conditions and their impact on older adults' everyday competence. Using data from a multistage probability sample of all non-institutionalized U.S. civilians age 70 or older, Boult, Kane, Louis, Boult, and McCaffrey (1994) reported that the best predictors of the development of functional limitations in ADLs and IADLs were cerebrovascular disease, arthritis, and coronary artery disease (see also Furner, Rudberg, & Cassel, 1995).

Several studies have focused on sensory impairments and their effect on elderly adults' everyday competence. Branch, Horowitz, and Carr (1989) compared changes in self-reports of everyday competence over a five-year period for a group of elderly adults with good vision and a group of elderly adults who reported a decline in vision. Older adults with vision problems were twice as likely to report needing assistance with shopping and paying bills. They also were less likely than the nonimpaired elders to leave their residence and travel by car. Rudberg, Furner, Dunn, and Cassel (1993) used data from the Longitudinal Study of Aging to examine the relationship of visual and hearing impairments with ADL disability in adults aged 70 and older. They found that persons with visual impairment were at an increased risk to develop functional disability in ADLs compared to individuals without visual impairment. In contrast, hearing impairment was not independently related to increased ADL disability. Wahl et al. (1999) found in a German sample that the majority of the visually impaired older adults showed low P-E fit with regard to their home environment. Moreover, under conditions of low P-E fit, older adults were more likely to show lower IADL performance. Thus, this research illustrates how person and environment interact to produce a certain level of everyday competence. That is, in individuals with visual impairment, a poorly structured physical environment will exacerbate the effects of vision loss, whereas a well-designed environment is more likely to assume a compensatory role, resulting in a higher level of everyday competence (Wahl et al., 1999).

Willis and Marsiske (1991) found a significant but modest negative relationship between the number of cardiac drugs along with the total number of drugs taken and performance on a paper-and-pencil test of everyday competence (i.e., the Basic Skills Assessment Test). Diehl, Willis, and Schaie (1995) showed significant relationships between general health, cardiovascular health, and hearing impairment and older adults' performance on a set of *Observed Tasks of Daily Living* (OTDL). Interestingly, health factors affected older adults' performance on the OTDL indirectly via basic cognitive abilities such as speed of processing and memory.

In summary, older adults' everyday competence and everyday problem solving are positively related to their general physical health and sensory functioning. Moreover, several studies have shown that different medical

conditions (e.g., stroke, arthritis, heart disease) affect the development of IADL impairment differentially (Furner et al., 1995; Rudberg et al., 1993). To the extent that older adults' declining health is related to lifestyle factors, such as poor nutrition or lack of physical exercise, targeting these lifestyle factors for interventions may be a viable route to prevent functional decline and increase the likelihood for maintaining a high level of everyday competence (Chernoff, 2001; DiPietro, 2001; King, 2001; McAuley & Katula, 1998).

Cognitive Abilities and Factors Related to their Maintenance

Despite the ongoing debate about the relationship between basic cognitive abilities and everyday competence (Sternberg & Wagner, 1986), there is increasing evidence showing that cognitive abilities are important predictors of practical intelligence and everyday competence (Allaire & Marsiske, 1999; Diehl et al., 1995; Willis & Marsiske, 1991; Willis & Schaie, 1986, 1993). Willis and Marsiske (1991), for example, showed that over 50 percent of the variance in older adults' performance on a test of everyday problem solving was accounted for by basic cognitive abilities. Both fluid and crystallized abilities accounted for everyday task performance, although a somewhat greater portion of the variance was accounted for by fluid abilities. Diehl et al. (1995) showed that fluid intelligence was the strongest correlate of older adults' performance on a set of behavioral tasks of daily living. Smaller yet significant associations between everyday problem solving and basic mental abilities have been reported by Camp, Doherty, Moody-Thomas, and Denney (1989) and by Cornelius and Caspi (1987). Cockburn and Smith (1991) showed that older adults' performance on a test of everyday memory was significantly related to fluid intelligence as well as to age and participation in social and domestic activities.

Willis and Schaie (1986, 1993) proposed a hierarchical relationship between basic cognitive abilities and everyday cognition, suggesting that basic cognitive abilities and processes are necessary but not sufficient antecedents for competence in everyday problem solving. Support for this proposition comes from a study by Willis, Jay, Diehl, and Marsiske (1992) and from longitudinal data from the Seattle Longitudinal Study (Schaie, 1996). Specifically, Willis et al. (1992) examined the directionality of the relationship between basic cognitive abilities and everyday cognitive competence over a seven-year period. Structural equation models showed that fluid ability at the first time of assessment predicted everyday task performance seven years later; however, everyday cognitive competence predicted basic abilities at the second occasion of assessment less well. Similarly, Schaie (1996) documented for the relatively healthy community-residing participants of the Seattle Longitudinal Study that mean-level changes in everyday cognitive competence were small in the '60s, but that the rate of decline increased in the '70s and in the '80s, mimicking the rate of decline that has been observed for traditional measures of psychomet-

ric intelligence. Schaie (1996) also found that older adults with a lower level of education functioned at a lower level of everyday cognitive competence at all ages. However, the rate of decline became particularly steep for less educated older adults in the '80s (see Figure 1 in Willis, 1996a).

From an environmental perspective, these findings are relevant because individuals performing at different levels of cognitive functioning are likely to interact differently with their physical and social environment, resulting in different patterns of P-E fit. For example, an older adult who is still able to process information fast and accurately is more likely to show competent driving behavior under a variety of traffic conditions, whereas the driving competency of a person with lower cognitive functioning is more likely to be limited (see Willis, 2000). Similar principles may also apply to exchanges with the social-interpersonal environment.

To the extent that cognitive abilities are the foundation for older adults' everyday cognitive competence, it is reasonable to assume that the same long-term antecedents that contribute to the maintenance of basic intellectual abilities also contribute to the maintenance of everyday competence. Besides physical health, Schaie (1994, 1996) identified a number of individual difference variables that predicted the maintenance of high levels of intellectual functioning into old age. A first group of variables was described as "living in favorable environmental circumstances" (Schaie, 1994, p. 310), as would be the case for persons with high socio-economic status. Such circumstances included "above-average education, histories of occupational pursuits that involve high complexity and low routine, above-average income, and the maintenance of intact families" (Schaie, 1994, p. 310). A second group of variables included involvement in activities high in complexity and intellectual stimulation, such as extensive reading, participation in continuing education activities, or participation in clubs and professional organizations (Gribbin, Schaie, & Parham, 1980; Schaie, 1994). A third set of variables involved a flexible personality style at midlife, as assessed by self-report questionnaires and objective measures of motor-cognitive rigidity/flexibility. Being married to a spouse with high cognitive status and being satisfied with one's life's accomplishments in midlife or early old age represented an additional set of predictors, underscoring the importance of a stimulating social-interpersonal environment (Schaie, 1994). Finally, individuals who maintained high levels of perceptual processing speed also tended to maintain high levels of functioning in other cognitive domains.

In summary, a solid database exists suggesting that *multiple cognitive components* (Allaire & Marsiske, 1999; Diehl et al., 1995; Willis, 1996b) and factors of *environmental complexity* are involved in maintaining high levels of everyday competence into late adulthood (Lawton, 1983; Schaie, 1994, 1996; Schooler, 1987). Indeed, there is some evidence that the dimensions of cognitive functioning and environmental complexity distinguish

resource-rich from resource-poor older adults (M. Baltes & Lang, 1997). Moreover, the physical and social factors of environmental complexity suggest promising avenues for interventions in older adults' everyday environment.

Personality Characteristics

Findings with regard to the influence of personality characteristics on older adults' everyday competence and everyday problem solving are limited. However, because there is evidence that environmental complexity, both in terms of the physical and social environment, is positively related to the maintenance of everyday cognitive competence (Schaie, 1994; Schooler, 1987), it can be reasoned that personality characteristics that expose individuals to more complex environments should be positively associated with the maintenance of competent behavior. Among the candidates for such personality characteristics are openness to experience (Costa & McCrae, 1992), behavioral and cognitive flexibility (Schaie, 1994), tolerance for ambiguity, and individuals' beliefs of control (Lachman, Ziff, & Spiro, 1994) and self-efficacy (Bandura, 1997).

In general, adults who have a strong belief in their own capabilities display a number of behaviors that should be conducive to the maintenance of high levels of everyday competence (Bandura, 1997). For example, older adults who believe that aging is associated with positive changes have been shown to benefit more from memory training than older adults who engage in negative self-stereotyping (Levy, 1996). Similarly, adults who have a strong belief in their memory capabilities remember things more accurately and effectively than adults with weak self-efficacy beliefs (Berry, West, & Dennehey, 1989; Lachman, Steinberg, & Trotter, 1987).

Several cross-sectional studies have shown significant relationships between self-efficacy and everyday functioning in community-residing older adults (Berkman et al., 1993; Tinetti, Mendes de Leon, Doucete, & Baker, 1994). Using a prospective design, Mendes de Leon, Seeman, Baker, Richardson, and Tinetti (1996) showed, for a large sample of community-residing older adults, that high ADL-related self-efficacy was associated with less functional decline among older individuals who had declined in physical capacity over an 18-month period. In contrast, among older adults who had not declined in physical capacity, self-efficacy was unrelated to changes in functioning. Taken together these findings suggest that instilling beliefs of self-efficacy and control in older adults represents a powerful tool for fostering the maintenance of everyday competence into old age (Langer & Rodin, 1976; Lachman, Weaver, M. Bandura, Elliott, & Lewkowicz, 1992; Tennstedt, Howland, Lachman, Peterson, Kasten, & Jette, 1998).

To the best of our knowledge, there are no studies that have examined the relations between openness to experience, one of the Big Five personality factors (Costa & McCrae, 1992), and maintenance of everyday competence across the adult lifespan. However, some findings exist with

regard to other personality characteristics with conceptual similarity to openness of experience. For example, earlier we already discussed that Schaie (1994) reported a positive relationship between a flexible personality style at midlife and maintenance of intellectual functioning into old age. Similarly, research that has focused on the constructs of tolerance for ambiguity and cognitive style has shown that greater tolerance for ambiguity is associated with more detailed processing of consumer information (Cox, 1967; Schaninger & Schiglimpaglia, 1981) and more effective medical decision-making (E. A. Leventhal, H. Leventhal, Schaefer, & Easterling, 1993).

In summary, although the role of personality characteristics with regard to the maintenance of everyday competence is not well researched at this point in time, there is sufficient evidence suggesting that individual difference variables, such as tolerance for ambiguity, cognitive and behavioral flexibility, and beliefs of control are very likely important moderators of the effects of aging on older adults' everyday competence (Lachman et al., 1994; Schaie, 1994; Willis, 1996b).

EMERGING TRENDS AND FUTURE DIRECTIONS

Throughout this chapter we have emphasized that everyday competence is a function of personal and environmental factors. Because environmental conditions are subject to sociocultural and technological changes, we want to focus on some of the emerging trends and future challenges that we see evolving with regard to the definition and assessment of older adults' everyday competence. Specifically, we will focus on the impact of new technologies and the changing social-interpersonal context on older adults' everyday competence. Furthermore, we will discuss some recent developments in the assessment of everyday competence. Finally, we will use the sample case of driving competence to exemplify the importance of P-E fit when talking about everyday competence.

New Technologies and Everyday Competence

Older adults use their skills, abilities, and knowledge to respond to their social and physical environment; in turn, their competence is affected by their social and physical environment. Such a reciprocal relationship implies that the nature and definition of competent behavior may change with changes in the larger environment. Some of the macro-level changes that increasingly affect older adults' everyday competence are related to the advent of new technologies. Among these technologies, the use of personal computers, microelectronic devices, and communication technologies deserve particular attention from aging researchers (Czaja, 1997).

Computer technology can be used in a number of ways to support older adults' quality of life. For example, it is possible to use home computers to

carry out routine errands such as shopping, bill paying, financial management, and obtaining health and medical information (Czaja, 1997). Similarly, the use of personal computers and other communication technologies (e.g., wireless phones and phone-based networks) can facilitate social interaction and enhance the intellectual and leisure activities of older adults (Czaja, Guerrier, Nair, & Landauer, 1993; Eilers, 1989; Garbe, Stockler, & Wald, 1993). Even if future generations of aging adults will be well versed in the use of computers and communication devices, current generations of older adults often show some anxiety and reservations toward these new technologies (Czaja, 1997), although most studies show that older adults' attitude toward the use of personal computers becomes more positive with experience (Jay & Willis, 1992). These positive findings have encouraged researchers to design and test user-computer interfaces, taking into account the specific circumstances of aging adults, such as age-related changes in vision, hearing, and fine motor skills (Charness & Bosman, 1992; Morrell & Echt, 1997). In general, redesigned user-computer interfaces facilitate adults' acquisition of computer-related knowledge and increase the use of computers in everyday life (Charness, Shulmann, & Boritz, 1992; Garfein, Schaie, & Willis, 1988; Hahm & Bikson, 1989).

Computer and microelectronic technology will also continue to affect older adults everyday competence through their incorporation into *assistive devices* (Fernie, 1997), such as mobility devices or medication organizers (Park & Jones, 1997). For example, research with microelectronic medication-event-monitoring systems suggests that such systems can be adopted to improve the accuracy of older adults' medication-taking behavior and, in turn, reduce unintended side effects due to nonadherence (Park & Jones, 1997). Similarly, microelectronic technology may be used to assist vision-impaired elderly to navigate their home environment more safely by designing mobility-enhancing assistive devices (Czaja, 1997; Fernie, 1997).

In summary, the recent advent of computer and communication technologies underscores that societal and technological changes affect not only the definition, but the very nature of competent behavior in everyday life. Although new technologies may challenge the everyday competence of many older adults, overall they hold great promise for facilitating independent living and enhancing older adults' quality of life.

Collaborative Cognition and Older Adults' Everyday Competence

Another emerging trend focuses on the social-interpersonal context of older adults' everyday competence. Early assessments already acknowledged the social nature and context of the definition and solution of everyday problems (Cornelius & Caspi, 1987; Demming & Pressey, 1957; Denney & Pearce, 1989). However, the focus on the social-interpersonal nature of many everyday problems and individuals' attempts to solve these problems has become more prominent with theoretical developments on the social foundations of cognition (P. Baltes & Staudinger, 1996; Meacham &

Emont, 1989; Rogoff & Lave, 1984) and the social-contextual embedding of human intelligence (Berg & Sternberg, 1985; Sternberg & Wagner, 1994). Thus, recent studies have drawn on the theoretical notions of *collaborative cognition* and *interactive minds* (Goodnow, 1996; Gould & Dixon, 1993) and have examined how adults define their everyday problems (Berg, Calderone, Sansone, Strough, & Weir, 1998) and how they solve them collaboratively (Berg, Johnson, Meegan, & Strough, 2003; Margrett & Marsiske, 2002; Meegan & Berg, 1997; Strough, Berg, & Sansone, 1996; Strough, Cheng, & Swenson, 2002).

In general, findings from this research have shown that a large proportion of adults' self-reported everyday problems was defined as social-interpersonal in nature and required the cooperation of social partners in finding an optimal solution (Berg et al., 1998; Strough et al., 1996). For example, Margrett and Marsiske (2002) showed that older adults solved their everyday problems more effectively when they collaborated on a problem solution than when they worked individually, supporting the notion that "two heads are better than one" (see also Meegan & Berg, 1997; Strough et al., 2002). However, there were interesting qualifications to this notion. First, collaboration tended to be most effective when individuals first had a chance to work alone. This suggests that prior practice had activated individual competence to higher levels, so that individuals could then more fully profit from the collaborative experience. Second, familiarity of collaborator mattered, such that working with a spouse yielded better performance than working with a stranger (see also Gould & Dixon, 1993). Indeed, working in the presence of a spouse even boosted individual, noncollaborative performance—suggesting that familiar partners might also shape the motivational context and aid in anxiety reduction. Third, when dyad members were classified into "better" and "worse" partners, it was the worse partners who seemed to gain disproportionately from the collaboration, suggesting that a compensatory process might have best characterized the collaborative interactions (Margrett & Marsiske, 2002).

The emerging focus on collaborative problem solving holds a great deal of promise not only because it complements laboratory-based research, but it also complements findings from a longitudinal study showing that being affiliated with a social partner (e.g., spouse) with a high cognitive status tends to be associated with maintenance or an increase in intellectual functioning across the adult lifespan (Schaie, 1994). Thus, these findings point at social partners as important players with regard to adults' competence and everyday functioning. They also point to future research that may draw on these social partners as "tools" of planned interventions and agents of change.

Although research on collaborative problem solving underscores the compensatory nature of social relationships (Dixon & Bäckman, 1995),

there are also a number of concerns and challenges that result from recent changes in family composition and family relationships (see Himes, 1992). These changes are likely to affect the availability of family members' support for future generations of older adults and potentially will have negative effects on older adults' everyday competence and quality of life. Specifically, changes in past and future levels of fertility, marriage, and divorce patterns will affect the likelihood that older adults of the future have family members who will be available as "social prostheses." For example, patterns of marital stability and divorce will affect the availability of spousal support, the most important form of support for older adults (Antonucci, 2001). Similarly, increased divorce rates are likely to lead to a situation in which the loyalties of children to their divorced parents are unclear and where elderly parents may not have the benefit to rely on their offspring for support (see Himes, 1992). This may be specifically the case for adult children who had little contact with a particular parent because of divorce and therefore may feel little responsibility with regard to providing support to that parent. Thus, sociocultural changes of family composition and the family life course may create new challenges with regard to the social resources that traditionally have been available to older adults in their old age.

New Measurement Approaches: Performance-Based Assessment of Everyday Competence

The last decade or so has seen a number of new approaches with regard to the assessment of everyday competence (see Diehl, 1998). Among these approaches have been single (e.g., Hershey, Walsh, Read, & Chulef, 1990; Park & Jones, 1997) and multi-domain assessments, such as the *Everyday Problem Solving Inventory* (EPSI) (Cornelius & Caspi, 1987), the *Everyday Problems Test* (EPT) (Willis & Marsiske, 1993), or the *Everyday Cognition Battery* (ECB) (Allaire & Marsiske, 1999). The latter instruments are paper-and-pencil measures of everyday problem solving and have shown consistent relations with basic cognitive abilities and with measures of functional status.

Several researchers have suggested that the use of behavioral, performance-based assessments could provide more accurate and objective information with regard to older persons' everyday competence (Diehl et al., 1995; Guralnik, Seeman, Tinetti, Nevitt, & Berkman, 1994; Kuriansky & Gurland, 1976). Although, in principle, this argument may be correct, a major challenge for test developers has been to design assessment procedures that assess a wide range of functioning (see Guralnik et al., 1994). Researchers have responded to this challenge in two ways. On one hand, measures have been developed for older adults who show signs of mild to moderate cognitive impairment and may be at risk for institutionalization (Loewenstein et al., 1989; Mahurin, DeBettignies, & Pirozzolo, 1991; Morris, Sherwood, & Mor, 1984). On the other hand, measures have been

developed for healthy community-residing older adults to assess their competencies in a variety of domains (Diehl et al., 1995; Guralnik et al., 1994; Odenheimer et al., 1994; Owsley, Sloane, McGwin, & Ball, 2002).

The performance-based measures that are currently available are the *Performance Test of Activities of Daily Living* (PADL) (Kuriansky & Gurland, 1976), the *Direct Assessment of Functional Skills* (DAFS) (Loewenstein et al., 1989), and the *Structured Assessment of Independent Living Skills* (SAILS) by Mahurin et al. (1991). All of these assessments measure adults' performance on a mixture of ADLs and IADLs using multiple items per functional domain. The psychometric properties of these measures have been established and their predictive validity has been examined in samples of elderly adults showing early symptoms of dementia (Loewenstein et al., 1989; Kuriansky & Gurland, 1976; Mahurin et al., 1991).

Cognitively more demanding tasks of daily living are included in the OTDL (Diehl et al., 1995) and the *Timed Instrumental Activities of Daily Living* (TIADL) (Owsley et al., 2002). Specifically, the OTDL require older adults to perform tasks related to food preparation, telephone use, and medication-taking behavior. The OTDL have shown significant correlations with basic cognitive abilities such as fluid and crystallized intelligence, perceptual speed, and memory (Diehl et al., 1995), and a revised and shortened version has been used in the ACTIVE multisite clinical trial (Jobe et al., 2001). The TIADL (Owsley et al., 2002) assess performance with regard to five IADLs (i.e., communication, finance, cooking, shopping, and taking medications). Adults are required to perform each task as fast and as accurately as they can. The TIADL is used as another everyday competence measure in the ACTIVE clinical trial and preliminary findings support its psychometric properties and its predictive validity (Owsley et al., 2002).

In summary, recent years have seen a number of efforts to assess adults' actual performance on everyday tasks more objectively. Results from this research have shown that the traditionally used self-report assessments have serious limitations and should, whenever possible, be complemented by other methods of assessment. Observational assessments and evaluations from proxies (e.g., spouse and caregiver) who are intimately familiar with the focus person's day-to-day behavior represent valuable complements to older adults' self-reports.

Emphasizing Person-Environment Fit: Driving Competence as a Sample Case

Throughout this chapter, we have emphasized that everyday competence does not reside solely in the person nor in the environment, but in the interaction between the person and environment. Perhaps the best support for this argument comes from research that focuses on older adults' driving competence. Willis (2000), for example, defined driving competence "as the congruence or fit between the driver and the environment" (p. 270) and discussed a number of environmental and personal factors that con-

tribute to driving competence. On the environmental side, researchers have investigated

1. the physical environment, including the weather;
2. the environment within the automobile (including the placement of equipment such as mirrors, turn signals, etc.);
3. structural (e.g., number of lanes and types of signals) and dynamic aspects (e.g., traffic flow and the size of oncoming vehicles) of the roadway;
4. the social aspects of the driving context (e.g., driving alone or with others, and the aggressive behavior of other drivers)

As Willis (2000) has pointed out "these environmental factors are important to the extent that they increase or decrease the mental load required of the driver" (p. 272). That is, these factors become important in interaction with the sensory (i.e., vision and hearing) and cognitive capabilities (e.g., simple and complex reaction time, speed of processing, working memory) of the older driver, resulting in the actual driving competence that is displayed in a particular traffic situation. We suggest that research on older adults' driving competence can serve an important function by providing a more dynamic perspective and research tools that recognize explicitly that everyday competence always exists in the interaction between person and environment.

CONCLUDING REMARKS

Maintaining a high level of functioning in everyday life is one of the most important goals for older adults and a sign of successful aging (M. Baltes & Lang, 1997). Willis (1996c) stated that "what the elderly fear most, often even more than dying, is the loss of independence—the inability to care for oneself, to manage one's affairs, and to live independently in the community" (p. 87). Thus, individuals' ability to interact independently, competently, and meaningfully with their physical and social environment, and to respond to the challenges of everyday life constructively, is a central topic of aging research.

The objective of this chapter was to provide a review of the role of the physical and social environment in the context of everyday competence and everyday problem solving in later life. We conceptualized everyday competence as a transactional construct and emphasized its multidimensional nature. An important implication of such a conceptualization is that assessment procedures do not only need to take into account older adults' actual performance on day-to-day tasks, but also their performance potential, including the reserve capacities that may be activated under favorable

environmental conditions. In addition, assessment of an older person's everyday competence needs to take into account the available physical and social resources and the person's motivational and emotional states. We believe that such a conceptualization is most appropriate for capturing the dynamic and reciprocal nature of the competence construct.

Studies that have adopted such a transactional and multidimensional view of everyday competence have shown that complex models and greater differentiation are needed to account for older adults' performance on different tasks of daily living (Allaire & Marsiske, 1999; Diehl et al., 1995; Marsiske, Klumb, & M. Baltes, 1997; Wahl et al., 1999). Most notably, research on the dual-component model of everyday competence by M. Baltes and her colleagues (1999) has shown that in community-residing elderly adults, different components of everyday competence are associated with different physical, social, and psychological correlates. Similarly, research by Wahl et al. (1999) on everyday competence in visually impaired older adults has shown that different combinations of environmental and personal factors are at play depending on whether everyday competence is conceptualized as outcome, process, or predictor variable.

The overwhelming majority of studies on everyday competence conducted to date have been correlational in nature. We believe that a next step in this area of aging research needs to also focus on experimental studies that examine P-E interactions under more controlled conditions. For example, the simulation of different driving conditions in the laboratory is one way in which environmental conditions (e.g., road conditions such as traffic flow, weather, etc.) and person factors (e.g., cognitive load) can be systematically manipulated and actual driving competence can be observed. Other examples are the testing-the-limits approach to examine the performance potential or range of plasticity of older adults' everyday competence under conditions of optimal environmental support (see P. Baltes & M. Baltes, 1990) or research on human factors and aging (Charness & Bosman, 1992). These efforts need to be complemented by research designs that explicitly test for P-E interactions and incorporate both physical and social aspects of older adults' environment.

Finally, we highlighted some of the emerging trends and future challenges in this research area. Recent developments in computer and communication technology challenge established definitions of everyday competence and suggest that different skill repertoires will be necessary in order to be considered competent in daily life in the future. Similarly, sociocultural changes in family composition and family relationships, due to large-scale changes in fertility, marriage, and divorce patterns, represent challenges to the established forms of social support (Antonucci, 2001; Himes, 1992). Aging researchers need to adapt their definitions, assessment instruments, and research methodologies to these changes in order to serve the aging population appropriately in the twenty-first century (Czaja, 1997).

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