Adapting to Aging Losses: Do Resources Facilitate Strategies of Selection, Compensation, and Optimization in Everyday Functioning?

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Previous cross-sectional research has shown that older people who are rich in sensorimotor-cognitive and social-personality resources are better functioning in everyday life and exhibit fewer negative age differences than resource-poor adults. Longitudinal data from the Berlin Aging Study was used to examine these findings across a 4-year time interval and to compare cross-sectional indicators of adaptive everyday functioning among survivors and nonsurvivors. Apart from their higher survival rate, resource-rich older people (a) invest more social time with their family members, (b) reduce the diversity of activities within the most salient leisure domain, (c) sleep more often and longer during daytime, and (d) increase the variability of time investments across activities after 4 years. Overall, findings suggest a greater use of selection, compensation, and optimization strategies in everyday functioning among resource-rich older adults as compared with resource-poor older adults.

This study extends our earlier research on everyday functioning proposing that older individuals who are rich in sensorimotor, cognitive, personality, and social resources exhibit fewer negative age trends than resource-poor older people (M. Baltes & Lang, 1997). Building on assumptions derived from the model of selective optimization with compensation (SOC; M. Baltes & Carstensen, 1996; P. Baltes & Baltes, 1990; Freund & Baltes, 2002), we explored whether the buffering function of resources against negative aging effects on everyday functioning is associated with a facilitated use of adaptive strategies in everyday life. Everyday functioning here relates to the older individuals’ adaptation to the demands and tasks of everyday life. In a longitudinal follow-up design, strategies of everyday functioning, indicating selection, compensation, and optimization, are compared between four resource-defined groups of older people who were identified at the first measurement (M. Baltes & Lang, 1997). In addition, we tested whether the resource-defined groups show differential survival rates after 4 years and whether cross-sectional indicators of SOC at the first measurement differentiate groups of survivors and nonsurvivors within the resource-defined groups.

SOC and Everyday Functioning

In order to understand how people master the challenges of aging, Paul and Margret Baltes (1990) proposed the SOC model that describes three strategies of adaptively responding to everyday demands and functional decline in later life: selection, optimization, and compensation (M. Baltes & Carstensen, 1996). One assumption is that use of SOC is associated with better functioning but also requires the use of resources. Thus, the more resources an aging individual has, the better she or he can engage in the use of SOC, particularly of compensation and optimization strategies. In this context, we define resources as an individual’s capacities and assets in the domains of sensorimotor, cognitive, personality, and social functioning (M. Baltes & Lang, 1997; Steverink, Westerhof, Bode, & Dittmann-Kohli, 2001). On the basis of cross-sectional data, M. Baltes and Lang (1997) reported differential age effects for parameters of everyday activities within a group of resource-rich individuals as compared with a group of resource-poor individuals, indicating selection, compensation, and optimization. However, it is not possible to detect adaptation to aging losses unless changes in patterns of everyday functioning are considered. For this reason, we identified change parameters in patterns of everyday activities that in our view indicate strategies of selection, optimization, and compensation on the behavioral level.

Selection in everyday life is defined as actively or passively reducing the number of activities, goals, or domains in order to focus on those areas that are most important or salient in one’s everyday life. When dealing with everyday tasks, older people may face challenges that require the reorganization of goal priorities or of activities (M. Baltes & Carstensen, 1996). At first sight, having more resources may be expected to be associated with less selection. However, in late life having more resources may also facilitate selection processes as the selection can be made from a broader range of domains that can be mastered. Even when having many resources, older people approach the ending of their lives. For this reason it was suggested that older people prefer to seek emotionally meaningful experience in their everyday lives (Carstensen, Isaacowitz, & Charles, 1999). Perceptions of limited future were found to be associated with prioritizing generative and emotionally meaningful goals (Lang & Carstensen, 2002). Moreover, subjective nearness to death in late life was found to predict improved quality of family ties over time (Lang, 2000, 2001). Having many resources available may facilitate such selection because individuals may be less dependent on instrumental help.
Selection also relates to the choice of discretionary leisure activities. Engagements in leisure activities such as gardening, visiting the theater, playing sports, reading, helping others, and visiting or talking to others are assumed to be highly goal relevant. We argue that in the context of aging, selection relates to reducing the diversity of activities, that is, a focus on most preferred and thus most meaningful activities (e.g., playing tennis or jogging) by excluding other activities within a domain of goal-relevant leisure activity (e.g., physical leisure). Note that we make no specific assumptions on the nature of “good” and “bad” leisure choices in old age except that under specific constraints in later life focusing on a few meaningful domains of functioning is the most adaptive choice (Mannell, 1993). When confronted with aging loss, people may respond by concentrating on few activities that appear most relevant for achieving their goals. On a behavioral level, this choice is reflected by a reduced diversity of leisure activities. Such a selective focus on few activities may help to preserve resources for obligatory routine activities and thus keep up health or independent living (M. Baltes & Carstensen, 1996).

Compensation in everyday life refers to the use of new and alternative means to reach a goal, or maintain a desired state, once losses have occurred. When experiencing functional loss, older people may intensify or expand routines and basic activities of daily living that are essential for maintaining health and independence in the community (M. Baltes, Maas, Wilms, Borchelt, & Little, 1999), for example, by investing more time or energy in these activities or by regenerating resources. Compensation is expected to occur exclusively in the context of loss or decline. We argue that when adapting to aging losses, compensation is more likely to occur when alternative means or resources relevant to the achievement of the same goal are available. Older people who are rich in resources should be more capable of compensating when confronted with losses than older people who are poor in resources.

When experiencing aging losses, individuals may seek to compensate for it through regeneration. Regenerative compensation in everyday life is associated with activities such as resting or sleeping that may enhance an individual’s resources (Hobfoll, 1989). For example, older individuals may sleep more often during the daytime in order to adjust to losses that have caused them to exhaust more quickly.

Optimization in everyday functioning is defined as the enhancement and refinement of the means to maximize one’s resources in a selected domain of functioning. Optimization refers to adaptive processes or strategies where no direct or indirect aging losses have occurred and where an actual amelioration or maximization of means can be found. In the absence of losses that hinder selected discretionary activities, one strategy of optimization refers to the regulation of time investments for activities across leisure domains such as physical leisure, cultural–intellectual leisure, or social engagement. When individuals invest time in such different activities as gardening, going to the theater, playing sports, reading, visiting or helping others, allocating their time resources wisely and variably may be fundamental for getting the most out of these activities. We argue that investing more time and effort in specific tasks or activities results in a pattern of greater variability in the duration of such tasks across domains of activities. Intraindividual processes of variability may also reflect choices and readjustments of resources in everyday life (e.g., Nesselroade & Featherman, 1991) and therefore reflect the general idea of SOC: simultaneously maximizing one’s investments in some domains (e.g., taking a lot of time to do what one feels is important) and minimizing one’s investments in other domains (e.g., reducing time needed for self-care or housekeeping; P. Baltes & Baltes, 1990). Note that in the SOC model such regulation of time investment may also indicate a compensatory strategy when it occurs as a response to loss.

Research Strategy and Hypotheses

Four resource-defined groups were identified at the first measurement on the basis of nine sensorimotor, cognitive, personality, and social resources (see M. Baltes & Lang, 1997). These groups were compared with respect to changes in parameters of everyday functioning indicating selection, compensation, and optimization, which were assessed twice within a 4-year time interval. It is examined whether there was more indication of selection, compensation, and optimization in everyday activities within a 4-year time period among resource-rich than among resource-poor individuals. Three hypotheses guided our research: (a) We expected that after 4 years, resource-poor older individuals would be less likely to have survived. (b) We expected that when comparing survivors and nonsurvivors within the resource-defined groups of the first measurement, cross-sectional indication of selection, compensation, and optimization will be observed more often among survivors than among nonsurvivors. (c) We explored whether there is more selection, compensation, and optimization in the group of resource-rich individuals than in the group of resource-poor individuals after 4 years.

Methods

Participants

Between 1990 and 1996, 206 community-dwelling and institutionalized participants in the Berlin Aging Study (BASE; 105 women, 101 men) aged between 70 and 103 took part in two occasions of measurement separated by an average time interval of 4 years (see P. Baltes & Mayer, 1999; Smith et al., 2002). Of the 516 participants at the first measurement, 203 (40.1%) did not take part at the second occasion (T3) because they had not survived (i.e., nonsurvivors), and 107 participants (20.7%) did not take part for other reasons. At the first measurement, 31 data sets were excluded because of too many missing values (in the Yesterday Interview [YI]). Of these 31 participants, 27 (87.1%) were diagnosed as demented. At the second measurement (T3), 11 data sets were incomplete; 5 of these 11 people (45.5%) were diagnosed as demented. For this reason, all subsequent analyses refer to a sample of 195 out of 206 participants in the longitudinal sample, and 485 out of 516 participants at the first measurement.

Measures

Resource indicators.—On the basis of assessments of sensorimotor, cognitive, personality, and social resources at the first measurement occasion, two factors were identified
with an exploratory factor analysis, that is, a sensorimotor-cognitive resource factor and a social-personality resource factor. The extraction procedure of these resource factors is described in detail elsewhere (M. Baltes & Lang, 1997). All longitudinal analyses are based on these same resource factors. In order to test for the invariance of extracted factors at the first measurement among those participants who also took part in the longitudinal study (N = 195), an exploratory factor analysis of all resources (as assessed at T1) was carried out. The same two resource factors were found as for all participants at the first measurement (N = 485).

Sensorimotor-cognitive resources were operationalized with three constructs of sensorimotor functioning and three constructs assessing cognitive reasoning ability: (a) balance-gait (number of steps used for a 360° turn; M. Baltes et al., 1999), (b) visual acuity (distance and close visual acuity of both eyes), and (c) auditory acuity (assessed with a Bosch ST-20-1 pure-tone audiometer, Kind-Arbeitssicherheit, Burgwedel, Germany). The three constructs assessing cognitive reasoning ability were (d) figural analogies test, (e) letter series test, and (f) practical problems test (for a description of b–f, see Lindenberger, Scherer, & Baltes, 2001).

Social-personality resources were operationalized with two personality constructs and three social resource indicators: (a) Extraversion was assessed with a six-item German adaptation of a subscale of the NEO Personality Questionnaire (Costa & McCrae, 1985; Smith & Baltes, 1997); (b) goal strength was measured as the average of reported investment in 10 goal domains (e.g., health, hobbies, friends, family, and death and dying; Smith & Baltes, 1997). The three social resource indicators were (c) role variety in the social network reflecting the availability of different types of relationships, (d) perceived social support in the network, and (e) occupational status (Wegener, 1988).

**Resource groups.—**The resource-defined groups used in the longitudinal analysis of everyday functioning were based on a median split of the Sensorimotor-Cognitive and the Social-Personality factor at the first measurement (see M. Baltes & Lang, 1997): (a) 51 participants were above the median on both resource factors (resource-rich group), (b) 69 participants were above the median in the Sensorimotor-Cognitive resource factor but not in Social-Personality resources, (c) 44 participants were above the median in the Social-Personality factor but not in the Sensorimotor-Cognitive factor, and (d) 31 participants were below the median on both resource factors (resource-poor group). At the second measurement, not all resources were assessed again. Therefore, stability of belonging to a resource group after 4 years cannot be reported and is not the purpose of our research. Rather, it is of interest to what extent belonging to a particular resource group at the first measurement is associated with changes in everyday functioning after 4 years. Table 1 gives an overview of the basic descriptors of the resource-defined groups of older adults. No significant differences between survivors (N = 195) and nonsurvivors (N = 184) were found with regard to sensorimotor-cognitive resources, F(1,371) = 2.6, ns, η² = .007, or social-personality resources, F(1,371) = 1.1, ns, η² = .003. There was a significant Group × Survival interaction effect with regard to social-personality resources, F(3,371) = 2.9, p < .05, η² = .023, but none with sensorimotor-cognitive resources, F(3,371) = 0.7, ns, η² = .005. Nonsurviving resource-rich participants were better off in terms of social-personality resources than surviving resource-rich participants.

**Everyday functioning.—**The YI (Moss & Lawton, 1982), an instrument that provides a minute-to-minute reconstruction of the sequence, duration, frequency, and geographical

### Table 1. Descriptors of the Four Resource-Defined Groups in the Longitudinal Sample (N = 195)

<table>
<thead>
<tr>
<th>Descriptors</th>
<th>Resource Rich (n = 51)</th>
<th>Only Sensorimotor–Cognitive Resources (n = 69)</th>
<th>Only Social–Personality Resources (n = 44)</th>
<th>Resource Poor (n = 31)</th>
<th>Significance Test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Women (%)</td>
<td>45.1</td>
<td>50.7</td>
<td>61.4</td>
<td>54.8</td>
<td>χ² = 2.7, ns</td>
</tr>
<tr>
<td>T1: Age</td>
<td>79.9</td>
<td>79.8</td>
<td>80.4</td>
<td>78.2</td>
<td>F = 0.7, ns</td>
</tr>
<tr>
<td>(SD)</td>
<td>(7.6)</td>
<td>(6.6)</td>
<td>(6.6)</td>
<td>(6.8)</td>
<td></td>
</tr>
<tr>
<td>Measurement interval (years)</td>
<td>3.7</td>
<td>3.8</td>
<td>3.9</td>
<td>3.7</td>
<td>F = 0.8, ns</td>
</tr>
<tr>
<td>(SD)</td>
<td>(0.6)</td>
<td>(0.7)</td>
<td>(0.7)</td>
<td>(0.7)</td>
<td></td>
</tr>
<tr>
<td>T3: Married (%)</td>
<td>41.2</td>
<td>31.9</td>
<td>29.5</td>
<td>12.9</td>
<td>χ² = 92.2, ns</td>
</tr>
<tr>
<td>T3: Widowed (%)</td>
<td>45.1</td>
<td>53.6</td>
<td>61.4</td>
<td>64.5</td>
<td></td>
</tr>
<tr>
<td>T3: Never married/divorced (%)</td>
<td>13.7</td>
<td>14.5</td>
<td>9.1</td>
<td>22.6</td>
<td></td>
</tr>
<tr>
<td>T3: Living in institutions (%)</td>
<td>2.0</td>
<td>1.4</td>
<td>11.4</td>
<td>6.5</td>
<td>χ² = 7.2, ns</td>
</tr>
<tr>
<td>T3: Demented (%)</td>
<td>5.9</td>
<td>8.7</td>
<td>18.2</td>
<td>32.3</td>
<td>χ² = 13.7**,</td>
</tr>
<tr>
<td>T1: Sensorimotor–cognitive resources b</td>
<td>58.9</td>
<td>59.1</td>
<td>41.7</td>
<td>43.8</td>
<td>F = 229.1**</td>
</tr>
<tr>
<td>Means in t values</td>
<td>(6.0)</td>
<td>(6.8)</td>
<td>(6.3)</td>
<td>(4.7)</td>
<td></td>
</tr>
<tr>
<td>T1: Social–personality resources b</td>
<td>55.7</td>
<td>42.6</td>
<td>58.9</td>
<td>44.2</td>
<td>F = 244.1**</td>
</tr>
<tr>
<td>Means in t values</td>
<td>(4.6)</td>
<td>(6.1)</td>
<td>(5.8)</td>
<td>(4.7)</td>
<td></td>
</tr>
</tbody>
</table>

*ns* *F* tests are reported with (3,191) degrees of freedom; Chi-squared tests are reported with 3 degrees of freedom.

Comparisons of the resource factors between participants and nonparticipants of the longitudinal study did not reveal significant main effects or Group × Drop-Out Status interaction effects.

**p < .01.**
and social context of activities engaged in during the day preceding the interview, was used to assess everyday functioning. The YI was carried out twice within the 4-year time interval by trained interviewers. In the YI the interviewer asks the participant first to recount all activities that took place during the preceding day from waking up to falling asleep, in the sequence of their occurrence. Once the sequence of activities has been recounted, the interviewer starts anew beginning with the first one reported and requests information on the duration of the activities and then where and with whom they occurred. All reported activities were recorded as verbatim as possible. Trained raters coded these activities into 44 activity codes. Kappa values of intercoder reliability are above .80 (M. Baltes et al., 1999). On average, participants of our sample reported 29.9 (SD = 7.1) activities at T1 (T3: M = 37.4, SD = 12.8) during an average waking day of 995 min (SD = 95; T3: M = 973, SD = 109). Although participants reported more activities at the second measurement, there was no significant difference with respect to the number of different activities between the first and the second measurement (T1: M = 13.6, SD = 2.6; T3: M = 13.4, SD = 3.0), F(1,194) = 1.4, ns. Considering that the length of waking days and the number of different activities remained relatively stable, it seems likely that the increase in reported activities at the second measurement reflects a more detailed reconstruction of the day preceding the interview. However, we cannot exclude that there has simply been an increase in the number of reported activities.

We summarize the 44 activity categories into nine classes: self-care or basic activities, activities related to household chores, transportation activity, passive phases, sleeping, and discretionary leisure activities (i.e., social engagement, physical leisure, intellectual/cultural leisure, and television viewing). Table 2 presents these nine activity classes. In addition, four separate indicators of everyday functioning were generated, relating to selection, compensation, and optimization (see Table 2). (a) Selection in everyday functioning refers to the percentage of social time spent with family members or other relatives. Note that an increase of time spent with close partners other than family may also indicate selection, but was not measured in this study. (b) Selection also refers to a decrease in the diversity of different activities within the most salient leisure domain relative to the diversity across all activities. The most salient leisure domain referred to either physical, social, or cultural/intellectual leisure activities, depending on which of the three domains was most often reported by the participant. (c) Compensation in everyday functioning is indicated by an increase of regenerative activities such as sleeping or passive phases during daytime. (d) Optimization relates to the variability of time investments as indicated by the intradividual standard deviation of durations of all activities reported in the YI. Higher values in this score indicate greater variability; low values indicate a less differentiated time investment across types of activities during the day. The diversity of leisure activities and the variability of time investments correlated moderately with .40 (N = 195, p < .01), although both indicators are statistically independent. In sum, a total of 22 parameters of everyday functioning were examined (Table 3).

The YI appears to be robust, at least with respect to face validity, that is, participants with the diagnosis of mild dementia are able to reconstruct their previous day (M. Baltes et al., 1999).

**Overview of statistical procedures.**—In order to compare differential change in everyday functioning among resource-rich and resource-poor adults, residualized change indicators of everyday activities and strategies of selection, optimization, and compensation were explored. In addition to our earlier work, insights can also be gained from cross-sectional analyses comparing differences in some dependent variables at the first measurement between survivors and nonsurvivors (after 4 years). For example, it is of interest whether indicators relating to adaptive everyday functioning (at T1) differentiate survivors from nonsurvivors (at T3) above and beyond the effects of resource-defined groups. Thus, our statistical procedure contains three steps of analysis: (a) We explored the differential survival rates within the four resource-defined groups after 4 years; (b) participants

<table>
<thead>
<tr>
<th>Activity Class</th>
<th>Description and Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Everyday Activities</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Self-care</strong></td>
<td>Basic activities of daily living (e.g., getting up, toileting, eating)</td>
</tr>
<tr>
<td><strong>Household chores/housekeeping</strong></td>
<td>Instrumental activities of daily living (e.g., shopping, cleaning)</td>
</tr>
<tr>
<td><strong>Transportation</strong></td>
<td>Active or passive transportation (e.g., subway, car driving)</td>
</tr>
<tr>
<td><strong>Passive phases</strong></td>
<td>Phases of contemplation, procrastination, or “doing nothing” (not sleeping)</td>
</tr>
<tr>
<td><strong>Sleeping</strong></td>
<td>Sleeping during daytime</td>
</tr>
<tr>
<td><strong>Physical leisure</strong></td>
<td>Activities that include any kind of physical efforts or demands (e.g., exercising, gardening, walking, traveling)</td>
</tr>
<tr>
<td><strong>Intellectual/cultural leisure</strong></td>
<td>Activities referring to intellectual efforts or cultural interest (e.g., painting, visiting the theater, writing, reading, listening to radio, religious activities)</td>
</tr>
<tr>
<td><strong>Television viewing</strong></td>
<td>Separate leisure category</td>
</tr>
<tr>
<td><strong>Social engagement</strong></td>
<td>Activities that explicitly engage social partners (e.g., talking to others, visiting others, telephoning, helping others, political activities)</td>
</tr>
</tbody>
</table>

| **Additional Change Indicators of Everyday Functioning** | |
| **Social time with family** | Spending a greater proportion of social time with family members |
| **Diversity of activities within salient leisure domain** | Reducing the diversity of different activities within the most salient leisure domain (i.e., physical, cultural/intellectual, social) |
| **Variability of time use** | Increasing the (intra-)variability of time investments across activities |

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Table 3. Description of Nine Classes of Everyday Activities and Additional Change Indicators of Everyday Functioning

Information about the social context was classified by using the following three categories: time spent alone, time spent with family members, and time spent with others.
of the resource-rich and resource-poor groups who have survived were compared with those who did not survive in 22 everyday functioning parameters using multivariate analyses of variance; (c) for each of the 22 everyday functioning parameters, change indicators were generated by residualizing mean performance levels at the second measurement on levels of performance at the first measurement controlling for time interval between occasions. Differential mean change of everyday functioning between resource-rich and resource-poor groups was explored with analyses of variance.

**RESULTS**

**Selective Survival Within Groups**

As we had expected, participants who were in the resource-rich group were more likely to have survived the interval between the measurements than participants who were in the resource-poor group, $\chi^2(6, N = 485) = 27.6, p < .001$. In total, 184 (37.9%) of the 485 participants at the first measurement deceased before the second measurement, and 106 participants of the 485 had dropped out for other reasons. The likelihood of nonsurvival at the second measurement was 50.0% in the resource-poor group, 45.9% among participants rich only in social-personality resources, 30.0% among participants rich only in sensorimotor-cognitive resources, and 24.2% among resource-rich participants, $\chi^2(3, N = 485) = 26.9, p < .001$. Survival status here refers to survival or nonsurvival of participants at the occasion of the second measurement. Note that survivors in the longitudinal study and those participants who dropped out for other reasons were not differentially distributed across the four resource-defined groups, $\chi^2(3, N = 485) = 6.0, \text{ns}$. There was no indication of gender-differential survival within four resource-defined groups.

**Everyday Functioning of Survivors and Nonsurvivors in the Resource-Rich and -Poor Groups**

In a second step of our analysis, we compared the cross-sectional indicators of everyday functioning as measured at the first occasion between survivors and nonsurvivors within the resource-rich and the resource-poor groups of participants.

Nonsurvivors (NS: $n = 75$) as compared with survivors (S: $n = 82$) showed significantly shorter waking days (NS: $M = 905 \text{ min}; S: M = 986 \text{ min}; \eta^2 = .081, p < .01$), a greater diversity of activities within salient leisure domains (NS: $M =$...
50.4; S: M = 37.0; \( \eta^2 = .067, p < .01 \), less variability of time investments across activities (NS: M = 36.7; S: M = 44.7; \( \eta^2 = .028, p < .01 \)), less housekeeping (NS: M = 3.4; S: M = 5.9; \( \eta^2 = .070, p < .01 \)), fewer intellectual/cultural activities (NS: M = 2.1; S: M = 3.3; \( \eta^2 = .035, p < .05 \)), fewer social leisure activities (NS: M = 1.2; S: M = 2.0; \( \eta^2 = .028, p < .05 \)), fewer active transportations (NS: M = 1.7; S: M = 2.9; \( \eta^2 = .027, p < .05 \)), more passive phases (NS: M = 2.7; S: M = 1.4; \( \eta^2 = .060, p < .01 \)), shorter housekeeping activities (NS: M = 17 min; S: M = 28 min; \( \eta^2 = .056, p < .01 \)), shorter physical activities (NS: M = 22 min; S: M = 29 min; \( \eta^2 = .034, p < .01 \)), and longer passive phases (NS: M = 62 min; S: M = 39 min; \( \eta^2 = .030, p < .01 \)). Resource-poor participants (P: n = 83) as compared with resource-rich participants (R: n = 74) reported shorter waking days (P: M = 920 min; R: M = 978 min; \( \eta^2 = .033, p < .05 \)), fewer intellectual/cultural leisure activities (P: M = 2.1; R: M = 3.4; \( \eta^2 = .066, p < .01 \)), fewer social activities (P: M = 1.1; R: M = 2.2; \( \eta^2 = .076, p < .01 \)), more passive phases (P: M = 2.5; R: M = 1.5; \( \eta^2 = .042, p < .05 \)), as well as longer passive phases (P: M = 61 min; R: M = 38 min; \( \eta^2 = .050, p < .05 \)). Although our analysis is restricted to comparisons between the resource-poor and resource-rich groups, most differences between the four resource-defined groups related to differences between the resource-poor and the other three groups. When comparing three resource-defined groups, minus the resource-poor group, no significant differences between these resource groups were found, except for two: resource-rich participants reported more social activities than the sensorimotor-cognitive-rich participants and fewer passive phases than the social-personality-rich participants.

There were four significant interaction effects of Extreme-Resource Group × Survival Status (see Figure 1): (a) on the length of the waking day (\( \eta^2 = .028 \)), (b) on the diversity of activities (within salient leisure domain, \( \eta^2 = .044 \)), (c) duration of passive phases (\( \eta^2 = .056 \)), and (d) duration of intellectual/cultural leisure activities (\( \eta^2 = .026 \)).

Figure 1. Four cross-sectional parameters of everyday functioning at the first measurement differentiated more strongly between survivors and nonsurvivors among resource-poor than among resource-rich older adults. Resource-poor nonsurvivors were less active and more diversified in their activities than resource-poor survivors. *\( p < .05 \); **\( p < .01 \).
Longitudinal Indication of Selection, Compensation, and Optimization in Everyday Functioning

In order to test differential changes of everyday functioning among the resource-poor and the resource-rich groups of older adults, we compared the regression residuals of T3 parameters of everyday functioning after statistically controlling for T1 parameters. Table 3 provides the raw residual change scores for two resource-defined groups. Eta squared ($\eta^2$) as shown in the right column of Table 3 indicates the percentage of explained variance when comparing the resource-rich and the resource-poor groups of older adults after controlling for effects of the time interval between measurements. When excluding demented participants, 4 of 10 reported effects remained significant, five of the effects lost significance but did not change in size, and one effect disappeared (i.e., diversity of activities). Table 3 shows that among resource-poor participants, there was a reduction in the proportion of social time spent with family, the variability of time investments, the frequency and duration of intellectual/cultural activities, the amount of sleeping during daytime, and the frequency of social activities. Moreover, diversity of different activities increased among resource-poor participants. In contrast, with respect to these parameters, positive changes were observed among resource-rich participants.

Figure 2 illustrates the observed differential changes in everyday functioning between resource-rich and resource-poor groups of older adults with respect to four change indicators of everyday functioning. Resource-rich older adults spent more of their social time with the family, reduced the diversity of different activities within their most prominent leisure domain, reported sleeping more during the day (but less passive phases), and showed an increased variability of their time investments across activities. Also, the number of social and intellectual activities increased in the resource-rich group.

**DISCUSSION**

The availability of sensorimotor, cognitive, personality, and social resources facilitated the use of adaptive strategies in everyday functioning within a 4-year interval. Resource-rich participants were found to show more indication of selection, compensation, and optimization in everyday activities and were more likely to have survived after 4 years as compared with resource-poor participants. Survivors in the longitudinal study were more active in everyday life than nonsurvivors. In addition, these differences in everyday activities at the first measurement were more pronounced among resource-poor than among resource-rich participants and thus support cross-sectional findings on differential negative age effects within these groups (M. Baltes & Lang, 1997). The findings suggest that resources facilitate strategies of adapting to aging losses in everyday life. Note, however, that our definition of resources was broadly inclusive. Disentangling the ways in which specific resources contribute differentially to adaptation in later life appears a promising venue (Freund & Baltes, 2002; Li, Lindenberger, Freund, & Baltes, 2001).

According to the SOC model, we expected indications of selection, optimization, and compensation in everyday functioning to be more prevalent among those who are resource rich and have survived in the study after 4 years. Selection in everyday functioning was indicated by (a) an increase of contact with family members during the day and (b) a decrease in diversity of activities within the most salient leisure domain. Compensation was indicated by (c) an increase in the number and duration of sleep phases during the day. Finally, (d) an increase in the variability of time investments across all reported activities indicated an optimization strategy of resource management in daily life. Such longitudinal indications of SOC were found to be more salient among resource-rich than among resource-poor participants. Variability in the time used for different activities was found to increase, while at the same time the diversity of activities of the most-salient leisure domain was reduced in the group of resource-rich older adults. When many resources were available, older adults also increased the number and duration of sleeping phases during the day but at the same time reduced passive phases of “doing nothing.” The latter finding suggests that not all our indicators of compensation reflected equally well the concept of regenerating one’s resources. This also points to a caveat that needs to be considered when interpreting our findings. In this research,
we generated indicators of adaptation strategies from changes of self-reports on everyday activities over time. An alternative approach would be to more directly gather information on older adults' intentions of reducing the diversity in their leisure activities, of increasing the variability of their time investments, or of regenerating their resources when doing nothing or when sleeping. Further research on the behavioral indicators of selection, optimization, and compensation processes is needed. For example, depending on one's health status, different compensatory strategies could be equally effective for regenerating one's resources in everyday life.

The findings on cross-sectional differences between survivors and nonsurvivors further underscore that our indicators of SOC in everyday activities are relevant for adaptation in later life (M. Baltes et al., 1999). Overall, survivors among BASE participants showed more active and energetic levels of everyday functioning already at the first occasion. In general, they reported more routine activities related to housekeeping and more discretionary activities across intellectual/cultural, physical, and social leisure domains. Notably, nonsurvivors in the resource-rich group of older adults as compared with resource-rich survivors did not differ much in cross-sectional indicators of everyday functioning at the first measurement, whereas such differences were more pronounced in the resource-poor group of older adults. Nonsurvivors in the resource poor group spent more time of the day in passive phases, reported shorter waking days, and reported more diverse activities within their most salient leisure domain. It seems that as long as many resources are available, older adults are more capable of compensating for losses in everyday functioning, for example, by taking more regenerative sleeps during the day (but not in passive phases). Resource-rich nonsurvivors also spent more time with housekeeping, social, and intellectual/cultural leisure than resource-poor nonsurvivors. Thus, nonsurvivors in the resource-rich group of older adults may have led a relatively active and energetic everyday life. When resources are available, individuals seem to be more resistant to aging losses and thus keep up relatively high levels of everyday functioning (Staudinger, Marsiske, & Baltes, 1995). In the absence of resources, though, older individuals seem to be more vulnerable to aging losses in everyday functioning. Having fewer resources in later life, a breakdown in the orchestration of selection, optimization, and compensation in everyday functioning may be associated with an increased risk of nonsurvival. The lower level of everyday functioning in the group of nonsurviving resource-poor older adults calls into mind the terminal decline phenomenon in research on cognitive functioning (Berg, 1996). The cross-sectional findings on differences between survivors and nonsurvivors need to be validated with longitudinal data on survival rates (Lindenberger, Singer, & Baltes, 2002).

Selective survival within the resource-defined groups may have had an effect on the observed group differences of change in everyday functioning. Considering the larger experimental mortality risk in the resource-poor group of older adults, our findings may have underestimated the differences in change of everyday functioning between the resource-rich and the resource-poor group of older adults. In our analysis, changes of resources within the groups were not explored. Including this information on change of resources would add more detailed information on whether selective optimization with compensation in everyday functioning also contributes to the maximization or conservation of resources (Hobfoll, 1989) and thus buffers effects of resource loss on mortality. In conclusion, our findings suggest that resources facilitate adaptation to aging losses and the use of selection, optimization, and compensation in everyday life. When resources are scarce, indication of selection, optimization, and compensation in everyday functioning is also associated with a greater likelihood of survival. Overall, findings indicate that the model of selective optimization with compensation is applicable to an adaptive management of resources in everyday life.

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