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Article

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A Mixed-Method Study on Strategies in Every-Day Personal Goals among Community-Dwelling Older Adults.

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† We deeply regret that our friend and colleague passed away during the revision of this

manuscript.

Short Title: Strategies in Older Adults' Every-Day Goals

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1

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Keywords: Selection Optimization Compensation (SOC), Subjective Health,

Cognition, Successful Aging, Mixed-Methods Research.

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1. Abstract Introduction

Although it is well known that preference for selection, optimization and compensation (SOC) strategies is associated with indicators of successful aging and well-being, very little is known about what predicts the use of SOC as goal-management strategies in the daily-lives of older adults. The present study investigates predictors of self-reported use of SOC strategies in community-dwelling adults. We expected selection and especially compensation to be higher in individuals with worse subjective health and cognitive performance. On the contrary, given that optimization is an anticipatory strategy to increase goal-relevant means in the absence of resource losses, we did not expect optimization to be related to either health or cognition.

Methods

We performed hierarchical regression to predict use of SOC strategies to achieve every-day personal goals (assessed qualitatively via semi-structured interviews exploring participants' personal goals) from subjective health and objective cognitive performance, controlling for age, apathy, and depression.

Results

Poorer self-rated health and worse cognitive performance positively predicted compensation as a goal-management strategy ($R^2 = 20\%$), whereas self-rated health just failed to significantly predict selection rates. None of the variables of interest predicted optimization.

Discussion/Conclusion

Whereas previous research suggests associations between reduced resources and decreased absolute frequency of compensation use, the present study found that poorer cognitive status and perceived health are both linked to increased reliance on compensation in order to preserve well-being. In line with their anticipatory nature, the use of optimization strategies was independent from health and cognitive resources in our sample. We discuss the absence

of conclusive effects regarding selection in this study in light of the distinction between elective and loss-based selection.

Keywords: Selection Optimization Compensation (SOC), Subjective Health, Cognition, Successful Aging, Mixed-Methods Research.

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2. Introduction

Throughout the lifespan, striving to achieve personal goals gives meaning to life and fosters well-being [1]. Effectively reaching goals requires a complex coordination of physical, cognitive, and motivational resources, all of which tend to decline in late-life [2,3]. Despite this well-documented decline in resources, community-dwelling older adults generally function well in daily-life, sometimes leading to a discrepancy between objective performance in labs and performance in real life [4].

The implementation of positive adaptation strategies may explain how many individuals counteract losses and their limited resources in old and very-old age, hereby maintaining high levels of well-being and functional outcomes [5,6]. The SOC model describes three such developmental regulation strategies, selection (S), optimization (O), and compensation (C), which help older adults maximizing gains and minimizing losses when facing age-related limitations and changes in opportunities [1,5,7]. While selection entails goals choice and prioritization, optimization and compensation revolve around goal-related means.

More precisely, selection refers to the development, elaboration and commitment to personal goals complying with personal and environmental resources. Therefore, selection processes help reducing the number of goals worth pursuing and fostering investment of efforts into attainable goals. Selection strategies are most effective in dealing with restricted resources when older adults are not solely reducing their number of goals, but also when they focus their efforts on superordinate goals that facilitate each other and are central to the individuals' identity [8].

In turn, optimization processes aim at maximizing internal and external resources (goal relevant means) to increase functioning efficiency (e.g., training or acquiring new goal-related means). If the specific goal-related means are context-specific, optimization strategies generally revolve around augmenting one's resources and proactively anticipating difficulties before they arise. Hence, these strategies are anticipatory in nature. They facilitate goal-achievement (e.g., through training and automation of goal-related means) and free up resources to pursue other goals or goal-related means. As such, optimization is oriented toward achieving higher levels of functioning, but also presuppose that one has sufficient levels of individual resources to acquire new skills.

Finally, compensation processes aim at maintaining a satisfactory level of functioning, by minimizing or counteracting the impact of inevitable age-related resource losses which limit functional outcomes. Compensation strategies notably include activating unused or alternative goal-relevant means (e.g., external aids, assistive devices), and intensifying the use of previously used resources and goal-relevant means (e.g., increased planning, investing more time and efforts). Contrary to optimization, which is oriented toward growth, compensation is oriented toward maintenance of current functioning and avoidance of losses. As such, compensation can also lead to lower levels of functioning but prevent giving up a goal altogether.

Examples of daily-life SOC strategies for someone whose goal is to grow one's vegetables despite a back injury, which limits one's movements, would be continuing walking regularly to stay in shape (optimization); reducing the size and diversity of one's vegetable garden (selection); or installing raised off-soil containers to continue gardening (compensation). On the opposite, an instance of non-SOC strategies would be accepting things the way they are and regulating one's negative emotions when thinking about one's difficulties and pains due to movements. In an experimental context, Li and colleagues [9]

provided empirical evidence for the use of selection and compensation in older adults when asked to memorize words while walking. Because older adults are more prone to falls than their younger counterparts are, older adults prioritized walking over memory performance (i.e., selection) and made better use of a handrail to preserve walking performance (i.e., compensation).

SOC strategies are related to positive functional outcomes in daily-life and tenacious goal-pursuit in older adults with various degrees of physical and cognitive limitations. Indeed, the combined use of the three SOC strategies robustly correlates with indicators of successful aging, and appears to buffer the effects of stressors on both cognition and well-being [7,10–12]. In older adults with osteoarthritis, individuals who used compensation reported less pain and higher levels of well-being, and those who reported high levels of selection and optimization were less impaired in the instrumental activities of daily-living [13]. In turn, higher compensation rates predict better cognitive performance and levels of functional independence in older adults with moderate to low cognitive status [14–17].

Because resources decline with age, compensation and selection strategies appear more important in maintaining personal goals and satisfying levels of functioning in older than in younger adults, whereas the reverse is true for optimization strategies [6]. Indeed, there is robust evidence that selection supports a major shift in motivational processes with increasing age [see 18] and that compensation is summoned for both physical and cognitive functioning when dealing with declining resources [4,14,15,19].

Paradoxically, SOC strategies have been shown to be less preferred in resource-poor individuals and in older adults, compared to resource-rich and younger or middle-age adults, but, at the same time, also to critically benefit resource-poor and older adults the most [7,10,16,20,21]. In that regard, Jopp and Smith [20] showed that preference for SOC buffered the negative effect of reduced resources (demographic, cognitive, health, and social) on aging-

satisfaction, and that optimization and compensation played a key role in maintaining high levels of aging-satisfaction over time.

The vast majority of quantitative studies investigating the three SOC strategies in older adults used questionnaires to assess participant's general preference for SOC over non-SOC goal-management strategies [7,10,20]. Only a handful of studies investigated, with a qualitative or mixed-methods design, the actual use of, rather than preference for, SOC in daily-life activities and goal pursuit (see [9,21] for exceptions). Such studies, based on selfreports, have shed light on how older adults with health-related issues may apply SOC to maintain well-being, and on the potential determinants of SOC use. Using structured interviews, Gignac and colleagues [22] explored how older adults with osteoarthritis use SOC to adapt to their physical illness. Compensation was the predominant strategy reported in this sample. Greater change in individuals' physical capacities and increased functional disability predicted both higher compensation and selection rates. Optimization, in turn, was specifically more frequent in individuals with a mobility disability. Finally, the size of the social network predicted selection, but neither optimization nor compensation use, such that individuals with few social resources used selection more often. In the context of everyday physical activities, Carpentieri and colleagues conducted semi-structured interviews with older adults that were previously categorized in groups according to their levels of physical functioning and well-being [23]. The authors coded concrete strategy use for everyday physical activities from participants' narratives in terms of SOC instances. More SOC use was associated with higher levels of well-being despite lower levels of physical functioning. Individuals with the lowest physical functioning reported compensation and, to a lesser extent, selection as strategies to maintain tenacious goal pursuit and avoid narrative foreclosure. Similarly, in semi-structured interviews examining resources allocations in older adults with various chronic illnesses, compensation was reported as a mean to preserve

independence and pursuit of personally relevant goals, while selection served as a mean to affirm one's autonomy and ability to make choices [24]. In the two latter studies [23,24], participants reported particularly low levels of optimization, corroborating the idea that this strategy requires unrealistically high levels of physical functioning for these populations. The few instances of optimization specifically revolved around enhancing one's physical health, irrespectively of one's actual physical status.

Although there is substantial quantitative evidence that SOC strategies are related to positive functional outcomes in daily-life and tenacious goal-pursuit in older adults, far less is known about determinants of actual SOC use in daily-life (as investigated in the aforementioned studies). In studies focusing on compensation for memory only (in a non-SOC theoretical framework), higher health-related issues and both moderate objective and subjective cognitive difficulties predicted greater levels of compensation in community-dwelling older adults [25,26]. In SOC studies, preference for SOC was, for instance, related to personality, health status, intelligence or thinking style [10]. This preference, however, does not guarantee that older adults actually apply such strategies in their daily goal pursuit.

In order to fill this gap, the present study stems from a mixed-methods research project (combining quantitative and qualitative methods) to inquire into community-dwelling older adults' actual daily goal pursuit and goal management strategies, focusing on the interplay between cognitive functioning, goal-directed behaviors, and well-being. We conducted interviews to assess older adults' perceived (a) personal goals, (b) cognitive, motivational and affective facilitators or barriers to goals' achievement, (c) links between specific goals and well-being, and (d) proactive goal management strategies. We report the detailed qualitative results of this project in a separate paper (Joly-Burra, Gallerne, Van der Linden, & Ghisletta, in prep). Importantly, well-being in our older adults' sample depended more on being able to adapt to age-related losses and maintain meaningful personal goals rather than on being free

from objective functional impairments. More precisely, participants reported subjective cognitive decline and functional limitations mainly due to health-related issues. Nevertheless, they still pursued personal goals (such as nurturing meaningful social relations, caring for one's health, and maintaining a satisfying level of autonomy, volunteering, etc.) and did not identify cognitive decline as substantially hindering their goal pursuit. On the contrary, participants undoubtedly saw health-related issues as slowing or complicating goal attainment. Critically, participants described managing personal goals and preserving wellbeing by applying instances of SOC strategies to mitigate the impact of health or perceived cognitive difficulties. Participants, for instance, described prioritizing some goals over others or presently investing more efforts than before to achieve their goals. It therefore appears that they use SOC strategies both to prevent and in response to cognitive and health-related difficulties.

The present paper builds upon these first qualitative results and fully develops the mixed-method part of this project by exploring correlates of SOC strategy use to maintain goal-pursuit in older adults. Its aims are twofold: First, we assess the *individual contributions* of subjective health and of objectively assessed cognitive performance – two key types of resources that emerged from the interviews – rather than testing their global contribution (i.e., we specify the nature of resources). Second, we predict the self-reported *use* of each of the three SOC strategies in older adults, rather than focusing on participants' preferences for these strategies. We control for the effects of depression and apathy, given that higher negative affect and lack of initiative or interest can interfere with tenacious goal pursuit [27,28]. In addition, for each strategy, we also control for the effect of the other two strategies (e.g., controlling for optimization and compensation when predicting selection) to ensure that potential effects of variables of interest are not confounded with these strategies.

Because compensation and selection strategies are particularly important in maintaining satisfactory levels of functioning in older adults due to age-related decline in resources, and given that SOC appears to be most relevant for resource-poor individuals [20,21], we expect use of both selection and compensation strategies to be associated with poorer health and cognitive status. Indeed, these strategies should allow redirecting resources to attainable goals and counteracting resource losses in remaining goals. We expect health difficulties and poorer cognitive performance to be more strongly associated to use of compensation because this strategy should become more relevant when resources are low or already lost. In that sense, compensation appears as the last bulwark of successful goal pursuit in face of losses. In contrast, we do not expect the use of optimization to be associated with either subjective health or cognition, given that optimization is conceived as an anticipatory strategy to increase goal-relevant means and prevent difficulties in the absence of direct or indirect resource losses [see also 21,22].

3. Materials and Methods

3.1. Participants

A hundred healthy French-speaking retired adults over 65 years of age completed cognitive tasks and questionnaires in a first session. A random half (n = 49, 63.27% women, age: 65–92 years, M = 73.90, SD = 5.95) of these participants additionally conducted an indepth semi-structured interview in a second session. Exclusion criteria were dementia diagnosis, neurological antecedents, severe motor or sensory disability, and known psychiatric disorders. Participants gave their informed consent to participate and were financially remunerated for the study. The study was conducted in accordance with the World Medical Association Declaration of Helsinki, and the protocol was approved by the Ethical Committee of the Faculty of Psychology and Educational Sciences at the University of Geneva.

3.2. Quantitative data

During the first session, participants indicated their age and subjectively rated their general health using a single item on a 5-point Likert scale (from 1: $Very\ bad$ to 5: $Very\ good$, M=4.04, SD=0.80). They were then administered the mini-mental state examination (MMSE, [29]), a Go/No-Go task (adapted from [30]), the letter-number sequencing test (LNS, Wechsler Adult Intelligence Scale III, [31]), and the trail-making test part B (TMT-B, [32]). These tasks, respectively, assess global cognitive status, prepotent response inhibition, working memory, and processing speed and switching. Participants also completed the French versions of the Center for Epidemiologic Studies Depression Scale (CES-D, [33] and the Lack of Initiative and Interest Scale (IIS, M=50.87, SD=25.01, [28]).

3.3. Qualitative data

In the second session, in-depth semi-structured interviews were conducted to investigate the nature of participants' personal goals, their relations to well/ill-being, and how participants apply general goal-management strategies to maximize well-being. The interview consisted of three main segments: (1) activities and personal goals, (2) personal and environmental aids, and barriers to goals achievement, and (3) well-being and its relations with goal-achievement. All interviews were conducted (in French) by the first author, who followed a structured list of questions (see Appendix A of Supplementary Material for the full interview structure) and additionally included personalized follow-up probes to elicit meaningful descriptions of everyday life. The interviews lasted between 45 minutes and 2 hours, and were fully audio-taped and manually transcribed.

We applied an in-depth qualitative thematic analysis on transcribed interviews to better understand the nature of goals reported by participants and their link to well-being (the results of this analysis are reported in Joly-Burra et al., in prep). Both the first author and a research assistant coded the interviews, using a mixture of deductive and inductive coding strategies as advised by Fereday and Muir-Cochrane [34]. We first developed an initial a

13

priori deductive coding scheme based on research questions and theoretical frameworks (e.g., focusing on autonomy and health-related functional limitations), which we then completed by unforeseen, data-driven inductive codes (e.g., anticipating and planning for one's or significant others' end of life). We applied this coding scheme to analyze older adults' goals and aspects contributing to well- and ill-being. We updated the coding scheme regularly, by dropping irrelevant a-priori codes, and inductively adding new codes. We held regular coding meetings (generally once a week during 14 months) to compare codes and discuss discrepancies, until full consensus was reached. We assessed intercoder reliability by comparing independent coding for 10 interviews (chosen to vary in content and to represent the full spectrum of length, depth, and complexity of all interviews). The intercoder reliability was satisfactory ($\kappa = .74$) and we discussed possible discordances until we reached a final agreement. We then separately coded the 39 remaining interviews. The final coding scheme contained 21 codes, which we clustered in 10 themes after examining meaning overlap and co-occurrence frequencies between codes (see Appendix B). Six of the 10 themes described specific goals that directly contributed to well-being and/or ill-being (e.g., caring for one's health and maintaining autonomy), whereas the remaining four described general aspects of well-being and ill-being, resulting from global feelings and attitudes toward life that were not directly related to a specific goal (e.g., satisfaction with one's life and self-acceptance).

In a second step, and critically to the present paper, it emerged from the coding process that participants not only talked about goals, well-being or ill-being, but also about more general emotional regulation and goal-management strategies – among which SOC strategies. We thus decided to carry out a content analysis to further investigate the strategies reported by our participants to manage a wide array of personal goals and activities, such as maintaining social and familial relationships, caring for one's health and autonomy, having leisure and cultural activities, volunteering, etc. More precisely, whenever appropriate, we

identified and categorized interview segments describing participants' general goal management strategies as compensation, optimization, or selection (for an analogous procedure, see [23]). A total of 441 goal-management strategies were reported by participants, 333 of which were SOC strategies. The three strategies positively and significantly correlated (see Table 1).

[INSERT TABLE 1]

To code the SOC strategies, we closely followed the technical report of Baltes and colleagues [35]. The definitions and examples of items therein provided us with solid and broad guidelines to code SOC in our interviews. Examples provided in this report are not goal-specific (their formulation is very generic) but they provided a versatile template to identify SOC strategies for specific goals in participants' speeches. For instance, the item "When things don't go as well as before, I choose one or two important goals" can serve as a basis to code a selection strategy when a participant reported reducing the number of his volunteering activities because he was increasingly tired, and preferred focusing his energy on the activities he enjoys the most. We accordingly coded selection when participants reported operating a choice on which goal to engage in, abandon, or prioritize over others. We coded compensation when participants applied the strategy to counteract some loss or decline in participants' resources or when they neglected other optimizing means. In contrast, we coded optimization when strategies aimed at refining or increasing participants' goal-relevant means and level of functioning. We report excerpts of text describing SOC strategies in Appendix C of Supplementary Material.

This quantification of qualitative data reveals interindividual differences in SOC strategies use and enables investigation of theirs quantitative predictors [see 36].

3.4. Data analysis

First, following a latent variable analysis, we estimated a cognitive ability score, indicated by the common factor among the Go/No-Go task global accuracy score, the LNS total correct score, and both the TMT-B completion time and number of errors. One participant was excluded from subsequent analyses because of a cognitive factorial score 3.70 SD below average (see Table 2 for a description of the final sample). Then, we conducted separate multiple hierarchical regressions for the three SOC strategies to assess the respective contribution of each predictor of interest. For instance, to predict compensation, we started by including the control variables age, CESD, IIS, and also selection, and optimization, because of their positive intercorrelations (Model 1C). Then, we added subjective health (Model 2C) to assess its additional contribution. Likewise, we replaced subjective health by cognition (Model 3C) for the same reason. Finally, (Model 4C), we added both predictors to Model 1C. In the end, we estimated the four models for each of the three SOC strategies as an outcome variable, resulting in twelve models in total.

[INSERT TABLE 2]

4. Results

4.1. Latent variable analysis

The general cognitive confirmatory factor model presented an excellent fit (χ^2 = .24, df = 2, CFI = 1.00, RMSEA < .001, SRMR = .01). The estimated factorial score correlated with the global cognitive status, r = .67, p < .001, as indicated by the MMSE (M = 28.08, SD = 1.77).

4.2. Multiple hierarchical regressions

Only compensation significantly and positively predicted selection in Models 2S, 3S and 4S (β = .42, t(41) = 2.56, p = .01; β = .35, t(41) = 2.03, p = .04; β = .45, t(40) = 2.55, p = .02 respectively). This effect was only nearly significant in Model 1S (β = .31, t(42) = 2.00, p = .05). In addition, subjective health just failed to significantly predict selection in

Models 2S and 4S (β = .28, t(41) = 1.76, p = .09; β = .28, t(40) = 1.74, p = .09 respectively). For compensation, there only were marginally significant effects of age (β = .25, t(42) = 1.90, p = .06) and selection (β = .28, t(42) = 2.00, p = .05) in Model 1C. In Model 2C, both age (β = .26, t(41) = 2.13, p = .04), selection (β = .33, t(41) = 2.56, p = .02) and subjective health (β = -.40, t(41) = -3.08, p < .01) resulted important. In Model 3C, cognition negatively predicted compensation (β = -.36, t(41) = -2.66, p = .01), while age was no longer predictive (β = .10, t(41) = 0.71, p = .48). The effect of selection remained (β = .26, t(41) = 2.03, p = .05). Finally, in Model 4C, subjective health (β = -.35, t(40) = -2.85, p < .01), cognition (β = -.31, t(40) = -2.41, p = .02) and selection (β = .31, t(40) = 2.55, p = .02) concurrently predicted compensation use. Age (β = .13, t(40) = 0.99, p = .33) remained unimportant. Effects of CESD, IIS, and optimization never emerged. There were no significant effects of any of the predictors for optimization. See Table 3 for full results.

Age, IIS, CESD, selection and optimization explained 22% of the variance of compensation. The addition of subjective health and cognition together (Model 4) increased the effect size by 20%, resulting in 42% of explained variance in total. Taken together, all the predictors explained 16% of the variance of selection, whereas they explained only 1% of the variance of optimization. There was no multicollinearity among the predictors and the residuals of all models were normally distributed.

[INSERT TABLE 3]

5. Discussion

As predicted, we found that worse self-rated health and cognitive status were associated to higher use of compensation, among goal-management strategies, even when controlling for age, depression, apathy, selection, and optimization. The effects of health and cognition were quite substantial given that they explained 20% of the variance of compensation. Of interest, the effect of cognition concealed the effect of age on

compensation. We thus conclude that higher self-reported use of compensation is not directly related to older age, but rather to general cognitive performance, which tends to decline with advancing age [5]. This is especially the case for broad fluid cognitive abilities [37], as measured in the present study.

At first glance, our results may appear in contradiction with those of Lang and colleagues [21], who found increased compensation use in individuals with more resources. Of importance, Lang and colleagues measured compensation as an increase of self-reported regenerative activities only, such as sleeping or passive phases during daytime, whereas in the present study compensation encompasses a wider and more complex scope of behaviors (see Appendix C of Supplementary Material). For instance, our definition of compensation allowed for the inclusion of *modifying the environment to suit one's needs* (e.g., using an offground cultivation tray to continue gardening despite back pain), *avoiding multitasking and planning more deliberately using external aids* (e.g., writing what one has to do to specify a clear action plan in response to memory and attentional difficulties), and *substitution of means* (e.g., changing transportation methods to continue going on holidays despite chronic pain). Hence, our study encompasses a more generalizable ensemble of compensation behaviors in healthy older adults' daily life than Lang et al.'s, which limits the direct comparability of the two studies.

More importantly, our results regarding compensation are in line with previous qualitative and mixed studies that showed higher use of this strategy as a mean to maintain well-being and engagement in meaningful goals, in individuals presenting health-related challenges [22–24]. Even though preference for SOC strategies appears to decline in older age and resource-poor individuals [10,20,21], compensation seems to be more frequently used as a goal-management strategy in these same individuals. Moreover, the conjunction of the positive relationship between objective cognitive performance and compensation and the

absence of perceived impact of these difficulties on participants' attainment of personal goals (Joly-Burra et al., in prep) suggests that compensation is an effective strategy to facilitate goal attainment despite age-related cognitive difficulties in our sample.

Also in line with our hypotheses, neither cognitive performance nor subjective health were related to optimization, suggesting that participants in our sample who used this strategy to maximize goal-related means did so regardless of their resource status. However, contrary to our hypotheses, cognitive performance was not related to selection. Only compensation was significantly and positively related to selection. The absence of clear effects of cognitive performances and subjective health on selection may come from the fact that we coded selection strategies as a single entity instead of differentially coding elective selection and loss-based selection. Indeed, loss-based selection (i.e., selecting activities based on what one is still able to do) is related to a loss-avoidance orientation and, therefore, is expected to be more frequent in older adults with both health and cognitive difficulties. In turn, because elective selection (i.e., selecting goals aiming at reaching a higher level of functioning) does not arise as a response to losses, but is rather oriented toward personal growth, one could expect higher rates of elective selection in physically and cognitively healthy individuals [38]. It would thus be preferable that future studies clarify the relationship between resources and both elective and loss-based selection use in older adults' daily-lives.

To our knowledge, this is the first study, to focus on the use of (rather than preference for) SOC strategies among goal-management strategies and to test the unique associations between both subjective health and cognitive resources and SOC, in a sample of community-dwelling older adults, using a mixed-methods design. Our study presents a certain number of limitations. First, we relied on self-reported data. Although participants might have reported actions that they did not undertake in reality, all other previous studies on the use of compensation adopted the same methodology, thus allowing for direct comparison of results.

Surely, objectively observed instances of SOC behaviors might be more reliable than selfreports. However, such a methodology can hardly be envisaged outside of a laboratory setting, thereby introducing major validity threats. Given our interest in SOC use in real life, self-reports appear as the only viable methodology. Second, we only focused on subjective health and objective cognitive resources, neglecting the role of other types of resources, such as social, financial, personality, or life-management, because, given the breadth of this study (qualitative interviewers and quantitative assessments), it would have been unfeasible to further extend the duration of the study by including other life aspects. Such resources nevertheless seem to play a role in SOC use or preference in older adults [7,10,21]. Future studies might want to further include such types of resources, although often participants are reluctant to disclose their financial situation. Finally, and more importantly, the use of a crosssectional design prevents us from making any causal inferences about the underlying dynamic relationships between compensation and maintenance of well-being in the long-run. Such a conundrum also stems from the fact that using SOC strategies calls for a minimal level of personal resources [10] – that were not critically low in the present sample given that participants lived independently at home and functioned well cognitively ($M_{MMSE} = 28.10$, SD_{MMSE} = 1.78). Although Knecht and Freund [39] showed that SOC strategies appear to be a response to, rather than an antecedent of, experiencing goal conflict in management of multiple goals, we cannot address the issue of whether higher compensation use stems from lower cognitive and health resources or whether participants' resources derive from their ability to compensate. Ecological momentary assessment studies [see 39] would prove useful to assess the dynamic relation between compensation in daily-life and goal achievement and maintenance of well-being [40]. Moreover, longitudinal studies including samples of older adults with a wider range of levels of resources and functional autonomy should allow for a more comprehensive analysis of SOC use in older adults.

20

In conclusion, verbalization of selection, optimization and compensation spontaneously emerged through semi-structured interviews about goal-management strategies to maintain well-being, confirming that older adults naturally apply SOC strategies in their daily life to maintain well-being [1,7,24]. The mixed-methods approach we adopted sheds alternative light on the contrary findings that resource-poor individuals, for whom SOC use appears to be the most helpful, show less general preference for these strategies than resource-rich individuals.

The present study therefore advocates for combining qualitative and quantitative data sources to deepen our understanding of the aging process from the perspective of older adults. This shift in focus allowed us to reveal that, in a sample of community-dwelling and relatively well functioning older adults, poorer cognitive status and perceived health were both associated with a higher reliance on compensation – but not on selection and optimization – as a strategy to preserve well-being. An optimistic speculation would entail that greater use of compensatory strategies in adults experiencing normal cognitive decline might contribute to their ability to maintain meaningful personal goals, yielding to overall well-being.

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Statement of Ethics: Participants gave their informed consent to participate. The study was conducted in accordance with the World Medical Association Declaration of Helsinki, and the protocol was approved by the Ethical Committee of the Faculty of Psychology and Educational Sciences at the University of Geneva.

Disclosure Statement: The authors have no conflicts of interest to declare.

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Author Contributions: EJB, MVdL, and PG conceived and designed the experiments; EJB performed the experiments and analyzed the data; EJB, MVdL, and PG wrote the paper.

6. References

- 1 Baltes MM, Carstensen LL. The Process of Successful Ageing. Ageing Soc. 1996 Jul;16(04):397–422.
- 2 Brown RG, Pluck G. Negative symptoms: the "pathology" of motivation and goal-directed behaviour. Trends Neurosci. 2000 Sep;23(9):412–7.
- 3 Glisky EL. Changes in cognitive function in human aging. Brain aging: Models, methods, and mechanisms. Boca Raton, FL, US: CRC Press; 2007; pp 3–20.
- 4 Verhaeghen P, Martin M, Sędek G. Reconnecting cognition in the lab and cognition in real life: The role of compensatory social and motivational factors in explaining how cognition ages in the wild. Neuropsychol Dev Cogn B Aging Neuropsychol Cogn. 2012;19(1–2):1–12.
- Baltes PB, Baltes MM. Psychological Perspectives on Successful Aging: The Model of Selective Optimization with Compensation. In: Baltes PB, Baltes MM, editors. Successful Aging: Perspectives from the Behavioral Sciences. New York NY: Cambridge University Press; 1990; pp 1–34.
- Baltes PB, Smith J. New frontiers in the future of aging: from successful aging of the young old to the dilemmas of the fourth age. Gerontology. 2003 Apr;49(2):123–35.
- 7 Freund AM, Baltes PB. Selection, optimization, and compensation as strategies of life management: correlations with subjective indicators of successful aging. Psychol Aging. 1998 Dec;13(4):531–43.
- 8 Riediger M, Freund AM. Focusing and restricting: two aspects of motivational selectivity in adulthood. Psychol Aging. 2006 Mar;21(1):173–85.
- 9 Li KZ, Lindenberger U, Freund AM, Baltes PB. Walking while memorizing: age-related differences in compensatory behavior. Psychol Sci. 2001 May;12(3):230–7.
- 10 Freund AM, Baltes PB. Life-management strategies of selection, optimization and compensation: Measurement by self-report and construct validity. J Pers Soc Psychol. 2002;82(4):642–62.
- 11 Teshale SM, Lachman ME. Managing daily happiness: The relationship between selection, optimization, and compensation strategies and well-being in adulthood. Psychol Aging. 2016;31(7):687–92.
- 12 Robinson SA, Lachman ME, Rickenbach EH. Self-regulatory strategies in daily life: Selection, optimization, and compensation and everyday memory problems. Int J Behav Dev. 2016 Mar;40(2):126–36.
- 13 Janke MC, Son JS, Payne LL. Self-Regulation and Adaptation of Leisure Activities Among Adults with Arthritis. Act Adapt Aging. 2009 Jun;33(2):65–80.
- 14 Tomaszewski Farias S, Gravano J, Weakley A, Schmitter-Edgecombe M, Harvey D, Mungas D, et al. The Everyday Compensation (EComp) Questionnaire: Construct

- Validity and Associations with Diagnosis and Longitudinal Change in Cognition and Everyday Function in Older Adults. J Int Neuropsychol Soc JINS. 2019 Oct;1–11.
- 15 Weakley A, Weakley AT, Schmitter-Edgecombe M. Compensatory strategy use improves real-world functional performance in community dwelling older adults. Neuropsychology. 2019;33(8):1121–35.
- 16 Tomaszewski Farias S, Schmitter-Edgecombe M, Weakley A, Harvey D, Denny KG, Barba C, et al. Compensation Strategies in Older Adults: Association With Cognition and Everyday Function. Am J Alzheimers Dis Dementias®. 2018 May;33(3):184–91.
- 17 Schmitter-Edgecombe M, Parsey C, Lamb R. Development and Psychometric Properties of the Instrumental Activities of Daily Living: Compensation Scale. Arch Clin Neuropsychol. 2014 Dec;29(8):776–92.
- 18 Hess TM. Selective Engagement of Cognitive Resources Motivational Influences on Older Adults' Cognitive Functioning. Perspect Psychol Sci. 2014 Jul;9(4):388–407.
- 19 Bäckman L, Dixon RA. Psychological compensation: a theoretical framework. Psychol Bull. 1992 Sep;112(2):259–83.
- 20 Jopp D, Smith J. Resources and life-management strategies as determinants of successful aging: on the protective effect of selection, optimization, and compensation. Psychol Aging. 2006 Jun;21(2):253–65.
- 21 Lang FR, Rieckmann N, Baltes MM. Adapting to Aging LossesDo Resources Facilitate Strategies of Selection, Compensation, and Optimization in Everyday Functioning? J Gerontol Ser B. 2002 Nov;57(6):P501–9.
- 22 Gignac MAM, Cott C, Badley EM. Adaptation to disability: Applying selective optimization with compensation to the behaviors of older adults with osteoarthritis. Psychol Aging. 2002;17(3):520–4.
- 23 Carpentieri JD, Elliott J, Brett CE, Deary IJ. Adapting to Aging: Older People Talk About Their Use of Selection, Optimization, and Compensation to Maximize Well-being in the Context of Physical Decline. J Gerontol B Psychol Sci Soc Sci. 2017 Mar;72(2):351–61.
- 24 Rozario PA, Kidahashi M, DeRienzis DR. Selection, optimization, and compensation: strategies to maintain, maximize, and generate resources in later life in the face of chronic illnesses. J Gerontol Soc Work. 2011 Feb;54(2):224–39.
- 25 de Frias CM, Dixon RA, Bäckman L. Use of Memory Compensation Strategies Is Related to Psychosocial and Health Indicators. J Gerontol Ser B. 2003 Jan;58(1):P12–22.
- 26 Garrett DD, Grady CL, Hasher L. Everyday memory compensation: The impact of cognitive reserve, subjective memory, and stress. Psychol Aging. 2010;25(1):74–83.
- 27 Brinkmann K, Gendolla GHE. Does depression interfere with effort mobilization? Effects of dysphoria and task difficulty on cardiovascular response. J Pers Soc Psychol. 2008 Jan;94(1):146–57.

- 28 Esposito F, Rochat L, Juillerat Van der Linden A-C, Lekeu F, Charnallet A, Van der Linden M. Apathy in aging: Are lack of interest and lack of initiative dissociable? Arch Gerontol Geriatr. 2014 Jan;58(1):43–50.
- 29 Folstein MF, Folstein SE, McHugh PR. "Mini-mental state". A practical method for grading the cognitive state of patients for the clinician. J Psychiatr Res. 1975 Nov;12(3):189–98.
- 30 Rochat L, Billieux J, Juillerat Van der Linden A-C, Annoni J-M, Zekry D, Gold G, et al. A multidimensional approach to impulsivity changes in mild Alzheimer's disease and control participants: cognitive correlates. Cortex J Devoted Study Nerv Syst Behav. 2013 Jan;49(1):90–100.
- 31 Wechsler D. Wechsler Adult Intelligence Scale. Third. San Antonio, TX: The Psychological Corporation; 1997.
- 32 Tombaugh TN. Trail Making Test A and B: Normative data stratified by age and education. Arch Clin Neuropsychol. 2004 Mar;19(2):203–14.
- 33 Fuhrer R, Rouillon F. La version française de l'échelle CES-D (Center for Epidemiologic Studies-Depression Scale). Description et traduction de l'échelle d'autoévaluation [The French version of the CES-D (Center for Epidemiologic Studies-Depression Scale)]. Psychiatr Psychobiol. 1989;4(3):163–6.
- 34 Fereday J, Muir-Cochrane E. Demonstrating Rigor Using Thematic Analysis: A Hybrid Approach of Inductive and Deductive Coding and Theme Development. Int J Qual Methods. 2006 Mar;5(1):80–92.
- 35 Baltes PB, Baltes MM, Freund AM, Lang FR. Measurement of selective optimization with compensation by questionnaire. Berlin: Max Planck Institute for Human Development; 1995.
- 36 Sandelowski M, Voils CI, Knafl G. On Quantitizing. J Mix Methods Res. 2009 Jul;3(3):208–22.
- 37 Horn JL, Cattell RB. Age differences in fluid and crystallized intelligence. Acta Psychol (Amst). 1967;26(2):107–29.
- 38 Freund AM, Nikitin J, Riediger M. Successful Aging. In: Lerner RM, Easterbrooks MA, Mistry J, editors. Handbook of Psychology., 2nd ed. New York NY: John Wiley & Sons; 2012; pp 615–38.
- 39 Knecht M, Freund A. The use of selection, optimization, and compensation (SOC) in goal pursuit in the daily lives of middle-aged adults. Eur J Dev Psychol. 2017;14(3):350–66.
- 40 Boker SM. Selection, Optimization, Compensation, and Equilibrium Dynamics. GeroPsych. 2013 Jan;26(1):61–73.

Correlations and Descriptive Statistics for SOC Strategies (N = 48)

Variables	1	2	3
1. Selection	_		
2. Optimization	.30*	-	
3. Compensation	.41**	.29*	_
M (SD)	4.00 (2.81)	1.48 (1.86)	1.46 (1.87)
Range	0-11	0-8	0-8

Note: **p* < .05. ***p* < .01.

Table 1

Table 2

Description of the final sample

Variable	N(%) / M(SD)	Range
Gender		
Female	30 (62.5%)	-
Male	18 (37.5%)	-
Living Situation		
With spouse/partner	32 (66.70%)	-
Alone	16 (33.30%)	-
Age	73.90 (6.01)	65-92
Years of Education	13.80 (3.38)	7-25
Global Self-Rated Health	4.04 (0.80)	1-5
MMSE	28.10 (1.78)	23-30
IIS	16.50 (3.94)	10-27
CES-D	11.60 (8.05)	1-38

Note: MMSE: Mini Mental State Examination test, CES-D: Center for Epidemiologic

Studies-Depression scale, IIS: Lack of Initiative and Interest Scale.

Table 3 $Summary\ of\ Hierarchical\ Regression\ Analysis\ Predicting\ Selection,\ Optimization\ and\ Compensation\ Respectively\ (N=48)$

	Selection									Optimization								Compensation										
	Model 1S		Model 1S		Model 1S		Mode	el 2S	Mode	el 3S	Model 4S		Mode	Model 10		Model 2O		Model 3O		Model 4O		del 1C	Model 2C		Model 3C		Model 4C	
Predictor	В		В		В		В		В		В		В		В		В		В		В		В					
	(SE	β	(SE	β	(SE	β	(SE	β	(SE	β	(SE	β	(SE	β	(SE	β	(SE	β	(SE	β	(SE	β	(SE	β				
	B)		B)		B)		B)		<i>B</i>)		B)		B)		B)		B)		B)		B)		B)					
Age	0.04	.09	0.02	.04	0.05	.11	0.03	.07	-0.02	08	-0.03	-	-0.01	02	-0.01	-	0.08	.25†	0.08	.26*	0.03	.10	0.04	.13				
	(0.07)		(0.07)		(0.07)		(0.07)		(0.05)		(0.05)	.08	(0.05)		(0.05)	.03	(0.04)		(0.04)		(0.04)		(0.04)					
IIS	-0.01	01	-0.01	01	0.01	.01	0.01	.01	0.03	.06	0.03	.07	0.04	.09	0.04	.09	-0.11	22†	-0.09	19	-0.11	24^{\dagger}	-0.10	-0.21†				
	(0.10)		(0.10)		(0.11)		(0.10)		(0.07)		(0.07)		(0.07)		(0.07)		(0.06)		(0.06)		(0.06)		(0.06)					
CESD	0.03	.09	0.07	.19	0.03	.09	0.07	.19	0.01	.05	0.02	.07	0.01	.05	0.02	.07	0.03	.13	-0.01	04	0.02	.10	-0.01	05				
	(0.05)		(0.05)		(0.05)		(0.05)		(0.04)		(0.04)		(0.04)		(0.04)		(0.03)		(0.03)		(0.03)		(0.03)					
Selection	NA	NA	NA	NA	NA	NA	NA	NA	0.14	.22	0.13	.20	0.13	.20	0.12	.18	0.19	$.28^{\dagger}$	0.22	.33*	0.18	.26*	0.21	.31*				
									(0.11)		(0.11)		(0.11)		(0.11)		(0.09)		(0.09)		(0.09)		(0.08)					
Optimization	0.29	.19	0.25	.17	0.27	.18	0.23	.16	NA	NA	NA	NA	NA	NA	NA	NA	0.18	.18	0.16	.16	0.20	.20	0.18	.18				
	(0.22)		(0.21)		(0.22)		(0.22)										(0.14)		(0.12)		(0.13)		(0.12)					
Compensation	0.47	.31†	0.63	.42*	0.52	.35*	0.68	.45*	0.22	.22	0.25	.25	0.28	.28	0.31	.31	NA	NA	NA	NA	NA	NA	NA	NA				
	(0.24)		(0.25)		(0.26)		(0.27)		(0.17)		(0.19)		(0.18)		(0.20)													
Subjective	-	-	0.97	$.28^{\dagger}$	-	-	0.97	$.28^{\dagger}$	-	-	0.14	.06	-	-	0.14	.06	-	-	-0.93	40**	-	-	-0.83	35**				
Health			(0.55)				(0.56)				(0.41)				(0.42)				(0.30)				(0.29)					

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Cognition	-	-	-	-	0.67 .09	0.66 .08			0.87 .17	0.87 .17			-1.89 - .36 *	-1.60 31 *
					(1.32)	(1.29)			(0.91)	(0.92)			(0.71)	(0.67)
adj R²	0.13		0.17		0.11	0.16	0.03	0.01	0.03	0.01	.22	.36	.32	.42
F test for change in R ²			3.09 [†]		0.26	3.03^{\dagger}		0.11	0.92	0.11		9.49**	7.06*	8.12**

Note: Numbers in bold indicate significant standardized estimated parameters $^{\dagger}p < .10 *p < .05. **p < .01.$ F test for change in adjusted R^2 for Models 2 and 3 represent comparisons with Model 1, whereas for Model 4 it represents comparison with Model 3. IIS: Initiative and Interest Scale, CESD: Center for Epidemiologic Studies Depression Scale. NA = not available (because that line refers to the same strategy as the outcome).

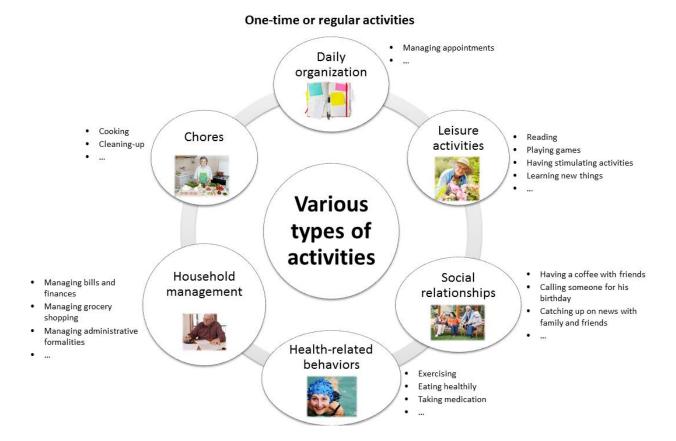
Supplementary Material

Appendix A: Interview Structure and Associated Visual Material Support (translated from French)

Opening Segment: Activities and personal goals

Thank you for agreeing to talk to me about your daily-life. On a day-to-day basis, we perform various activities; we have various goals or objectives to reach, whether they are small or big. Today, the aim of this interview is to understand how you manage to reach goals or objectives in your daily-life. We are going to discuss, among other things, about activities you perform without difficulties (or even without thinking about it), but also about activities that require more efforts. I'm going to ask you several questions, some will be very broad, others more specific. I want to understand what helps you, or on the contrary, hinders you in reaching your goals (we'll come back to this later). To this end, I invite you to respond with as much details and examples as possible.

Here is a first card [give the Activity card to the participant], it will help you understand what I mean when I talk about activities and goals/objectives. [Interviewer lists categories and reads the bullet points on the card].



This card displays an array of activities that we can do in our day-to-day lives.

Obviously, they may be other activities that are not listed here; these are just examples. We perform activities to reach a goal, and as you can see on the card, they can encompass widely varying things.

All these various activities are often interrelated (for instance, leisure activities are often linked with social relationships: e.g., having leisure with our friends or family), they can be punctual (a single event or task) or happen regularly (for instance, an activity every week at the same time). Some of these activities will be easily performed, whereas others can happen to be a lot more difficult, or require more efforts.

Do you have questions about what I just explained?

And now, to make sure I succeeded in explaining this well, can you please rephrase what I told you and explain what we are going to talk about? [if participants' explanations were not

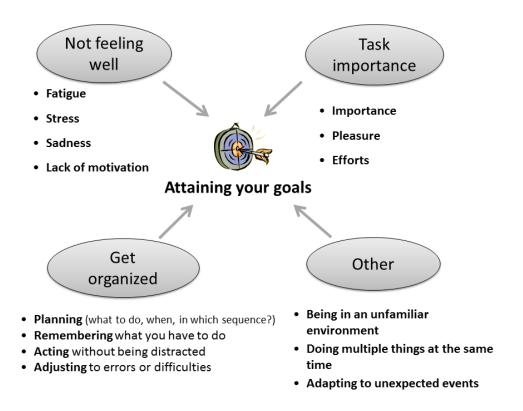
clear enough, or if he/she did not understand well, the interviewer repeated more slowly and with more examples until participant was able to rephrase correctly].

Questions asked to the participant:

- Based on what we previously discussed, which activities do you easily perform? On the contrary, are some activities more difficult? If so, which difficulties do you encounter?
- Lately, did you start new activities? How is that going?
- On the contrary, did you stop some activities lately? If so, why?

Middle segment: Personal and environmental aids, and barriers to goals achievement

Now comes the second card [give the aids and barriers card to the participant]. This card shows examples of things that can help us attaining our goals or, on the opposite, hinder us.



32

For instance, when we don't feel well (when we're tired, stressed, sad, or when we don't feel like doing anything), it can prevent us from reaching our goal. On the opposite, when the activity or task is important to us, or when we enjoy doing it, it will motivate us to make the efforts needed to reach the goal and not to give up along the way.

It can also be useful to get organized, because it will help us come up with a plan (deciding what we have to do, when and in which order) to reach our goal. We also have to remember what we have planned to do and when. Then, when it's time, we have to act (putting our plan into effect) without being distracted along the way. Often however, we don't reach the expected aim, even if we carefully followed our plan. In that case, we have to adapt to our errors or to some obstacles: we have to be flexible enough and change our strategy to reach our goal the best we can.

Other factors can have an impact too. For instance, when we are in an unfamiliar environment, when we lose our marks: when we are on holidays, we can often forget to do things that we normally do automatically (e.g., taking our medication). We can also have more difficulties to handle all of our activities when we have multiple things to do at the same time or when unexpected events disrupt activity completion. These are only examples of things that can interfere with or help us attain our goal.

Do you have questions? [The interviewer answered potential questions before asking the following questions].

Questions asked to the participant:

- Do you think that some of the elements I have just mentioned an impact on your everyday functioning?
- According to you, do some of these elements help you achieving your goals or performing an activity?
- On the contrary, are difficulties you encounter in your daily life emphasized when some of these elements are present or when you are in a particular context (e.g. feeling sad or stressed, having multiple things to do at the same time, etc.)?
- Do you usually use some tips or tricks to achieve your goals? For example, you could tie a knot to your handkerchief to remind you of something to do, you could write some key words on your hand, or write on a paper the steps you have to complete to achieve your goal, etc.
- Are there things we did not discuss but that you deem relevant, or would like to mention?

Closing segment: Well-being and its relations with goal-achievement

We are now moving toward the end of this interview. I would then like to turn to another topic [give the well-being card to the participant]. Usually, when we reach a goal, we are satisfied and pleased.

According to research in psychology, when we feel good, we tend to be happy, enthusiastic, proud, or even satisfied with our lives. In addition, being autonomous, feeling capable of doing things, experiencing personal growth, having good relationships with others, having purpose in life and accepting oneself as we are can also help us feeling good and satisfied with our lives. All these things [show the six domains from Autonomy to Self-Acceptance] are

supposed to help us reach our goals. In exchange, reaching our goals also helps us to feel more autonomous, more capable, and to grow, and so on. It appears to go both ways.

I would like to know what you think of that, and which links you see between your dailylife goals and what we call "well-being".



Do you have questions? [The interviewer answered potential questions before asking the following questions].

Questions asked to the participant:

- Do you feel that reaching your goals helps you feeling good or appreciating your life? Or are these two things unrelated for you?
- In your opinion, do some particular goals or activities have more influence on your well-being than others?

- How could difficulties you could encounter in performing daily-life activities/difficulties to achieve your goals have a negative impact on your well-being? Are there things that are more relevant than these negative experiences to you? Are there other elements that would make you feel good despite difficulties in reaching your goals? What do you do/think to get better when you feel sad/bad about yourself?

Important note: We developed the interview questions according to Galletta's guidelines (2013) and divided them into three main segments: (1) activities and personal goals, (2) personal and environmental aids, and barriers to goals achievement, and (3) well-being and its relations with goal-achievement. We designed the first few questions to elicit rather straightforward descriptions: activities, goals, difficulties, etc. Then, we designed questions to guide the participant into an introspective analysis of his/her functioning: which factors help them or hinder them, do they apply strategies or not? Did they change something in their behavior to adapt to age-related changes. Finally, we directed questions in the last segment toward a more philosophical, or reflexive analysis around well-being, meaning in life, etc. We then asked participants to relate their goals to their perceived well-being.

Moreover, because the interview was semi-structured and not structured, when relevant, the interviewer asked individualized additional questions through the interview to obtain more details, concrete examples, or complementary information. Examples of such probes would be: "So, you just told me that you enjoy having leisure with your friends, but that you stopped participating to some of these activities because it's getting hard to follow. What would be such activities? Do you recall a concrete situation in which it happened lately?", or even: "What did

you tell yourself in that situation? How did it make you feel? Have you tried some things before giving up on the activity?"

Appendix B: Final Themes and Corresponding Codes for General Qualitative Analysis

I. Specific goals that directly contribute to well-being and/or ill-being

- Social and familial relations (having good relationships; socializing and informal social and family relationships; assisting and taking care of others).
- Caring for one's health and maintaining autonomy (looking after one's health; health status; sports; health-related functional limitations; Focusing on autonomy).
- Leisure and cultural activities (active arts and culture; passive arts and culture; reading and playing games for fun).
- Volunteering and community life.
- Personal growth and skills acquisition (*personal education*; *personal development*; having goals in life).
- Anticipating and planning for one's or significant others' end-of-life.

II. General aspects of well-being and ill-being

- Satisfaction with one's life and self-acceptance (*long-term satisfaction; Self-acceptance*).
- Feeling confident in one's abilities and still feeling useful/helpful to others.
- Enjoying simple pleasures of life and living one day at a time.
- Attitudes concerning end of life.

III. Goal management strategies to maintain Well-being

- Reducing the number of goals with increasing age.
- Adjusting and reevaluating goals.
- Overcoming difficulties and stabilizing current functioning to provide a sense of continuity

Appendix C: Excerpts describing daily-life SOC strategies reported by some of our participants.

I. Selection:

Engaging in new goals

"I started taking saxophone classes last September, and in the meantime I also have music theory. And I also took the choir up. I wanted to try the choir, because of my throat problems, and I told myself that, maybe, I wouldn't be able to sing. This is the reason I chose the saxo, I said « if I can't sing, I'll play the saxo anyway, this way I'll still have something to do». And the choir works well! Sometimes it's a little bit demanding because you have to practice the saxo every day to learn, you have to do it everyday, but I'm pleased to do it, yes REALLY, I like it."

Goal-commitment

"I mean, with my wife, we take every little pleasure that we can find for ourselves, because we figure that. for now, we are both there... in full command of our faculties, at any time something could happen and so we have to live it up, you see. So, of course, we go on holidays, we take at least two one-week holidays; we go walking with the walking group.

Then, we go on holidays as a couple, we took a cruise not so long ago, well, we try to seize all the opportunities we can find..."

Prioritizing most important goals / Hierarchy of goals

"So, it's family first, and then all the rest, all the social relationships. [...] As a matter of fact, we like pampering the kids, why? Because we love it too, for sure. [...] We take pleasure – real pleasure – in playing a role in our children's and grandchildren's scholastic, professional and affective development. I have a funny example of that. Yesterday, I had a phone call from my 23 year-old grand-daughter, and she tells me « listen grandma, I'm really

bothered but I really have to drive a car to Spain for the family, because they need it, and blah, blah, would you come with me? ». And I had to cancel two activities from my calendar. I would have enjoyed these activities, but I canceled them to go with her [her grand-daughter's]. Because I thought it was more important. Yes, it was my priority. I did not want her to go alone."

Giving up or doing less activities that have become too demanding

"I was president of the seniors club for eleven years. I let go of the presidency last year. What led you to quit permanently? Because I deem that... I also have plenty of things to do on the side. There comes a point, when we age, we can't... It was a lot of responsibilities. Were you tired of doing that for so many years? No, not tired of it, but it's a bit tiring, it's difficult to manage. But I told them "Don't worry, I'm not letting you down, I'll be volunteer, I'll always do whatever I can for the club." But I don't want the presidency anymore, it's too burdensome, it's too many responsibilities."

Adapting goals to our means / Focusing on fewer, most important, goals

"I used to do a lot more before [10 seconds pause]. I also used to volunteer; I was part of an association "[name of her village] mutual aid." I stopped that. Now I tell myself that goals are especially for grandchildren, and children... For me, except having a life... Health, above all, is the priority, and staying in contact with friends and as much as possible; being autonomous not to depend on anyone."

"Goals in life, I've had plenty, I tried to, to succeed, and now I've adapted. We need to know – during the course of our life – to adapt our goals to our means. That means that we need... to have to tell ourselves "I can still do this, so I'll do it; that I can't anymore" so you move on to something else" and that's it, really. [...] That's the reason why it's good to have plenty different things that you like: looking at flowers, reading, watching TV [...] when you

have a lot of interests, if one disappears, you can still compensate with the others. [...] That's a harmonious whole. I like gardening, I like sports, I like cultural activities, I like reading and stuff, I mean, all the things I mentioned, it makes a whole that makes me feel good."

II. Optimization

Practice of skills and attentional focus

"I'm reading a book I'm passionate about, it's about the brain and how to work on our attention. And I can see that the attention is really helping me out in other domains. I mean for all the daily-life things. [...] I first had to work on attention, because I used to jump, the brain hops from one thing to another: you're focusing on something, and there's always something that comes bothering you. Then, focusing our attention, training the attention to focus on what I was doing. This training helped me getting better at it, and now I pay attention on a daily basis, so that I can redirect my attention, so that I can improve it. And I felt it even helped me for the [truck] driving license exam [that he recently passed]."

Time-allocation

"As the president of the parish council, I sometimes have to speak up, not giving a speech, but explaining things, and I don't really like it. But it has to be done, so I line my speech up rather... well, we could say well in advance. When I know I'll have things to say. Because public speaking is not my forte. It requires time, so I need to prepare my speeches, and I prepare them quite precisely. For my retirement I made a speech, and at the end, some of my colleagues told me « wow, you really have a thing for writing ». I told « yes, but I've taken some times to write it ». I don't know if I dare say, but these were ideas and formulations that took me two or three years. Well, if I would have had to shake myself up, I would have done that in a few days for sure, but I usually let it mature."

Acquisition of new skills and practice of skills

[Talking about cooking for friends over to have dinner] "If I plan, I know that someone is coming, I try, if possible, not to cook the same meal twice for that person.

Sometimes I have a problem with that. Because, first of all, I need to cook it for me first to know if it's good. So, suddenly, I end up with two apple pies [laughs]. If I invite someone over and I tell « I'm going to cook an apple pie » and I've never done it before. Can you cook that? You're better off trying first, to be sure it's a success. So yes, I plan and I really prefer to fine-tune everything."

III. Compensation

Taking more time to do things and modifying environment/using external aids:

[Talking about functional limitations due to her back issues] "I have to be organized. All the things that are too complicated. If it's something I can do in two steps, for example, if I have a stack of plates, when I empty my dishwasher, I put the first half, and then the second half. For that, you have to be organized, yes. I just have to. Alright, it's okay, I've got time. That's what I say « I've got time ». To go downstairs, for example, you can see that I had a handrail put because once I fall flat on my face. I said "This time I had it, I'm putting handrails". So I have a trick, I've got a small wicker basket, and when I have things to take downstairs, I put them in my basket and on the other side I hold myself. [...] And then, I'm telling you, we've got time. Otherwise it's too complicated. I do things into two steps, there you go."

[Talking about is principal hobby: carpentry work] "I've gotten slower, as I've had a heart problem. I have to manage it, while keeping a continuous motion, to keep life going on.
[...] I'd say that manual work doesn't scare me, but I avoid continuous efforts. I do it in steps."

"And inevitably, moving is more difficult, but in the house it's not really difficult. More time is needed for everything. For everything that I do, I need more time. To get dressed, like socks or shoes, I can't put my shoes on like this, standing anymore, or put on pants while standing, I CAN'T anymore. If I lean against a wall, I slide. So, I have to find a chair to sit down to."

"And in the summer, we grow vegetables in the garden. But I must say that growing old, it becomes... problematic because you have to bend over, and I've had back problems. I've had a herniated disk, so I have to be very careful. I can't garden for more than an hour, and I think that next spring we are going to try to do soil-less culture. We will do less, but hey..., because I still enjoy seeing things that grow."

<u>Increasing attentional focus and efforts:</u>

"For this, I have to tell myself "Watch out, focus!" But I mean, that's really about the car [driving]. Because there I can't afford to... At home, of course, I don't need as much focus. It's not a big deal, these are just small things, in case [I get distracted]. So it's true, let's say that if ever I don't put too much effort to focus. But well, for the car – yes. When I get in the car, for that, there are consequences! So, I REALLY have to be focused! Because, before, it's true, it was... [Searching for words... Interviewer suggests: "Automatic?"] Simply a pleasure. Yes, whereas no, now... I have to be focused."

Avoiding multitasking and planning more deliberately:

"To "do multiple things at the same time", there I have difficulties, that's true. That happens rarely. Even on the road, if I run my errands, I have my path to follow, I can't look on the side, even if I hear a noise! I'd like to know what it is, I have to stop, turn, and look. [...] I can't look on the side what's happening, because at that moment I'm no longer sure to walk alright and to keep my balance. [...] In any case, at the moment, I'd rather finish

something, knowing that it's done, and then afterwards begin something else. [...] If I have a hard time focusing, I do it in writing. I always have paper there, to write it down. That's true, I do it that quite often, or a phone number, when I have to call someone, I note it down, I write "tonight, I must call that someone or another" and I put the number right next to it, like that it's easy at the intended time, it's ready. Yes, I prepare it, I plan for it."

"Me, I am someone who, unfortunately, and I think it's even more so now, I do 36'000 things at a time. Before, it was never problematic, but now it is problematic. Well, for example, I put something on the stove, once I forgot, it never happened before, it's the first time. And then I start doing something in the kitchen, and, I don't know why, I'll go do something in the bedroom, and I tell myself "what the heck are you doing here? Finish your thing!" I'm like disorganized, [...]. No, that ain't right, so I tell myself "stop it". [...] Yeah, I mean, I've always been like that [...] I was SUPER organized, I used to do plenty of things and stuff, but now I can't do it anymore. If I do it, it totally disrupts me. As much before things went well, as much now it's terrible. [...] in general, I try to prepare everything so that precisely... I try to do everything well before, so that everything's ready."

Actively planning resting time to restore energy resources:

"What's hard for me now, it's to LIMIT [the number of social activities], because then, all of a sudden I can't anymore and I can't take it on. And then after, when it's like that, I sleep for almost 24 hours straight, that's what just happened to me this week-end, where I slept from 6pm on Saturday evening to 9:45 am on Sunday morning, it was... I had had so much, that at once, I unplugged like that. I really need.... That's it, to be let alone for... and then I can very well..., and I recover. IN GENERAL, I try one day during the week when I don't have something planned. Maybe it's Sunday – yesterday, it was Sunday – I TRY when I do my weekly schedule to keep maybe a day, where I don't have too many things, that's it."

"First, I'm going slower than before to do things, and then I do things during less time. I walk for a shorter time, I do groceries for a shorter time, I'm careful not to do too much.

Otherwise I end up all busted up. It's clear that I do less than before, that's for sure. I do them anyways, but over several days. [...] I don't remember when I canceled because I wasn't well [looks for an example but can't find one]. Still it's rare because I make sure that I'm well.

And, precisely, because I do few things at once, I manage to do them."

Substitution of means:

[talking about how she manages to continue traveling despite physical limitations, by changing the mode of transport] "Because we had done big journeys, but now, more than 3 hours in a plane is beyond my means because after that you have to stand up, and I can't move anymore. I need to move a little bit, because if I don't move, afterwards... [sights] I start off very badly, and it makes me suffer. So when I see that some people know me, that they see me get up, they say "There she goes, she's moving". But they know! So I take a little walk and then I come back. OK, now, bus trips are fine, because every two hours we stop. [...] Well there is only one thing that's good, it's the cruises, they're not tiring, that's good."

Asking for help from others:

"It's been a year for me, where I've declined a lot. I fell, and since then, I'm even scared, at the train station I say "Sir, would you cross [the road] with me?", I'm so afraid. [...] I mean, when I fell, I started not going out anymore, I was so scared. [...] So then, I started going out a bit with some neighbors, but it took me a while. For two weeks, I always asked a neighbor, a friend, and then now that' it, it's fine, I'm back on tracks. [...] yesterday I was scared, I was at Rive [a city neighborhood], at the street I can't remember anymore, there was no crosswalk. I said "I don't give a damn", there was some guy next to me, because there were cars, we couldn't even cross, me I am scared now. He told me "Are you flirting?" I laughed. « Ah no, I'm not flirting, it's just to cross!"