

BRIEF REPORTS

Aging and Social Satisfaction: Offsetting Positive and Negative Effects

William von Hippel
University of Queensland

Julie D. Henry and Diana Matovic
University of New South Wales

Social satisfaction in late adulthood originates from competing sources. Older adults tend to be more positive and less negative than younger adults, but social contact and working memory often decrease with age, both of which might limit older adults' social functioning. In the current study of younger and older adults, these socially facilitative vs. socially debilitating changes were found to underlie stasis in social satisfaction. These findings show that the lack of an overall effect for age can mask competing changes in social functioning in late adulthood, as the sources of social satisfaction might change even if the outcome does not.

Keywords: social satisfaction, social activities, working memory, hassles, uplifts

Social satisfaction in late adulthood originates from competing sources. On the one hand, life experiences and the wisdom that accompanies them can lead to more harmonious social relationships. Thus, socioemotional models of aging propose that social functioning in late adulthood does not follow the same course of decline as cognitive and biological aging (Antonucci, 2001; Charles & Carstensen, 2007). Evidence also suggests that older adults are biased toward positive information (Carstensen & Mikels, 2005; Gross et al., 1997; but see Grünh, Smith, & Baltes, 2005). This bias might reflect motivational shifts driven by time perspective that lead to prioritization of emotion-related goals (Charles & Carstensen, 2007). This bias might also be a mechanism that explains older adults' generally more positive approach to conflict resolution (Blanchard-Fields, 2007; Carstensen, Gottman, & Levenson, 1995) as well as their reports of fewer undesirable daily events (Almeida & Horn, 2004) and less interpersonal tension (Birditt, Fingerhman, & Almeida, 2005).

Competing with these facilitative effects, however, are other changes in late adulthood that are likely to have a detrimental impact on social functioning and on consequent social satisfaction. First and foremost, although older adults appear to intentionally cull their peripheral social partners to focus on closer and more meaningful relationships (Charles & Carstensen, 2007; Lansford, Sherman, & Antonucci, 1998), they also suffer unintended social losses brought about by poor health, retirement, mobility constraints, widowhood, and so on, that can lead to reduced social satisfaction (Jang, Mortimer, Haley, & Borenstein Graves, 2004; Pinquart & Sörensen, 2001; van Tilburg, 1998). Thus, although intentional reductions in social network size are theorized not to

cause decreased social satisfaction, unintended reductions in social contact have the potential to do so.

Compounding the effects of reduced social contact, cognitive losses associated with normal adult aging might also affect older adults' social functioning by limiting their ability to negotiate complex social relationships. Indeed, social reasoning skills impose substantial demands on various aspects of cognitive functioning, such as mental flexibility and inhibitory control (German & Hehman, 2006), and there is considerable evidence that links cognitive decline to reduced social functioning in older adulthood. For example, cognitive deficits have been linked to socially insensitive behaviors in the context of normal adult aging, such as increased difficulty in taking another's perspective (Bailey & Henry, in press), off-target and verbose speech (Pushkar et al., 2000), and prejudicial and other socially inappropriate comments (von Hippel & Dunlop, 2005; von Hippel, Silver, & Lynch, 2000).

Whether older adults show increased or decreased social satisfaction, or if indeed they show any change at all, depends on the relative magnitude of these socially facilitating versus socially debilitating changes. This lack of reliable change might mask important and competing changes in social functioning in late adulthood, as the sources of social satisfaction might change even if the outcome does not (cf. Kunzmann, Little, & Smith, 2000). The goal of this article is to test this possibility.

In service of this goal, we examined several social and cognitive factors that might account for competing changes in social satisfaction in later life. To assess social factors that might impact social satisfaction, we asked older and younger adults to indicate how much time they spend alone and how frequently they engage in various social activities. To assess cognitive factors that might impact social satisfaction, we asked older and younger adults to complete measures of working memory and inhibitory control. Based on previous research, we expected older adults to spend more time alone, to engage in fewer social activities, and to have decreased working memory capacity, and we expected these age differences to have a negative impact on social satisfaction. We also expected older adults to show increased cognitive disinhibition compared to younger adults, but it was unclear whether this

William von Hippel, School of Psychology, University of Queensland, St. Lucia, Australia; Julie D. Henry and Diana Matovic, School of Psychology, University of New South Wales, Sydney, Australia.

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Correspondence concerning this article should be addressed to William von Hippel, School of Psychology, University of Queensland, St Lucia QLD 4072, Australia. E-mail: billvh@psy.uq.edu.au

effect would impact social satisfaction. On one hand, poorer cognitive inhibition can be associated with social disinhibition (see Pushkar et al., 2000; von Hippel & Dunlop, 2005; von Hippel & Gonsalkorale, 2005; von Hippel et al., 2000) and thus might predict reduced social satisfaction if social disinhibition is causing relationship problems for older adults. On the other hand, inhibitory control is unlikely to play as broad a role in social functioning as does working memory (see Feldman Barrett, Tugade, & Engle, 2004) and by itself may not be a significant predictor of social satisfaction.

On the basis of the age-related positivity effect (Carstensen & Mikels, 2005), however, we expected older adults to experience their social events as more positive and less negative than younger adults. As a consequence, once the suppressing effects of time alone, reduced social activity levels, and reduced working memory were controlled, we expected this increased positivity to lead older adults to experience greater social satisfaction than younger adults. Thus, we expected older adults who did not spend a great deal of time alone, who maintained high social activity levels, and who retained good working memory to experience greater social satisfaction than younger adults. Furthermore, if increased emphasis on the positive (or decreased emphasis on the negative; Grühn et al., 2005) leads to enhanced social satisfaction, then older adults should experience more uplifts and fewer hassles from their daily activities and relationships than should younger adults. This effect, in turn, should mediate the increased residual social satisfaction that emerges with age after controlling for time alone, decreased social activity levels, and reduced working memory.

Method

Participants

Thirty-eight younger adults aged 18–30 years ($M = 23.8$, $SD = 3.2$; 26 female) and 40 older adults aged 66–91 years ($M = 74.4$, $SD = 7.5$; 25 female) participated in this study. Participants were paid \$20 Australian (~US\$16). Older and younger adults had similar levels of education, with average responses from both groups that ranged between *some university study* and *completed university degree*, $\chi^2(7, N = 78) = 7.23$, $p > .40$. Participants were community-dwelling, and older and younger adults were recruited in a similar manner from social clubs, apartment complexes, and churches in the Sydney metropolitan area. All older adults had normal mental status as indexed by the Mini-Mental State Exam (MMSE; range = 27–30, $M = 29.40$, $SD = 0.87$; Folstein, Folstein, & McHugh, 1975).

Procedure

Participants first completed a brief demographic form on which they indicated their age, gender, and education level, and then they completed several measures unrelated to the current research. Next, because measures of working memory can be fatiguing and sometimes disheartening for older participants and thus these measures have the potential to influence subsequent measures, participants completed either a working memory measure followed by a Hassles and Uplifts Scale (DeLongis, Folkman, & Lazarus, 1988) followed by a Stroop test or a Stroop test followed by a Hassles and Uplifts Scale followed by a working memory measure.

The working memory measure was adopted from Daneman and Carpenter (1980). The measure required participants to read a

series of sentences aloud and then to recall the last word of each sentence. Participants began by reading three sets of two sentences each, followed by three sets of three sentences, and they worked their way up to three sets of five sentences. Working memory was scored as the total number of final words that participants recalled, summed across the series of different lengths. A shortened form of the Hassles and Uplifts Scale was used to assess the degree to which daily experiences and relationships were experienced as hassles and uplifts. Participants rated a series of 43 items (e.g., family-related obligations, friends, and recreation) on the degree to which the items were experienced as hassles and uplifts over the last week, with responses to both questions provided on 4-point scales ranging from *not at all* (0) to *a great deal* (3). Participants were also given the option to indicate that an item was not applicable. For the Stroop test, participants first named aloud the ink colors of 42 color blocks and then named aloud the ink colors of 42 color words whose letters were printed in a color inconsistent with most of the word meanings (e.g., *red* printed in green ink). The reading times for the page of 42 color blocks and the page of 42 color words were measured with a stopwatch, and Stroop Color–Word Interference scores were computed as the difference in time taken to read color words and color blocks divided by the time taken to read color blocks.

Next, participants were asked to indicate how many hours each day they spend alone. They then completed a slightly modified version of the Prosocial subscale of the Social Functioning Scale (SFS–P; Birchwood, Smith, Cochrane, Wetton, & Copstake, 1990). The standard version of this measure assesses level of participation in 22 different social activities (e.g., being visited by/visiting relatives, eating out), but in the present study a 23rd activity (volunteering) was added, as this was considered to be a social activity in which older adults were particularly likely to be engaged. Participants were asked to provide an estimate of the frequency with which they had engaged in each activity in the last month. The SFS–P assesses involvement in activities that one generally does in the company of others (e.g., being visited by or visiting relatives, eating out), as opposed to activities one may be more likely to do alone (e.g., reading, gardening, or knitting). Responses to the 23 items were averaged to form a total score, with higher scores indicative of more active social functioning—the range in the current sample was 0.23 to 12.52. After participants completed the SFS–P, they responded to the single item “How satisfied are you with your social life?” on a scale that ranged from 0 (*very dissatisfied*) to 10 (*very satisfied*).

Results

The first step in the analyses was to examine age differences in the primary measures to assess whether the expected age differences emerged. Consistent with prior research, a significant multivariate analysis of variance, $F(5, 70) = 15.72$, $p < .001$, followed up by univariate analyses of variance revealed that older adults spent more hours per day alone ($M = 7.04$, $SD = 4.55$) than did younger adults ($M = 3.36$, $SD = 2.30$), $F(1, 75) = 19.95$, $MSE = 13.09$, $p < .001$. The scores of older adults on the SFS–P, $\alpha = .78$, indicated that they engaged in fewer social activities during the prior month ($M = 1.99$, $SD = 1.42$) than did younger adults ($M = 4.04$, $SD = 2.46$), $F(1, 76) = 20.50$, $MSE = 3.99$, $p < .001$. Older adults showed greater Stroop interference ($M = 1.17$, $SD = 0.45$) than did younger adults ($M = 0.82$, $SD = 0.30$), $F(1, 75) = 15.53$,

Table 1
Correlations Between Demographic Variables and Indices of Psychosocial Functioning

Variable	1	2	3	4	5	6	7	8	9	10	11
1. Age	—										
2. Time alone	.43***	—									
3. SFS-P	-.43***	-.39***	—								
4. Working memory	-.49***	-.28*	.05	—							
5. Stroop	.47***	.19	-.09	-.43***	—						
6. Uplifts	.10	.07	.41***	-.16	.00	—					
7. Hassles	-.42***	-.25*	.33**	.23*	-.26*	.17	—				
8. MMSE (<i>n</i> = 40)	-.20	-.19	-.01	.55***	-.02	-.26	.23	—			
9. Gender	-.12	-.02	-.03	.03	-.16	.07	.10	.13	—		
10. Education	.15	.00	.05	.17	-.14	.05	.08	.09	-.14	—	
11. Social satisfaction	.06	-.28*	.26*	.11	-.01	.40***	.09	.15	.30**	-.01	—

Note. Correlations of gender and education were calculated with Spearman's rho. All other correlations were calculated with Pearson's *r*. SFS-P = Social Functioning Scale—Prosocial; Stroop = Stroop Color-Word Interference Test; MMSE = Mini-Mental State Exam.

* $p < .05$. ** $p < .01$. *** $p < .001$.

$MSE = 0.15$, $p < .001$, and older adults recalled fewer of the words on the working memory task ($M = 27.96$, $SD = 6.53$) than did younger adults ($M = 33.32$, $SD = 4.19$), $F(1, 76) = 18.39$, $MSE = 30.42$, $p < .001$. Despite these age-related deficits, older adults showed high levels of social satisfaction ($M = 7.85$, $SD = 1.99$) that were comparable to those of younger adults, ($M = 7.78$, $SD = 1.98$), $F(1, 76) = 0.02$, $MSE = 3.93$, $p > .85$.

The Hassles and Uplifts Scale was then examined to see if younger and older adults responded to the same items with the same frequencies. This analysis revealed that some of the items were differentially likely to be chosen as not applicable by older or younger adults (e.g., items that referred to children were not applicable to most younger adults, whereas items that referred to parents were not applicable to most older adults). To ensure that the analyses were not unduly influenced by age differences in the likelihood of a participant's responses to particular items, we created subscales that included only the 23 items that older and younger adults were equally—and greater than 75%—likely to respond to the item, $\alpha = .70$ for hassles, $\alpha = .82$ for uplifts. Analyses of these subscales revealed that older adults reported fewer hassles ($M = 0.55$, $SD = 0.38$) than did younger adults ($M = 0.88$, $SD = 0.41$), $F(1, 76) = 13.63$, $MSE = 0.16$, $p < .001$; but older adults reported no differences in uplifts ($M = 1.54$, $SD = 0.43$) compared to younger adults ($M = 1.46$, $SD = 0.49$), $F(1, 76) = 0.64$, $MSE = 0.21$, $p > .40$. It should be noted that analyses of the remaining 20 items for which there were differential responses by age group revealed that older adults again reported fewer hassles, ($M = 0.29$, $SD = 0.33$), than did younger adults ($M = 0.92$, $SD = 0.51$), $F(1, 76) = 42.21$, $MSE = 0.18$, $p < .001$, and in this case greater uplifts, ($M = 1.70$, $SD = 0.56$) than younger adults ($M = 1.24$, $SD = 0.53$), $F(1, 76) = 14.25$, $MSE = 0.30$, $p < .001$.

The analyses thus far had suggested that older adults were neither more nor less satisfied with their social relationships than were younger adults, but as noted above, the absence of an age effect might mask underlying competing effects. That is, a suppression effect might have emerged whereby age led to positive effects on social satisfaction via one mechanism and to negative effects on social satisfaction via a different mechanism. To test this possibility, we estimated a regression-based causal model following the procedures outlined in Baron and Kenny (1986). The

correlation coefficients for all of the variables in the model, and also for education and MMSE, are presented in Table 1.

In the first step of the regression analysis, social satisfaction was regressed on age and gender (with male coded as 0 and female coded as 1) because social satisfaction correlated with gender (see Table 1).¹ As shown in Figure 1, and consistent with the analysis of variance results presented above, age had no direct effect on social satisfaction. In the second step of the analysis, social satisfaction was regressed on age, time spent alone, social activity levels, working memory, and Stroop performance. After controlling for these four factors, age exerted a substantial and positive direct effect on social satisfaction (see Figure 1). In the third step of the analysis, self-reported hassles and uplifts were included as additional mediators between age and social satisfaction (i.e., social satisfaction was regressed on age, time spent alone, social activity levels, working memory, Stroop performance, and self-reported hassles and uplifts). This analysis revealed that self-reported uplifts but not hassles partially mediated the residual effect of age on social satisfaction. In the final step of the analysis, social activity levels were included as a mediator between age and self-reported hassles and uplifts (i.e., hassles and uplifts were regressed on age and social activity levels). This analysis revealed the presence of an additional suppression effect, whereby the direct effect of age on self-reported uplifts was not significant until social activity levels were included in the analysis. Thus, it seems that decreased social activity levels with age also accounted for the fact that no age differences emerged in self-reported uplifts. Older adults who did not experience reduced social activity levels reported more uplifts than younger adults (see Figure 1).

To determine whether these mediational pathways were significant, we computed indirect effects from unstandardized regression weights with 10,000 bootstrap resamples to obtain accurate confidence limits by following the syntax provided by Preacher and Hayes (2007). Three sets of indirect effects and associated confidence intervals were computed in analyses that controlled for the effect of gender on social satisfaction. First, analyses revealed that increased time alone, decreased social activity levels, and de-

¹ The results are essentially unchanged when gender is not included in the analyses.

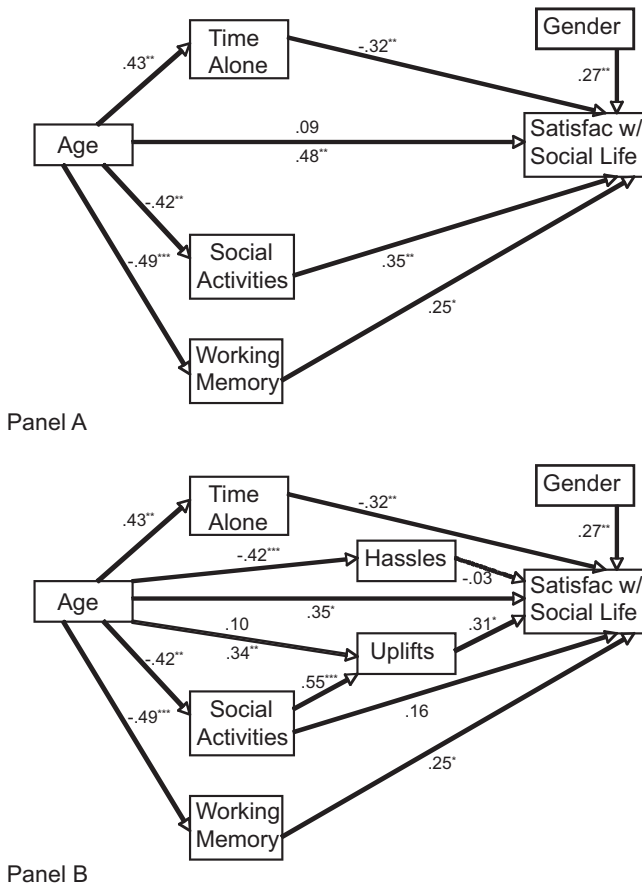


Figure 1. Mediation models of the effect of age on time spent alone, social activity levels, working memory, hassles, uplifts, and social satisfaction are depicted. Path coefficients are standardized beta weights. In Panel A, two direct effects of age on social satisfaction are included in the model. The coefficient above the path is from a model that did not include any mediators. The coefficient below the path is from a model that included time spent alone, social activity levels, working memory, and Stroop performance as mediators. Stroop performance is not depicted because it was not a significant mediator. In Panel B, two direct effects are included in the model for the impact of age on uplifts. The coefficient above the path is from a model that did not include social activity levels as a mediator. The coefficient below the path is from a model that included social activity as a mediator. The nonsignificant path from social activity levels to hassles is not depicted for the sake of expositional clarity. Satisfac w/ = satisfaction with. * $p < .05$. ** $p < .01$. *** $p < .001$.

creased working memory all significantly mediated the negative effect of aging on social satisfaction (indirect effect via time alone = $-.008$, $SE = .004$, $95\% CI = -.018, -.001$; indirect effect via social activity levels = $-.011$, $SE = .004$, $95\% CI = -.022, -.004$; indirect effect via working memory = $-.009$, $SE = .005$, $95\% CI = -.022, -.001$). Consistent with the lack of a relationship between the Stroop and social satisfaction, Stroop performance was not a significant mediator in this analysis (indirect effect = $-.001$, $SE = .004$, $95\% CI = -.009, .008$). Second, analyses revealed that when self-reported uplifts and hassles were added to the model, uplifts significantly mediated the residual positive effect of aging on social satisfaction (indirect effect = $.010$, $SE = .006$, $95\% CI = .001, .023$), but hassles did not

(indirect effect = $.000$, $SE = .002$, $95\% CI = -.003, .006$). Third, analyses revealed that uplifts also significantly mediated the positive effect of social activity levels on social satisfaction (indirect effect = $.117$, $SE = .060$, $95\% CI = .016, .251$). Finally, when these mediational analyses were conducted with the full Hassles and Uplifts Scale or with only those items in the Hassles and Uplifts Scale that were explicitly social in nature, the results were equivalent to those depicted in Figure 1.

Discussion

The results of this study provide a picture of aging in which social costs are offset by social gains. A community-based sample of older adults showed neither greater nor lesser social satisfaction than a community-based sample of younger adults. Additionally, older adults in this sample reported neither greater nor fewer uplifts from the experiences that they had in common with younger adults. Yet this apparent stability in social experience masked underlying counter-currents whereby age-related losses suppressed the effect of age-related gains. On the loss ledger, older adults spent more time alone, engaged in fewer social activities, and had poorer working memory than did younger adults. All three of these factors played a mediating role in decreased social satisfaction among older adults. When these factors were included in the model, aging was associated with residual increases in social satisfaction and self-reported uplifts. Furthermore, the residual increase in social satisfaction was itself partially mediated by the residual increase in uplifts. That is, once age-related decreases in social activity levels were controlled, older adults reported greater social satisfaction than did younger adults, which was partially accounted for by the degree to which older adults also reported increased uplifts.

Results also revealed that older adults considered their daily activities to be less of a hassle than did younger adults. This age effect on self-reported hassles appears to be of lesser importance than the effect on uplifts, however, as uplifts and not hassles played a mediating role in increased residual social satisfaction among older adults. Thus, it seems to be the case that increased positivity but not decreased negativity played a role in maintaining social satisfaction in late adulthood. The fact that age had a significant residual effect on social satisfaction after self-reported hassles and uplifts had been accounted for, however, suggests that other age-related changes also lead to increased social satisfaction. One possibility is that other aspects of increased positivity and decreased negativity are important determinants of increased social satisfaction with age, as it is highly unlikely that hassles and uplifts capture the full experience of increased positivity and decreased negativity with age. Additionally, a variety of other factors might be at play in the residual increase in social satisfaction that emerges in late adulthood. For example, increased social satisfaction might derive from changes in anger management strategies (Phillips, Henry, Hosie, & Milne, 2006, in press) or perhaps from older adults' tendency to make increased use of reappraisal to regulate their emotions (Gross et al., 1997; John & Gross, 2004). Future research might attempt to gain a more complete picture of how all of these factors contribute simultaneously to change and stability in social satisfaction across the lifespan.

The fact that the current study is cross-sectional and reliant on self-report limits the causal conclusions that can be drawn. Clearly, longitudinal work with a larger sample and multiple behavioral or physiological indicators would represent an important supplement

to the current findings. Additionally, it should be noted that the order of the questions might have increased the impact of time spent alone and social activity levels on social satisfaction. That is, because these items were assessed directly before social satisfaction was measured, their momentary accessibility might have increased their impact on this overall judgment (Strack, Martin, & Schwarz, 1988). Although future research should counterbalance these questions to ensure that time spent alone and social activity levels predict social satisfaction independent of question order, it should be noted that prior research has found that time spent alone and social activity levels are related to various indices of well-being that include social and life satisfaction (Hawkey et al., 2008; Iecovich et al., 2004; Piquart & Sörensen, 2001, 2003; Routasalo, Savikko, Tilvis, Strandberg, & Pitkälä, 2006).

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