

Which Social Needs Are Important for Subjective Well-Being? What Happens to Them With Aging?

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In this study the authors investigated how satisfaction levels of affection, behavioral confirmation, and status, as three human social needs, relate to age, physical loss, and subjective well-being. Results ($N = 883$, aged 65 to 98 years) revealed that (a) affection was relatively high and status was relatively low in all age and loss groups; behavioral confirmation showed negative age and loss effects but was better predicted by loss; (b) the three needs relate differentially to indicators of subjective well-being: affection and behavioral confirmation relate positively to life satisfaction; status and behavioral confirmation relate positively to positive affect and negatively to negative affect. It is concluded that the need for behavioral confirmation is more difficult to satisfy with high physical loss, but none of the three social needs becomes less important with advancing age.

Keywords: social relationships, social needs, subjective well-being, social production function theory

A substantial body of research exists on the protective influence of social relationships on physical health and survival (Avlund, Lund, Holstein, & Due, 2004; Cohen, 2004; House, Landis, & Umberson, 1988; Maier & Klumb, 2005; Seeman, 1996, 2000), as well as on psychological well-being and mental health (Berscheid & Reis, 1998; Myers, 1999; Ryff, 1995). Older persons rate social relationships among the most important determinants of successful aging (Von Faber et al., 2001). However, much evidence indicates that social relationships change as people age. Although it has not been consistently found that the size of the personal network decreases with age (Broese van Groenou & Van Tilburg, 1996), it is often found that the composition of the network changes and that the frequency of contact decreases with aging (Carstensen, 1992; Van Tilburg, 1998). Do these age-related changes in social relationships influence the well-being of older persons?

So far, research points in directions that are possibly contradictory. It has been argued that older people, facing a shortening time horizon, prioritize goals that are *emotionally* meaningful and, in support of this argument, it has been shown that the networks of older people do, indeed, concentrate on emotionally close social

partners (Carstensen, 1992). However, ample empirical evidence also shows that older people who remain socially active—in social and community service (Harlow & Cantor, 1996), as well as in voluntary and productive social activities (Glass, Mendes de Leon, Marottoli, & Berkman, 1999; Young & Glasgow, 1998), or who have multiple social roles (Adelmann, 1994)—have high levels of both physical and psychological well-being. This poses a puzzle. On the one hand, it seems that as people grow older, their social needs change and become more focused on affection (i.e., close relationships). On the other hand, it seems that people's social needs remain varied and focused on multiple social relationships and activities, although they may become more difficult to satisfy.

We believe that a key to the puzzle is to take a closer look at the functions of social relationships in terms of social need fulfillment and well-being. The objective of this paper is twofold. First, we investigate whether and to what extent levels of social need satisfaction are related to age and to physical losses. Second, we investigate to what extent levels of social need satisfaction are associated with different indicators of subjective well-being. The empirical study will be guided by an approach that focuses on (social) needs and well-being, as well as on the resources and opportunities to satisfy these needs across the life span. In the following, the theory and hypotheses will first be explained, after which the empirical testing of the hypotheses will be described. Two closely related theories will be used: the theory of social production functions (SPF) (Lindenberg, 1996, 2001; Ormel, 2002; Ormel, Lindenberg, Steverink, & Verbrugge, 1999) and the SPF-successful aging theory (SPF-SA) (Steverink, Lindenberg, & Ormel, 1998; Steverink, Lindenberg, & Slaets, 2005). Finally, we will introduce different indicators of subjective well-being that will be used as outcomes for empirical testing.

Theory and Hypotheses

SPF Theory

SPF theory basically integrates two theories: a theory of needs, goals, and resources, and a theory of behavior. The theory of

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needs, goals, and resources consists of a hierarchy of universal needs, instrumental goals and resources. *Needs* in this theory refer to a restricted set of basic physical and social needs that must be at least minimally fulfilled for a person to experience overall well-being. Needs can be satisfied to various degrees. The better the needs are fulfilled, the higher the individual's overall well-being. Needs in this approach are by definition inherent, universal, and relevant to people of all ages, and in this theory they are conceptually distinguished from goals and resources. Goals and resources have a lower place in the hierarchy: The needs are on top, and goals and resources—lower in the hierarchy—are the instruments by which these needs can be fulfilled. For example, a close relationship is a means (lower in the hierarchy) to fulfill the need for affection (higher in the hierarchy). A close relationship is thus a resource; however, when it has not yet been realized, it can also be a goal. Goals and resources are thus considered as two sides of the same coin. In addition to two basic physical needs (*comfort* [i.e., averting noxious stimuli such as hunger and thirst] and *stimulation* [i.e., averting lack of activation]), the theory identifies three basic social needs: *affection*, *behavioral confirmation*, and *status*. In this paper, we will concentrate on the three social needs. The central premise is that overall well-being will increase as more affection, behavioral confirmation, and status is achieved. The assumption that these three social needs are basic has received considerable support from empirical studies, and confirmative evidence from evolutionary perspectives indicates that humans, in general, are not only biologically hardwired to aspire and appreciate close connections to others but also to have their membership confirmed and to strive for status within the group. (For reviews see Baumeister & Leary, 1995; Buss & Kenrick, 1998; and Reis, Collins, & Berscheid, 2000.) Van Bruggen (2001) explored the social needs of people, as proposed by the SPF theory, in an extensive qualitative study and found strong evidence for the three social needs. Nieboer, Lindenberg, Boomsma, & Van Bruggen (2005), in their study of a large representative sample of the Dutch population, also endorsed these needs in a confirmatory factor analysis. The following definitions of the three social needs are based on these studies.

The first need, *affection*, is fulfilled by relationships that give you the feeling that you are liked, loved, trusted and accepted, understood, empathized with, know that your feelings are reciprocated, feel that others are willing to help without expecting something in return, feel that your well-being is intertwined with others, and feel that others like to be either emotionally or physically close to you (e.g., to hug). Affection thus refers to the love you get for being who you are, regardless of your assets (status) or actions (behavioral confirmation). The second need, *behavioral confirmation*, is fulfilled by relationships that give you the feeling of doing the "right" thing in the eyes of *relevant* others and yourself; it includes doing good things, doing things well, being a good person, being useful, contributing to a common goal, and being part of a functional group. Behavioral confirmation thus results primarily from what you do, rather than what kind of person you are (affection) or what you have or can do (status). The third need, *status*, is fulfilled by relationships that give you the feeling that you are being treated with respect, are being taken seriously, are independent or autonomous, achieve more than others, have influence, realize yourself, and are known for your achievements, skills, or assets.

The physical and social needs of SPF theory overlap with, for example, Maslow's hierarchy of needs (Maslow, 1970), but important differences also exist. (For a detailed discussion, see Lindenberg, 1996.) The main difference concerns the possibility of substitution and compensation in the fulfillment of different needs. In SPF theory, contrary to Maslow's hierarchy of needs, individuals require only a certain minimum satisfaction of both physical and social needs. Beyond this minimum, substitution is possible and likely whenever the satisfaction of one need becomes more difficult than that of another need. Thus it is possible that people are willing to sacrifice physical need satisfaction for an improvement in social need satisfaction. For example, youths are often willing to undergo physically painful initiation rites to be accepted by the group. The crucial processes of substitution and compensation are founded in the second SPF subtheory, the behavioral theory.

The behavioral theory in SPF theory states that, in general, people are inclined to maintain and improve levels of need satisfaction. They try to do this by achieving and maintaining resources that contribute to the satisfaction of the basic needs. Because of this natural tendency, people will try to substitute or compensate decreasing satisfaction of one need by an increased effort to satisfy the other social needs. Conversely, when the satisfaction of one need becomes relatively easier than that of the others, people will put relatively more effort into the satisfaction of this need. For example, the birth of a child offers new opportunities for affection and will thus be likely to draw effort away from the satisfaction of the needs for status and behavioral confirmation. Such a shift may also be driven by a relative increase in the difficulty of satisfying one need rather than the others. For example, when the need for status becomes more difficult to satisfy, people will try to maintain overall need satisfaction by concentrating more on satisfying the other two social needs (i.e., behavioral confirmation, affection). As Nieboer and Lindenberg (2002) have shown empirically, people with low status satisfaction do, indeed, use their resources for the satisfaction of affection and behavioral confirmation more than people with high status satisfaction do. Still, the compensation of the satisfaction of one social need by that of another is limited by the fact that a certain minimal level of satisfaction of all three social needs is necessary for healthy functioning and well-being. For this reason people may also give up some need satisfaction to reduce a deficit in the satisfaction of another need (e.g., the attorney who quits his or her job and stays home to raise a child gives up some status satisfaction but gains in the satisfaction of affection).

SPF-Successful Aging Theory

The SPF-SA theory (Steverink et al., 1998), which is an extension of SPF theory, explicates the age-related changes in the availability of resources for need satisfaction and thus the possibilities to satisfy needs and realize well-being (i.e., *success* in successful aging). This theory differs from other core theories about successful aging (Baltes & Baltes, 1990; Heckhausen & Schulz, 1995), because it explicates not only the behavioral processes of adaptation (e.g., selection, compensation) but also the basic needs and age-related changes in resources that guide the behavioral processes. (For a detailed discussion of some core theories and the SPF-SA theory, see Steverink et al., 1998.) The

basic tenet of the SPF-SA theory is that, although the basic human needs remain the same across the life span, their relative salience and the opportunities and resources that are available for fulfilling them will change. Important resources include physical resources (e.g., energy, health, mobility) and social resources and opportunities. For instance, fulfillment of the need for status often depends on having a paying job or being recognized for having specific assets or skills, such as being a top athlete or famous singer. At high ages, it often becomes relatively more difficult to fulfill this need, not only because of retirement but also because of age-related physical declines that may undermine specific skills. To a lesser degree, the same holds for fulfillment of the need for behavioral confirmation. Behavioral confirmation also requires physical and social resources that may show age-related declines, but by and large, opportunities to fulfill this need decline more slowly with aging than the need for status. For example, it can be fulfilled through voluntary work or by helping others. Affection, finally, is relatively *age-proof*, in the sense that it depends much less on performance than the other two social needs so that, even when physical and social resources decline considerably, a person may still be able to fulfill the need for affection.

The SPF-SA theory thus postulates two main processes. First, a *patterned change* occurs in the availability of resources for the satisfaction of the three social needs over the life span, with status need satisfaction as the most difficult to maintain, affection relatively the easiest to maintain, and behavioral confirmation somewhere in between. Empirical research has supported this patterned change hypothesis: older people indeed seem to lose their resources for social needs satisfaction over time in a specific order: first their resources for status, then for behavioral confirmation, and last (or not at all) their resources for affection (Steverink, 2001).

The second main process postulated by the SPF-SA theory is a specific process of substitution and compensation regarding the three social needs satisfactions over the life span (Steverink et al., 1998). Loss of status satisfaction will (at least partially) be compensated by increased effort to satisfy the needs for behavioral confirmation and affection, and loss of behavioral confirmation will (at least partially) be compensated by increased effort to realize affection. As a consequence, the relative decreases in need satisfaction will be different for the three needs among older people: the decrease in status will be the fastest, in affection it will be the slowest, and in behavioral confirmation it will be somewhere in between.

Based on these arguments, a first set of hypotheses (H) can be formulated. First, in the overall group of people aged 65 and over (65 being an average age at which age-related losses in resources begin to accelerate, as well as the age at which people in The Netherlands retire from work) the need satisfaction levels for status will be lower than for behavioral confirmation, and the need satisfaction levels for behavioral confirmation will be lower than for affection (H1). Second, it is expected that for all three social needs the levels of satisfaction will be lower in older age groups than in younger age groups, with affection showing the smallest difference between younger and older age groups, status the largest difference, and behavioral confirmation in between (H2). Third, an important part of the mechanism underlying the patterned change is the decline in physical resources and the differential dependency

of the three needs on resources. Therefore we hypothesize that the patterned differences in satisfaction of the three social needs will also be found when comparing groups on the basis of amount of loss in physical resources (H3a). Moreover, because loss of physical resources is assumed to be a direct cause for a decrease in the level of need satisfaction with regard to status and behavioral confirmation (whereas age is a proxy for decline in resources), it is expected that loss-related differences in social needs are greater than age-related differences in these needs (H3b).

The second set of hypotheses concerns the relationships between social needs, subjective well-being, and age. First, with regard to subjective well-being, a distinction between cognitive and affective components is often made (Diener, Suh, Lucas, & Smith, 1999). Life satisfaction is seen as the result of a cognitive evaluation of one's life as a whole; affect is considered as the presence of positive mood and the absence of negative mood (Diener et al., 1999). For this reason, we consider here one cognitive indicator (i.e., life satisfaction) and two affective indicators (i.e., positive and negative affect). On the basis of existing literature, expectations with regard to the different effects of the satisfaction level of the three social needs for the cognitive and the affective components of subjective well-being can be formulated. Affect is mainly influenced by events that are important to an individual's needs or goals (Frijda, 1988). Such events can thus be expected to have greater effects for needs that are less satiated because, at that moment, they offer more intense need satisfaction. Nieboer and Lindenberg (2002) showed empirically that once individuals have reached a minimum level of satisfaction of their need for affection, the satiation curve of affection levels off quickly, and a little bit more or less affection will not have much effect on elation (positive affect) or distress (negative affect). Thus when people realize a minimum level of affection, they will not be very alert to fluctuations in affection. Affection will thus not contribute much to the affective components of subjective well-being. Rather, the secure feeling of affection will contribute to the evaluation of one's life as a whole (i.e., life satisfaction). By contrast, as Nieboer and Lindenberg (2002) have shown, the need for status is more difficult to satiate than the need for affection, and small changes in satisfaction or dissatisfaction can produce clear affective reactions. Behavioral confirmation lies between affection and status in this respect. It can therefore be expected that affection will be mainly associated with life satisfaction, whereas status will be mainly associated with the affective components of subjective well-being; behavioral confirmation will be associated with both affect and life satisfaction (H4a). Nieboer and Lindenberg (2002) do not offer separate predictions for positive and negative affect. In the literature, however, clear indications exist that positive and negative affect do not depend on the same factors (Taylor, 1991) and that social activity is a better predictor of positive affect than negative affect (Watson, Clark, McIntyre, & Hamaker, 1992). Therefore we expect the satisfaction of status and behavioral confirmation—both clearly related to social activity—to have stronger associations with positive than negative affect (H4b). Finally, because the fulfillment of all three social needs is important to human well-being, we expect that the fulfillment of all three is related to indicators of subjective well-being, and that this relationship is not changed with advancing age (H4c).

Method

Sample and Procedure

In August of 2001 a questionnaire was sent to a random sample of 3,000 community-dwelling older persons aged 65 years and older. The addresses were randomly drawn from the registers of six municipalities in the north of the Netherlands; 500 addresses were drawn from each register. The six municipalities consist of smaller and larger villages and cities, and the average income is comparable to the national mean. A comparison on gender between the sample and the Dutch population of persons aged 65 years and over (Central Bureau of Statistics [CBS], 2003) showed that the proportion of males to females in the sample and in the population is equal, and approximately 42% are male.

Different versions of the questionnaire were randomly distributed to the addresses in the different municipalities, with a random subsample of 2,000 older persons receiving the two versions containing the core variables in this study, namely the scales measuring the three dimensions of social well-being (i.e., affection, behavioral confirmation, status) and one of the subjective well-being measures, namely life satisfaction. Two other scales for subjective well-being (i.e., positive and negative affect) were used in one of the two versions (1,000 addresses). Therefore the analyses of the two latter scales were performed in this smaller sample only.

Of the 2,000 (respectively 1,000) addressees, 44.3% (resp. 44.0%) returned the completed questionnaire, resulting in respective samples of $N = 883$ and $N = 439$. Although this response rate might seem low, and the potential danger of nonresponse bias exists, it is similar (Picavet, 2001), or even quite high (Bor, Mallandain, & Vetere, 1998; Buttle & Thomas, 1997), compared with that in similar studies in which the respondents received a questionnaire by mail. The distribution of the respondents over the six municipalities was much the same as the distribution of the original community sample (approximately 17% from each municipality), as was the proportion of male respondents to female respondents. In a number of cases of nonresponse ($n = 31$, 2.8%) the addressees or family members reacted and gave the reasons why they did not return the questionnaire: these included poor physical condition ($n = 10$), cognitive disorders ($n = 9$), admission to a nursing home ($n = 5$), too busy ($n = 3$), not in the mood ($n = 2$), and concern about privacy ($n = 2$). Moreover, a number of addressees had died ($n = 10$) or had moved ($n = 5$). Because relatively many people gave bad health as a reason, this may have resulted in an under-representation of physically frail respondents in the final sample. The average age of the respondents was 74.2 (74.3) years ($SD = 6.5$ [6.6]), with a range from 65 to 98 (65 to 97) years. At the time they filled in the questionnaire, 98.8% (98.9%) of the respondents were community dwelling and 0.5% (0.5%) had been admitted to a residential home; the residence of seven (3) respondents was unknown. In addition, 64.4% (66.5%) of the respondents had a partner with whom they shared a house, 1.8% (2.1%) had a partner with whom they did not share a house, and 33.8% (31.4%) did not have a partner. Of those without a partner, 81.8% (81.0%) were widowed. With regard to level of education, 25.7% (25.8%) had less than 7 years of education, 59.2% (56.9%) had 10 to 12 years of education, and 15.1% (14.1%) had more than 12 years of education.

Measures and Instruments

Affection, behavioral confirmation, and status. To determine the level of these three social needs, the short version of the Social Production Function Instrument Measuring Level of Need Satisfaction (SPF-IL) was used (Nieboer et al., 2005). The SPF-IL measures the three needs of social well-being and the two needs of physical well-being (not considered in the present study) as proposed by the SPF theory. The scale has been tested extensively and validated in three studies (Nieboer et al., 2005) and was found to have good psychometric properties. To reduce the burden on the respondents, a short version of the scale was developed, containing 15 items (for all five needs) from the original 58-item version. This version

also had good psychometric properties (Nieboer et al., 2005), and it was used in the present study. The *affection* scale consists of three items. An example of an item is the question, Do you feel that people really love you? The internal consistency coefficient (Cronbach's alpha) of the affection scale in this study was .83. The *behavioral confirmation* scale also consists of three items. An example of an item is the question, Do you feel useful to others? The internal consistency coefficient of the behavioral confirmation scale in this study was .58. Finally, the *status* scale also consists of three items. An example of an item is the question, Are you known for the things you have accomplished? The internal consistency coefficient of the status scale in this study was .70. All items in the three scales have the answer categories of *never*, *sometimes*, *often*, and *always*, on a 4-point scale (range 0–3).

Subjective well-being. For measuring the cognitive and affective components of subjective well-being, we included one cognitive indicator (i.e., life satisfaction) and two affective indicators (i.e., positive and negative affect). Life satisfaction was measured with the five-item Satisfaction With Life Scale (SWLS) (Pavot & Diener, 1993). An example of an item is the statement, In most ways, my life is close to my ideal. Answers could be given on a 5-point scale, ranging from *strongly disagree* to *strongly agree* (range 0 to 4). The scale has good psychometric properties, and the internal consistency coefficient of the scale in the present study was .85. Positive and negative affects were measured according to the Positive and Negative Affect Scale (PANAS), which consists of two 10-item scales (Watson, Clark, & Tellegen, 1988). The following questions are examples of items of positive affect (PA) and negative affect (NA), respectively: During the past few months, how often did you feel . . . excited, enthusiastic, alert, inspired? (PA), and How often did you feel sad, upset, afraid, nervous, scared? (NA). Answer categories ranged from *never* to *very often* on a 5-point scale. The internal consistency coefficients in the present study were .83 and .85 for PA and NA, respectively.

Physical losses. The level of losses in physical resources was measured by asking the respondents to indicate, for nine domains of physical functioning, whether they had problems (yes or no) in each of these domains. These nine domains are derived from the basic domains of functioning that are covered by the Groningen Frailty Indicator (GFI) (Schuermans, Steverink, Lindenberg, Frieswijk, & Slaets, 2004) and include mobility (four aspects: shopping, walking outside the home, [un]dressing, and toileting), energy, vision, hearing, and morbidity (two aspects: extreme weight loss and use of four or more medications). The following questions are examples of items: Can you do the shopping yourself? Can you fully independently dress and undress yourself? Do you experience problems in daily life because of poor vision? Do you experience problems in daily life because of poor hearing? These nine dichotomous items jointly provide a simple index of overall physical/sensory losses in functioning. The more domains that are affected, the higher the level of physical loss. The scores range from 0 (no problems) to 9 (problems in all domains). To compare groups of respondents with different levels of physical loss, three groups were formed according to the following categorization: no problems in the nine domains ($n = 415$; 47.0% of the sample); one problem ($n = 275$; 31.1% of the sample); and more than one problem ($n = 193$; 21.9% of the sample). Age groups were formed according to the following categorization: 65 to 69 years ($n = 262$; 29.7% of the sample); 70 to 74 years ($n = 230$; 26% of the sample); and age 75 and older ($n = 391$; 44.3% of the sample).

Analysis

The first set of hypotheses was tested with repeated measures analyses of variance (ANOVA) (Weinfurt, 2000). The measures of the three social needs were considered to be repeated measures of the within-subjects factor social needs fulfillment. Age groups and physical loss groups were considered as between-subjects factors. The F ratio was used to test the significance of mean differences between the three need satisfactions and

between the age and loss groups. As measure of effect size, η^2 is reported, which indexes the proportion of variance explained by a variable. According to Cohen's (1977) classification scheme for measures of the explained proportion of variance (cited in Weinfurt, 2000), .01 is considered as small, .09 as medium, and .25 or greater as large. The second set of hypotheses was tested by applying multiple-regression analysis. The interaction effects were analyzed by using centered scores to avoid correlation between interaction terms and main variables (Aiken & West, 1991). Gender was used as a control variable in the regression analyses. To check for a risk of colinearity in the multiple-regression analyses, the intercorrelations between the variables were examined. Table 1 shows that none of the correlations exceed .47 or $-.39$, which can be considered acceptable.

Results

Table 1 presents the descriptives and zero-order correlations of all variables.

Testing the Hypotheses

The first set of hypotheses, derived from the patterned change hypothesis, was tested first. The results are shown in Table 2 and Figure 1.

With regard to the first hypothesis (H1), the results show that in the group as a whole (the total group of people aged 65 and over, first row in Table 2), the level of need satisfaction is, indeed, different for the three social needs, $F(1.86, 1402.91) = 1080.76$, $p < .001$, $\eta^2 = .59$. Contrasts revealed, as was expected, that the level of satisfaction of affection was significantly higher than that of behavioral confirmation, $F(1, 751) = 17.01$, $p < .001$, $\eta^2 = .02$, and the level of satisfaction of behavioral confirmation was significantly higher than that of status, $F(1, 751) = 1798.66$, $p < .001$, $\eta^2 = .71$. The first hypothesis is thus confirmed. Note that the relatively low level of status may indicate, as assumed in the patterned change hypothesis, that at the age of 65 and over the satisfaction of status has already decreased considerably.

The results with regard to the second and third hypotheses (H2 and H3ab) are also shown in Table 2. Moreover, Figure 1 is added to illustrate the results graphically. With regard to the differences in need satisfaction between the age groups (Figure 1, left graph), the results show that, as a main effect, the levels of satisfaction of the three needs are, indeed, different for the three age groups,

Table 2
Means (M) and Standard Deviations (SD) of Affection, Behavioral Confirmation, and Status, for the Total Group (N = 883) and for Age Groups and Physical Loss Groups (% of Sample)

	Affection		Behavioral confirmation		Status	
	M	SD	M	SD	M	SD
Total group	6.14	2.02	5.88	1.65	3.11	1.65
Age groups						
65-69 (29.7%)	6.00	1.87	6.03	1.52	3.24	1.60
70-74 (26%)	6.18	1.94	6.04	1.71	3.25	1.62
75+ (44.3%)	6.26	2.08	5.64	1.66	3.05	1.69
Physical loss groups						
0 loss (47%)	6.27	1.89	6.14	1.54	3.29	1.68
1 loss (31.1%)	6.07	2.02	5.81	1.55	3.30	1.59
> 1 loss (21.9%)	6.00	2.11	5.33	1.84	2.64	1.54

$F(3.74, 1390.34) = 4.41$, $p < .01$, $\eta^2 = .01$. Contrasts comparing the levels of satisfaction of the three needs for the different age groups revealed that this difference must be attributed mainly to the significantly lower level of behavioral confirmation, compared with the level of affection in the oldest age group, $F(2, 744) = 9.02$, $p < .001$, $\eta^2 = .02$. The expected lower level of status, compared with the level of behavioral confirmation in the successive age groups, was not found, $F(2, 744) = 1.17$, $p = .31$. Again, the level of status is already quite low, which may have created a floor effect. The second hypothesis is thus partially confirmed.

Hypothesis 3a concerns an alternative way of testing the patterned change hypothesis. Instead of age (cf. H2), the amount of loss of physical resources is now considered in relation to the levels of satisfaction of the three social needs. The results (in Table 2 and Figure 1, right graph) show that, as a main effect, the levels of satisfaction of the three needs are, indeed, different for the three physical loss groups, $F(3.74, 1399.34) = 3.61$, $p < .01$, $\eta^2 = .01$. Contrasts comparing the level of satisfaction of the three needs for the different loss groups revealed that this difference must be attributed mainly to the significantly lower level of behavioral confirmation, compared with the level of affection in the physical

Table 1
Descriptives and Zero-Order Correlations of All Variables

	Range	M	SD	Correlations									
				1	2	3	4	5	6	7	8	9	
1. Age	65-98	74.2	5.6	—									
2. Gender (0 = male)	0-1	0.58	0.5	.06	—								
3. Physical losses	0-7	0.93	1.3	.35**	.06	—							
4. Affection	0-9	6.1	2.0	.05	.10**	-.07	—						
5. Behavioral confirmation	0-9	5.9	1.7	-.14**	.04	-.22**	.47**	—					
6. Status	0-9	3.1	1.7	-.06	-.16**	-.15**	.29**	.44**	—				
7. Life satisfaction	0-20	14.2	3.7	-.15**	-.10**	-.37**	.36**	.39**	.25**	—			
8. Positive affect	3-38	23.2	5.3	-.24**	.04	-.38**	.27**	.42**	.45**	.32**	—		
9. Negative affect	0-32	12.6	5.5	.05	.11*	.14**	-.13*	-.20**	-.22**	-.39**	-.09	—	

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

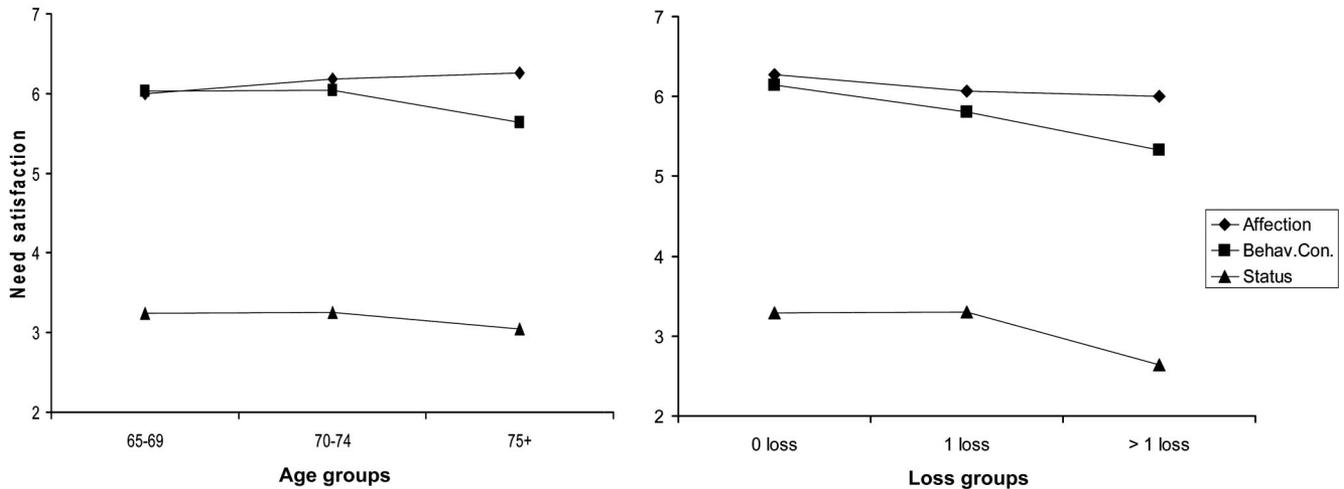


Figure 1. Mean levels of need satisfaction for affection, behavioral confirmation, and status, by age groups (left graph) and physical loss groups (right graph).

loss group with more than 1 loss, $F(2, 749) = 4.65, p < .01, \eta^2 = .01$. The lower level of status, compared with the level of behavioral confirmation in the loss group with more than 1 loss was marginally significant, $F(2, 749) = 2.68, p = .07, \eta^2 = .01$. Hypothesis 3a is thus largely confirmed.

The second part of the third hypothesis (H3b) states that the patterned change is expected to be even more pronounced when comparing physical loss groups than when comparing age groups. Therefore we also conducted a repeated measures ANOVA (mixed model) with age group and loss group as two between-subjects factors. The results show that, overall, the effect of loss group is significant, $F(2, 738) = 6.51, p < .01, \eta^2 = .02$, but not the effect of age group, $F(2, 738) = .34, p = .71$. This indicates that the differences in the level of satisfaction of the three social needs (taken together) is more pronounced when comparing groups of older people on the basis of physical losses than on the basis of age. However, comparing the levels of satisfaction of the three needs separately for the different age and loss groups, although optically more different (see Figure 1), revealed no significant differences. This indicates that our expectation that the patterned differences in social need satisfaction will be more pronounced when comparing loss groups than when comparing age groups was not confirmed for the separate needs. Hypothesis 3b is thus not confirmed.

The second and final set of hypotheses (H4abc) concerns the expected essential, but differential, contribution of all three social need satisfactions to indicators of subjective well-being and the expectation that these relationships are not changed with advancing age. These hypotheses were tested by performing three multiple-regression analyses, with three measures of subjective well-being as dependent variables: life satisfaction, positive affect, and negative affect. The results are shown in Table 3. In the first step, the influence of age, gender, and level of physical loss is controlled for. In the second step the three social needs, affection, behavioral confirmation, and status, are added to each model. In the third step the three interaction terms of social need by age are added.

What can first be seen is that in the first step in all three models the level of physical loss is clearly associated with all three indicators of subjective well-being. Greater physical loss is associated with lower levels of life satisfaction and of positive affect and with higher levels of negative affect, although the latter association is weaker than the former two. Moreover, for positive affect an age effect is also found: the higher the age, the lower the level of positive affect. For negative affect, on the other hand, a gender effect exists: women have higher levels of negative affect than men.

In the second step, the three social needs, affection, behavioral confirmation, and status, are added to all three models. As can be seen in Table 3, all three social needs are associated with indicators of subjective well-being but differentially for each of the three indicators, as predicted (H4ab). Affection is positively related to life satisfaction but not to positive and negative affect. Behavioral confirmation is positively related to life satisfaction and to positive affect and—in the second step—only marginally to negative affect. Status is not related to life satisfaction but strongly to positive affect and, less strongly, to negative affect.

To check whether some direct evidence exists for the differential saturation explanation, we offered for the differential findings regarding the three indicators of subjective well-being, we compared (with ANOVA and Tukey's HSD tests) mean levels of positive and negative affect, in low-, medium-, and high-affection groups and in low-, medium-, and high-status groups (in groups of approximately equal sizes). With regard to mean levels of positive and negative affect, low- and medium-affection groups differed (21.1 vs. 23.4, $p < .001$ for positive affect and 13.9 vs. 12.1, $p < .05$ for negative affect), but medium- and high-affection groups did not differ (23.4 vs. 24.8, $p < .10$ for positive affect and 12.1 vs. 12.1, *ns* for negative affect), indicating, as expected, a saturation effect for affection with regard to positive and negative affect.

Regarding the three status groups, it was found that low- and medium-status groups differed significantly on mean levels of positive affect (20.2 vs. 23.3, $p < .001$), as did medium- and high-status groups (23.3 vs. 25.2, $p < .01$), indicating low satu-

Table 3
 Regression Analyses for Life Satisfaction ($N = 883$), Positive Affect ($N = 439$), and Negative Affect ($N = 439$)

Step	Life satisfaction			Positive affect			Negative affect		
	1	2	3	1	2	3	1	2	3
1. Age	-.03	-.03	-.03	-.11*	-.06	-.04	-.01	-.02	-.04
Gender (0 = male)	-.06	-.08*	-.07*	.04	.08	.08	.11*	.07	.08
Physical losses	-.33***	-.25***	-.24***	-.34***	-.24***	-.20***	.14*	.08	.10
2. Affection		.25***	.25***		.06	.06		-.03	-.02
Behavioral confirmation		.19***	.18***		.18**	.18**		-.12#	-.14*
Status		.06	.07		.32***	.31***		-.13*	-.11#
3. Age * affection			-.01			-.06			.07
Age * behavioral confirmation			.01			.14*			-.04
Age * status			.03			.02			.09
R^2	.12	.27	.27	.15	.32	.34	.02	.07	.08
R^2 change		.15	.00		.17	.02		.05	.01
F for R^2 change	29.9***	48.3***	.33 ns	19.3***	31.6***	2.6 ns	2.7*	5.6**	1.3 ns

Note. Only standardized coefficients (Beta) are shown. We checked for the possibility of confounding because of overlap in operationalization regarding the lack of multivariate associations between, in particular, affection and positive affect and between status and life satisfaction. For this, we conducted additional analyses in which each of the three need satisfactions were entered separately (with controls and interactions of social need by age). Results showed that, although the standardized coefficients of status for life satisfaction and affection for positive affect are significant when analyzed separately, they are already substantially smaller than the Betas of the other two need satisfactions when these are analyzed separately ($\beta = .20$ [status] versus $\beta = .36$ [affection] and $\beta = .38$ [behavioral confirmation] for life satisfaction; and $\beta = .25$ [affection] versus $\beta = .34$ [behavioral confirmation] and $\beta = .39$ [status] for positive affect). These results indicate that, although the three needs do have some overlap, clearly the associations between status and life satisfaction and between affection and positive affect are the weakest, causing these associations to become nonsignificant when the three needs are analyzed simultaneously; ns = not significant.

* $p < .05$. ** $p < .01$. *** $p < .001$. # $p < .10$.

ration for status with regard to positive affect. For mean levels of negative affect, for which status was predicted to contribute less than to positive affect, only the low- and high-status groups differed significantly (14.0 vs. 11.5, $p < .01$); the medium-status group (12.7, ns) did not differ from the other two. Overall, the results support the saturation explanation of why the satisfaction of especially affection and status relate differentially to different indicators of subjective well-being.

In the third step, in each model the three social needs are added, each in interaction with age. The results show that overall no significant (negative) interactions were found with age. This indicates that, as expected in H4c, the fulfillment of the three needs remains associated with indicators of subjective well-being, and that these relationships are not changed with advancing age. For positive affect, even a significant *positive* interaction effect was found for behavioral confirmation and age. This indicates that the satisfaction of the need for behavioral confirmation is even *more* important for positive affect at higher ages.

To test whether there may be an interaction between the three needs and physical loss rather than age, a fourth step was executed (not shown) in all three regression analyses. No significant interactions were found, except for positive affect, where a positive interaction of behavioral confirmation by physical loss emerged ($\beta = .12$, $p < .05$), whereas the interaction of behavioral confirmation by age now became nonsignificant ($\beta = .04$, ns). This indicates that the satisfaction of the need for behavioral confirmation is even more important for positive affect with higher levels of physical loss. Moreover, it indicates again—as the results of H3b did—that physical loss seems to be a better predictor of the satisfaction of the need for behavioral confirmation than age.

It can be concluded that the data largely confirm the second set

of hypotheses (H4abc): the fulfillment of the three social needs is significantly associated with indicators of subjective well-being, and these relationships do not change with advancing age. It was also found that the three social needs do not become less important with more physical loss. Rather, behavioral confirmation seems to become even more important for positive affect with higher levels of physical loss. Moreover, as expected, the fulfillment of the three social needs relates differentially to the different indicators of subjective well-being. Affection is not related to positive and negative affect but is related to life satisfaction. Behavioral confirmation is related to both life satisfaction and positive and negative affect, whereas status is related to positive and negative affect but not to life satisfaction. Moreover, the associations of behavioral confirmation and status are clearly stronger for positive affect than for negative affect, as expected. It can be concluded that if older people are to experience high levels of life satisfaction, then it seems especially important that they maintain high levels of both affection and behavioral confirmation, not status. In contrast, to experience high levels of positive affect, it seems especially important that the needs for status and behavioral confirmation are fulfilled, but affection is not important (at least, not as long as a minimum amount of need satisfaction exists). Finally, for the experience of low levels of negative affect, both status and behavioral confirmation seem to play a role, but the total amount of explained variance is rather low (8%), indicating that other factors than those considered in this study are likely to play a role in negative affect. The considerable total amounts of explained variance of both life satisfaction and positive affect (27% and 34%, respectively) indicate that the fulfillment of all the social needs considered here is, indeed, substantially associated with these two indicators of subjective well-being.

Discussion

In this study we investigated whether and to what extent levels of social need satisfaction relate to age and to physical losses and to what extent levels of social need satisfaction are associated with indicators of subjective well-being. Based on the social production functions (SPF) theory, three social needs were identified: affection, behavioral confirmation, and status. The SPF-based theory of successful aging (SPF-SA theory) predicted patterned differences in the level of need satisfaction caused by differences in resources for different age groups. First, in people aged 65 and over, *in general*, the level of satisfaction of status is lower than the level of satisfaction of behavioral confirmation, which, in turn, is lower than the level of satisfaction of affection. We also expected the level of satisfaction of the three needs to be lower but to remain in the same order in successive age groups and groups with successively higher levels of physical loss. Finally, we predicted that the satisfaction of all three social needs would remain positively related to subjective well-being, and that these relationships are not changed with advancing age. We also considered different indicators of subjective well-being and expected different effects of the levels of satisfaction of the various social needs for the different indicators (see following).

Overall, the findings largely confirmed the hypothesized age-related and loss-related differences in the extent to which older people are able to satisfy the three social needs and the hypothesized associations of social need satisfaction with different indicators of subjective well-being. When considering different age groups and different physical loss groups, it appears that the expected age and loss effects on social need satisfaction apply, in particular, to behavioral confirmation in people aged 75 and older. This indicates that after the age of 75, or when two or more physical losses have been encountered, the level of satisfaction with regard to behavioral confirmation is generally lower. Moreover, when we considered the lower levels of satisfaction of behavioral confirmation for the age and loss groups simultaneously, we saw that the differences in need satisfaction for behavioral confirmation actually must be attributed to physical loss rather than to age. This is an important finding, because it shows again that factors that are associated with aging lend more understanding of phenomena than age (Schuurmans et al., 2004).

The expected age and loss effects that were found for status were not confirmed, but this may be because the level of satisfaction of status was already quite low in our sample (people aged 65 and older who had already lost important resources for status). This may have caused floor effects. On the other hand, the level of satisfaction of affection is relatively high and does not seem to be affected very much by age or physical loss. As predicted by the theory, this may indicate not only less dependence of affection on physical resources but also that older people for whom status and behavioral confirmation have become difficult to achieve compensate this loss by putting increasingly more effort into realizing and maintaining affection. This finding, emphasizing the stability of affection, is in line with empirical findings based on the theory of socioemotional selectivity (Carstensen, Isaacowitz, & Charles, 1999), which demonstrate the importance of close relationships (i.e., providing affection) for older people.

An alternative explanation of the lower satisfaction levels of behavioral confirmation and status would be that older people

change their priorities, and perhaps relinquish status, because social needs or goals shift with age. Indeed, this seems a plausible explanation, but it is difficult to square with our results that, even when older people have high levels of affection, it appears that status and behavioral confirmation remain important. Rather, all three social needs continue to be associated with indicators of subjective well-being, and these relationships are not changed with advancing age or with higher levels of physical loss. These findings may indicate that the social needs as proposed by the SPF theory are, indeed, essential to human well-being and that limits exist to the degree to which the satisfaction of one social need can compensate for that of another social need. This then also implies that older people may well have disengaged from seeking status and behavioral confirmation or may have experienced them as unimportant; however, this change does not seem to be the result of a shift in needs but a shift in resources and opportunities to satisfy them. Should there be opportunities and resources to satisfy status and behavioral confirmation again, then even older people would value this, because satisfaction of both needs contributes to their overall well-being (see also Baumeister & Leary, 1995, on the difficulty of disengaging from or denying essential social bonds). This may then also explain the results of other research on the associations among social activity, health, and well-being mentioned in the introduction: social activities might provide people with opportunities to fulfill especially their needs for behavioral confirmation and status, and as a result they may experience higher levels of well-being.

Yet another important result of our study is that the findings with regard to the three social needs must be qualified for the cognitive and affective indicators of subjective well-being. Therefore if older people are to experience high levels of life satisfaction, then it seems especially important that they maintain high levels of both affection and behavioral confirmation, not status. In contrast, to experience high levels of positive affect, it seems especially important that their needs for status and behavioral confirmation are fulfilled, but affection (at least beyond a minimum level) is not important. Moreover, for positive affect, behavioral confirmation seems to become even *more* important with higher levels of physical loss. Finally, negative affect is clearly associated with low levels of satisfaction of the needs for status and behavioral confirmation, but the effects are much smaller than for positive affect. The differences in the strengths of the effects for positive and negative affect support the notion that positive and negative affect do not depend on the same factors and that an asymmetry exists between the two (Taylor, 1991). Our results are in line with, for example, Lawton's (1984) findings that negative affect was better predicted by intrapersonal factors (e.g., functional health, personality), whereas positive affect was better predicted by exterior environmental transactions (e.g., time use, interaction with friends). Watson et al. (1992) also found positive affect to be more dependent on social activity than negative affect. Our suggestion that the various social needs are differentially related to the cognitive and affective indicators of subjective well-being because they saturate at different rates was supported by the data.

Our study also has some actual and potential limitations. The first is the relatively high rate of nonresponse and its consequences for interpreting the results. Although such a rate of nonresponse is common in large-scale population surveys, it urges researchers to be cautious when generalizing the results. However, this problem

is probably limited as well, because we could identify the main possible sample biases (see Methods section), which allows us to state that in all likelihood an under-representation of physically frail respondents exists. This may limit the generalizability of the results to a certain extent, but it also renders the test of our hypothesis on the effect of the loss of physical resources even more conservative.

The second limitation concerns the problems of using cross-sectional data to draw conclusions about causality and the restriction of the sample to people aged 65 and older. The direction of causality for a number of associations considered in the present cross-sectional study can only be determined on the basis of longitudinal data. Moreover, a full test of the hypothesized patterned change is only possible in a sample that covers the whole life span, especially the course of fulfillment of the need for status. Further research should take these considerations into account. Nevertheless, as a first attempt to shed some light on the social needs of older people and how they relate to subjective well-being, a cross-sectional design can provide useful insights, particularly when the analyses of the cross-sectional data are guided by explicit theoretical considerations. Moreover, some useful insights for further (longitudinal) research may be gained in such a manner.

The final possible limitation may lie in the use of the short versions of the measurement of the three social needs: affection, behavioral confirmation, and status. Although they have been extensively studied and validated (Nieboer et al., 2005), each of the short versions contains only three items that, moreover, are all phrased in positive terms (the long versions also contain negatively phrased items). The positive phrasing may have created a positivity bias and may have decreased correlations with the negative indicator of well-being. The fact that only three items were used for measuring each need may have reduced the alpha for the behavioral confirmation scale (.58). It was decided to use the short versions to limit the burden on the respondents, thereby improving the response rate, but this issue needs to be taken into account in future research.

Some implications of our results for further research and theory development should be mentioned. First, the result exists that affection—the seemingly so important social need of older people—does not play any role at all in positive affect, whereas status—seemingly unimportant for older people—has a significant role. This finding nuances the relatively strong focus of research in the field of aging and social relations on the importance of close (i.e., affective) relationships for older people. Moreover, it underscores the importance of clearly defining other social needs in addition to closeness. As Berscheid and Reis (1998) also observed, the commonly used term *close relationships* often suffers from ambiguity, but still remains unexamined. This makes it difficult to gain a deeper understanding of specific social needs and relationships and how they relate to well-being. Second, the findings with regard to positive affect, as opposed to those concerning life satisfaction, indicate that these two measures of subjective well-being are partly explained by satisfaction of different social needs in older adults. Especially the relatively strong relationship of status need satisfaction with positive affect (and no relationship with life satisfaction), indicates the importance of further research into the social status determinants of positive affect in older adults. This may add to the increasing amount of attention that is being paid to positive affect as an important human strength, also in the

older adults. Our study considered positive affect as an outcome, but others have pointed to the positive consequences of positive affect, for instance, as proposed by the broaden-and-build theory (Fredrickson, 2001). This theory posits that experiences of positive emotions broaden people's momentary thought-action repertoires. These, in turn, serve to build up their enduring personal resources, ranging from physical (Ostir, Ottenbacher, & Markides, 2004) and intellectual resources (Isen, 2000) to social and psychological resources (Watson et al., 1992). Therefore especially fulfillment of the needs for status and behavioral confirmation may be further examined in their possible role in reinforcing the upward spiral of positive affect.

It can be concluded that, despite their limitations, the results of our study may contribute to increasing the current knowledge about social relationships and well-being in older people. Moreover, the findings may provide new indications for interventions in the social world of older people, to improve their quality of life and their overall well-being.

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