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SUBSTITUTION, BUFFERS AND SUBJECTIVE WELL-BEING: A HIERARCHICAL APPROACH

Abstract. In quality of life research, social aspects have become recognized as important, next to physical aspects such as living conditions and health. However, objective indicators of physical and social aspects often correlate poorly with indicators of subjective well being. We argue that this may be due to buffer and substitution effects. People produce their own well-being and there are multiple means for realizing the same ultimate goals. Multiple means allow the formation of buffers which cushion the negative effect of loss and they allow substitution when some means become costlier or inaccessible. In order to trace buffer and substitution effects, one needs a theory that specifies these multiple means and the goals they serve (goal hierarchy). One such theory is Social Production Function theory which we use to trace buffer and substitution effects. We test the hypotheses on these effects with data on 1094 Dutch respondents. Even though the data are cross-sectional and thus do not allow us to demonstrate buffer and substitution effects on the individual level, there are good indications in the data that such effects exist.

INTRODUCTION

With increasing welfare, subjective well-being becomes increasingly important as a topic of research. This is a fairly new development and quite different from the concern, after the Second World War, with basic aspects of quality of life, especially in developing countries. One new direction was to include social conditions along with research into physical conditions. It is important to look at both people's social and physical living conditions because, presumably, people's social relations and health influence their subjective feelings of well-being (Argyle, 1996; Baumeister & Leary, 1995). There appeared to be a problem, however. The objective indices are often not strongly associated with subjective feelings of well-being (Argyle, 1999; Cummins, 1996; 2000; Diener, 1984; Diener, Suh, Lucas, & Smith, 1999). Why are people still fairly satisfied with their lives even when they lack important resources such as a paid job or a spouse? One plausible answer to this question is that people are much more active in the production of their own subjective well-being than is generally assumed in the quality of life literature. They have multiple ways of realizing well-being; that is, they have buffers and they can substitute one means for another. One problem with this answer is that it can only be seriously pursued if we have a theory that allows us to pinpoint the multiple means for achieving subjective well-being and helps us say something about which means are more essential (i.e., less substitutable) than others (Diener & Lucas, 2000). In other words, what we need is a theory in which means to achieve subjective well-being are ordered hierarchically. Each layer in the hierarchy contains multiple means for realizing goals on a higher level which, in turn, are multiple means for still a higher level of goals. Thus, such a hierarchy pinpoints alternative means for the realization of the same higher-order goal. These alternatives allow substitution when loss occurs or

when certain means become relatively too costly. It is theoretically particularly interesting to consider substitution between classes of means such as substituting a strong emphasis on affection for the pursuit of status after retirement.

Multiple means also allow the formation of buffers. The idea of buffers is quite simple. The realization of higher-order goals is subject to decreasing marginal returns. For example, having friends is important for realizing affection. But having many friends may add only a fraction of extra affection beyond the level realized by having a few friends. The same can be said about different means. Having a paid job may create a certain level of status. Adding volunteer work may increase one's status only marginally beyond the level already achieved by paid work. Even though the increase in higher-level goals (and in subjective well-being generally) may only be marginal, people are likely to pursue this increase when the means are relatively easily available. People who make friends easily may as well maintain many friends, and people who have many talents and much energy may add voluntary work to their paid job as well. Because the effect of the extra means is marginal, it creates buffers: When some of the means fall away, the overall well-being is not much affected. For theorizing about buffer effects, it is also necessary to identify the higher-order goals that may be served by multiple lower-order means. In other words, for both substitution and buffer effects, we need a theory on hierarchically ordered goals and means.

In the following, we will present such a theory (the so-called Social Production Function Theory, or SPF theory for short, see Lindenberg, 1996; Ormel, Lindenberg, Steverink, & Von Korff, 1997; Ormel, Lindenberg, Steverink, & Verbrugge, 1999) and formulate some hypotheses about buffers and substitution. We will then test these hypotheses with data gathered specifically for the purpose of assessing quality of life with SPF theory.

THEORY

SPF theory, developed by Lindenberg (1986, 1991, 1993, 1996) basically asserts that people produce their own well-being by trying to optimize achievement of universal goals within the constraints they are facing. Lindenberg distinguishes a number of universal and (hierarchically ordered) instrumental goals, which allows specificity about how individuals try to achieve well-being and reduces ad hoc specifications of needs and wants. Overall subjective well-being is a function of physical well-being and social well-being. For social well-being, three universal instrumental goals are specified: status, behavioral confirmation, and affection. Status refers to a relative ranking (mainly based on control over scarce resources such as money and education). Behavioral confirmation refers to one's belief that they have done "the right thing" in the eyes of relevant others. Affection includes love, friendship and emotional support, and is to a large extent provided in caring relationships (intimate, family and friendship relations). For the production of physical well-being, two universal instrumental goals have been distinguished: comfort and stimulation (see Wippler 1990). Comfort means the absence of deleterious stimuli (i.e., physiological discomforts such as pain, hunger, thirst or cold). Stimulation refers to activation which produces arousal, including mental and

sensory stimulation and physical effort. Human beings seem to prefer a certain level of activation, although prolonged levels of high activation or physical effort become unpleasant. All five instrumental goals are assumed to have decreasing marginal value for the production of well-being.

An important characteristic of SPF-theory is that goals are hierarchically structured with the help of production functions. General universal goals (i.e., physical and social well-being) are at the top; then there is a layer of universal instrumental goals (stimulation and comfort for the production of physical well-being, and status, behavioral confirmation and affection for the production of social well-being), then there are layers of means (resources) that are specific to cultures, groups and circumstances.[1] If a person lacks the necessary resources for the realization of a higher level goal, then the production of these resources can become an instrumental goal in itself. For example, somebody may direct her activities toward making money in order to be able to buy a house in the future. Given that the realization of the goal is in the future, such an activity can also be seen as investment behavior.

Instrumental goals are viewed in SPF theory as substitutable depending on their relative costs. If, for example due to unemployment, opportunities and resources for the achievement of status are decreasing, a person is likely to increase the production of affection and behavioral confirmation if that production is relatively easier. In terms of expressed preferences, this may show up as an increased interest in norm-conforming behavior and investment in personal relationships. Table 1 gives an overview of the hierarchical levels of social well-being.

Table 1. The hierarchical levels of social well-being

First-order Instrumental Goals	Status (control over scarce resources)	Behavioral Confirmation (what you get from "doing the right things")	Affection (what you get from others who care about you)
Examples of means by which goals can be achieved	Occupation, Excellence in sports or work	Compliance with external and internal norms	Intimate interaction, Providing support, Unilateral transfers
Examples of Resources / Constraints	Education, Social class, Unique skills	Social skills, Competence	Spouse, Empathy, Attractiveness

Multi-functional activities, especially those that combine production and investment, and those that serve multiple higher-order goals, are clearly the most efficient kinds of activity (Lindenberg, 1996; Nieboer, 1997). People will have the tendency to engage in activities that combine the production of physical well-being and social well-being. To illustrate the mechanism of multi-functionality, one may think of

what constitutes a good partner. In terms of SPF, a good partner is a partner who is stimulating, creates comfort for the other, raises the status of the other, confirms his (or her) actions and opinions, and cares about the other. Because people seek out multifunctionality, they will attempt to find and maintain partners that are multifunctional for them. The same can be said about the work context. Work is only in part a means for making money. For a large part, it can be means to realize all five universal instrumental goals. Thus, even voluntary work should be a source for well-being rather than a drag or net sacrifice.

HYPOTHESES

The major heuristic guidance of SPF theory comes from the universal instrumental goals. They guide our search for multiple means, both for buffer effects and for substitution possibilities. Substitution possibilities are first of all located within means to realize a particular universal instrumental goal (say, status), and, if this substitution is not possible, we look for it within possibilities to substitute between universal instrumental goals. If, for example, people lack the necessary resources to obtain status they will focus on affection and behavioral confirmation (and, barring these possibilities, even comfort and stimulation). There is no change in values involved (even though it may subjectively be experienced as a lower value placed on status). People will search for the most efficient way to produce well-being and they will thus shift between means according to relative costs (i.e., shadow prices), just as they would shift between any other kind of substitution goods. Of course, there is an (unspecified) minimum level for each of the universal instrumental goals below which no substitution will take place. Thus, everybody needs a minimum amount of stimulation, comfort, affection etc. In sum, the hypothesis is:

> H1 (Substitution) If means of production for a specific universal instrumental goal become relatively more costly or unavailable, people will try to shift to other means.

With regard to buffer formation, SPF theory guides us to mainly look at two aspects. These are; first, the relative cost of means of production, and secondly the different degrees of decreasing marginal returns. Let us take these up in turn. As mentioned above, when people have many talents and much energy they can increase their status (and probably also other goals) by adding voluntary work to their paid job, even though the increase in status may only be marginal. In this case, it is relatively cheap for people to add this extra means of production. In general, the assumption of subjective well-being maximization (or the more general assumption that people try to improve their condition) leads to the result that people keep producing more and more of a universal instrumental goal until the marginal return is equal to the marginal cost. When that cost is low, people get virtually saturated with the achievement of a particular universal instrumental goal. This also means that, as a side effect, a buffer is created against great losses in well-being when certain means of production fall away. In terms of a hypothesis, we can say:

> H2 (Buffer) The relatively cheaper the means of production, the more likely that people become saturated with regard to the universal instrumental goals. Thereby they form buffers against loss of subjective well-being.

Not every instrumental goal becomes as easily saturated as another does. There are good reasons to assume that there are differences between them. There may be psychological reasons for differences in saturation between the different universal instrumental goals that have not been well explored yet. However, at least for social well-being, the internal logic of SPF theory guides us to look at a very specific aspect: to what degree can universal instrumental goals also be used as lower-order means. For example, status contributes directly to social well-being. Yet, status can also be used as a means to realize other means and universal instrumental goals. For example, a high status person is likely to get credit more easily, and will be agreed with more often (i.e., receives more behavioral confirmation, see Wagner and Berger, 1993) and will have a wider range of interactions (i.e., more stimulation, see Homans 1951). Status is in that sense akin to money. Because of this role on different levels in the hierarchy, the marginal return for increasing status is likely to decrease slowly. By contrast, behavioral confirmation is much less useful as a lower-order means even if it still does help to get credit and a modicum of status. Finally, affection may be useful besides being its own reward in terms of social well-being, but because it is intentionally not contingent on behavior, it is still less useful as a lower-level means than behavioral confirmation. Thus, the marginal return of affection in terms of well-being should level off much more than the one for behavioral confirmation, which, in turn, would level of faster than the one for status. Buffer formation should occur most for affection and least for status, with behavioral confirmation falling in-between. The hypothesis on the shape of the functions then would be:

> H3 (Marginal rate of return) The marginal returns for affection in terms of subjective well-being decrease faster than those for behavioral confirmation. In turn, the latter decrease faster than those for status.

The above hypotheses will be tested in the following section.

METHOD

Participants

The study population consisted of 2,668 persons aged 18 to 65 years. We randomly drew a sample from Dutch postal addresses and asked eligible subjects by letter to cooperate when approached for a phone interview a few days later. To avoid overrepresentation of women, the youngest male member of the household who was currently at home was interviewed. If not present, the youngest female was interviewed (Hess, 1994). The interviews lasted approximately 25 minutes. All interviews were carried out by well-trained social science students. Useful data are available for 1,094 subjects (41% of the study population). The response rate was 59% (52.5% female). Of all respondents 82.9% reported having a partner, 68.5% had paid work and 31.4% was involved in volunteer work.

Measures

The SPF-IL (Social Production Function Instrument for the Level of well-being) is a multidimensional instrument to measure the instrumental goals that enable people to realize well-being (for a description of the development of the instrument see Nieboer, Lindenberg, Boomsma, & Van Bruggen, forthcoming).

For *affection*, questions are asked about the extent to which people feel liked, loved, trusted and accepted, understood, empathized with, know that their feelings are reciprocated, feel that others are willing to help without expecting something in return, feel that their well-being is intertwined with others, and feel that others like to be close and hug them (Van Bruggen, 2001). Eighteen items were selected to assess the nine different aspects of affection. Each aspect included a positive and a negative item. Examples of items are: 'Is it difficult for others to put themselves in your shoes?', 'Do people really like you?', 'Do you feel that people don't care enough about you?'. The 18 items were coded on a 4-point scale with the categories 'never', 'sometimes', 'often', or 'always' (range 0-3). The scores of the items were recoded in order to have higher scores reflect higher levels of affection. The indicator was transformed to a range of 0-100 (dividing it by the maximum scale score and multiplying it by 100). Cronbach's alpha for the affection scale was .79.

Behavioral Confirmation. The level of behavioral confirmation was measured with respect to six aspects, feeling that you: do good things, do things well, are a good person, are useful, are part of a functional group, and contribute to a common goal. Examples of items are: 'Do others think that your contribution is too small?', 'Do people think that you make the right choices?', 'Do you feel useful to others?'. The instrument consists of 12 items; range of indicator 0-100. Alpha for internal reliability for behavioral confirmation was .71.

Status. The level of status refers to six aspects: the feeling of being treated with respect, being independent, self-realization, achievement as compared to others, influence, and reputation. Examples of items are: 'Do people think that you do better than others?', 'Do people look down on your achievements?', 'Do people think you are influential?'. The instrument consists of 12 items; range of indicator 0-100. Cronbach's alpha was .60.

Comfort. The level of comfort refers to the absence of feelings of discomfort such as pain or stress. Respondents were asked: 'How often do you have pain?', 'In the past few months did you feel: ... fit', '... perfectly healthy'. The instrument consists of 8 items; range of indicator 0-100. Cronbach's alpha for the level of comfort was .86.

Stimulation. The level of stimulation refers to mental and physical activation. Respondents were asked, for example, 'Do you find your life boring?', 'Are your activities challenging to you?', 'Do you really enjoy your activities?'. The instrument consists of 8 items; range of indicator 0-100. Alpha for internal reliability for the level of stimulation was .80.

The overall level of *subjective well-being* (i.e., utility) is measured with respect to life satisfaction, positive and negative affect. Cantrill's Ladder (1965) is used to assess *satisfaction with life* and reflects a general, cognitive evaluation of a person's overall well-being. 'On a scale of 1 to 10, how satisfied are you with your life as-a-

whole now?' A 10-item version of the PANAS (Watson, Clark & Tellegen, 1988) was used to assess positive and negative affect. *Positive affect* consists of 5 items: During the past 3 months, how often did you feel ... excited, enthusiastic, alert, inspired, and determined. Due to low scalability of the item on feeling excited, it was removed from the analyses. Cronbach's alpha was .62. *Negative affect* consists of 5 items: sad, upset, afraid, nervous, scared. Cronbach's alpha was .73. An overall score of subjective well-being was used by adding the standardized scores of satisfaction with life, positive and negative affect, transforming the indicator to a range of 0-10. It is assumed that people can be compared on this score.

STATISTICAL ANALYSES

In order to determine the diminishing marginal returns of the level of affection, behavioral confirmation and status on the overall level of subjective well-being, quadratic terms are used. The quadratic effect of affection, behavioral confirmation and status is calculated after the variables are centered in order to avoid multi-collinearity which would distort the main effects of these variables. This means that the square of each one of these variables is calculated after subtracting the means from the scores on these variables (Aiken & West, 1991).

OPERATIONAL HYPOTHESES

Since we did not have longitudinal data, we were restricted to cross-sectional tests. This means that we will not always be able to distinguish clearly between substitution and buffer effects. The test of the three hypotheses will thus be limited. Still we believe that the results are well worth being considered due to the fact that the data set is quite large and that it has been gathered with carefully operationalized concepts of SPF theory. Two pilot studies have been used to create the operationalizations of the five universal instrumental goals (Nieboer et al., forthcoming). The way we will test the three hypotheses is as follows. One way to test Hypothesis 1 is to divide the sample into two status groups: high and low. If people with low status substitute, they will depend more heavily than the high status group on one or more of the other four universal instrumental goals for realizing their subjective well-being. Thus, one operational version of hypothesis 1 is:

> H1' (Substitution) Low status people depend more heavily for their subjective well-being on one or more of the other four universal instrumental goals (stimulation, comfort, behavioral confirmation and affection) than high status people.

A way to test buffer effects is to look at goods that, according to SPF theory, are very important for subjective well-being: multifunctional goods. As mentioned earlier, work and a partner are multifunctional goods (see Nieboer, Lindenberg, & Ormel, 1998, Nieboer et al. forthcoming). Paid work is a major multifunctional source of well-being and, to a lesser extent, so is voluntary work. Similarly, having a partner is a major source of well-being, and, to a lesser extent, so is having many friends. The argument about buffer effects is as follows. According to hypothesis H2, people for whom engaging in work is not very costly (in terms of talent and

effort) should not just engage in paid work but also in voluntary work even if voluntary work only increases well-being marginally ("buffer formation"). One can then expect an absolute and a relative buffer effect. If those who do engage in voluntary work lose their paid job, their well-being is higher than if they had lost their paid job and not engaged in voluntary work (absolute buffer effect). Also, voluntary work makes the gap in well-being between having a paid job and being unemployed smaller than it would have been without voluntary work (relative buffer effect). Thus, we will test the following hypotheses:

> H2' (Buffer formation) There should be a sizable percentage of people who engage both in paid work and in voluntary work. Their level of well-being should be generally higher than the level of well-being for people with a paid job but no voluntary work.

> H2'' (Buffer effect) People who are unemployed with voluntary work have a higher level of well-being than those who are unemployed without voluntary work (absolute buffer effect). The difference in well-being between employed and unemployed should be less among those who engage in voluntary work than among those who are not involved in voluntary work (relative buffer effect).

Of course, for H2'' it is not possible to rule out a substitution effect. People who are out of paid job may as a reaction to unemployment engage in voluntary work. Our cross-sectional data do not allow us to determine the timing of voluntary work. For this reason, it is wise to also look at a situation in which the buffer effect is more likely than substitution: not having a partner. People who have a partner and for whom making friends comes easy are likely to do both: have a partner and many friends. If such people lose their partner, they still have their friends and thus have a higher well-being than if they had lost the partner without having many friends to fall back on (absolute buffer effect). Also, having many friends cushions the blow of losing one's partner (relative buffer effect). People who lose their partner are unlikely to make many new friends as a reaction to the loss of a partner (see Nieboer, 1997) and thus, it is likely that we are dealing with true buffer effects (and no substitution effects). The operational hypotheses to be tested are:

> H2''' (Buffer formation) There should be a sizable percentage of people who have both a partner and many friends. Their level of well-being should be generally higher than the level of well-being for people with a partner and only a few friends.

> H2'''' (Buffer effect) People without a partner but who have many friends have a higher level of well-being than people without a partner and only a few friends (absolute buffer effect). The difference in well-being between people with or without a partner should be less among those with many friends than among those with only a few friends (relative buffer effect).

Hypothesis 3, which concerns the shapes of the production function for status, behavioral confirmation and affection, can be tested by looking at the quadratic terms. A negative quadratic term points to a concave utility function, and the less a factor deviates from linearity the less its quadratic term should contribute to the explanation of the variance of well-being. The operational hypothesis for H3 is thus:

> H3' (Marginal rate of return) (a) The quadratic terms for affection, behavioral confirmation and status are all negative; (b) the negative quadratic term for affection contributes more to the explanation of subjective well-being than that for behavioral

confirmation which, in turn, contributes more to this explanation than the negative quadratic term for status.

RESULTS

Descriptives

Table 2 gives an overview of the descriptive statistics of people's overall, subjective well-being and the level of affection, behavioral confirmation, status, comfort and stimulation.

Table 2. Descriptive statistics of well-being, affection, behavioral confirmation, status, comfort and stimulation.

	N	*M*	*SD*
Well-being	1089	6.88	1.23
Affection	1093	73.83	10.33
Behavioral confirmation	1092	77.95	9.27
Status	1093	69.43	9.77
Comfort	1093	70.06	19.07
Stimulation	1092	77.20	14.26
Valid N (listwise)	1084		

Substitution

The results concerning the test of Hypothesis H1' are shown in Table 3.

Table 3. Multiple regression of subjective well-being on affection, behavioral confirmation, comfort and stimulation by status

	Status	
	low (n=614)	high (n=474)
	Beta	Beta
Affection	.25**	.11*
Behavioral confirmation	.10*	.10*
Comfort	.24**	.30**
Stimulation	.31**	.29**
R square for equation	.44	.29

Note. * $p < .01$; ** $p < .001$

The respondents are divided into two groups. First, there are people with low levels of status who only have limited access to means that provide status. Second, there are people with high levels of status (whatever the source of that status). The

regression analyses reveal, as predicted, that people with low status-levels use the other instrumental goals (i.e., affection, behavioral confirmation, comfort and stimulation) much more (or more effectively) for the production of their overall level of subjective well-being. In the case of high-status, the other goals contribute much less to people's well-being (explained variance .44 versus .29). Hypothesis H1 was therefore supported by the data. If people lack means of production for a specific instrumental goal, they try to substitute through realizing other instrumental goals.

Table 4. Mean for well-being by paid work.

	No paid work	Paid work
Well-being *M*	6.7[a]	7.0[a]
SD	1.4	1.1
N	343	746

Note. [a] *t*-test $p < .001$

Table 5. Mean for well-being by paid work and volunteer work.

	No paid work		Paid work	
	No volunteer	Volunteer	No volunteer	Volunteer
Well-being *M*	6.6[ab]	6.8[c]	6.9[ad]	7.2[bcd]
SD	1.4	1.3	1.2	1.0
N	228	115	518	228

Notes.
1. [a,b,c,d] LSD multiple comparison test $p < .001$
2. One-way Analysis of variance $F=7.4$; $p < .001$
3. Anova for interaction effect of paid work*volunteer work, controlled for main effects of paid work and volunteer work; well-being ($F_{\text{paid work*volunteer work}}=0.5$; $p=ns$)

Buffer effects

We see from Table 4 that people with a paid job indeed have a significantly higher level of well-being than people without a paid job. From Table 5, we see that there is a sizable percentage (31%) of people with a paid job who also engage in voluntary work. They also have a higher level of well-being than the one's without voluntary work. This confirms hypothesis H2' on buffer formation. Table 5 also reveals that people without paid jobs who have voluntary work have a higher level of well-being than people who are unemployed without voluntary work. This confirms the absolute buffer effect of hypothesis H2''. However, the relative buffer effect of hypothesis H2'', tested with ANOVA as an interaction effect, is rejected. This may be due to the substitution effect as discussed earlier. We could not find a smaller

difference between employed and unemployed among those engaged in voluntary work than among those who are not involved in voluntary work.

Table 6. Mean for well-being by partner.

	No partner	Partner
Well-being *M*	6.3[a]	7.0[a]
SD	1.4	1.2
N	187	902

Note. [a] *t*-test $p < .001$

Table 7. Mean for well-being by partner and friends.

	No partner		Partner	
	Few friends	Many friends	Few friends	Many friends
Well-being *M*	6.1[abc]	6.5[ade]	6.9[bd]	7.0[ce]
SD	1.7	1.1	1.2	1.1
N	84	102	383	510

Notes.
1. [a,b,c,d,e] LSD multiple comparison test $p < .05$
2. One-way Analysis of variance $F=17.8$; $p < .001$
3. Anova for interaction effect of partner*friends, controlled for main effects of partner and friends; well-being ($F_{partner*friends}=3.0$; $p < .05$)

Table 6 shows the results for affection. Having a partner makes a significant difference for the level of well-being. Table 7 shows that, again, there is sizable percentage of people who, even though they have a partner, also have many friends (57%). Their level of well-being is higher than the one for people with few friends (buffer formation), confirming H2’’’. People without a partner who have many friends have a higher level of well-being than the people without a partner and only a few friends. Moreover, the interaction effect is significant (i.e. the difference between people with and without a partner is less among those with many friends than among those with only a few friends). This confirms both the absolute and the relative buffer effects of hypothesis H2’’’’.

MARGINAL RATES OF RETURN

Table 8. Intercorrelations for well-being and affection, behavioral confirmation, status and their quadratic terms.

	Well-being
Affection	.45*
Behavioral confirmation	.40*
Status	.35*
affection squared	-.27*
behavioral confirmation squared	-.21*
status squared	-.11*

Note. * $p < .001$

Table 9 Multiple regression analyses of well-being on the quadratic terms of affection, behavioral confirmation and status.

Well-being	R^2	*F*	Beta
	.080	31.473*	
affection squared			-.205*
behavioral confirmation squared			-.114*
status squared			-.025

Note. * $p < .001$

Table 10. Multiple regression analyses of well-being on affection, behavioral confirmation, status and their quadratic terms

Well-being	R^2	*F*	Beta *step 1*	Beta *step 2*
step 1	.425	159.200***		
Affection			.185***	.156***
Behavioral confirmation			.087**	.087**
Status			.086***	.085**
Comfort			.262***	.254***
Stimulation			.298***	.298***
step 2	.436	103.850***		
affection squared				-.061*
behavioral confirmation squared				-.047†
status squared				-.040

Note. † $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

From Table 8, we see that the correlation of the quadratic terms with well-being are all negative and highest for affection and lowest for status. Separate regression analyses for affection and status showed that in addition to the linear regression

model, the quadratic term of affection contributed 2% of explained variance in well-being, but only 1% for status. A similar picture emerges from the regression analyses in Tables 9 and 10. The quadratic term for affection is significant and larger than for status, with behavioral confirmation in between. Even though the effects are not very strong in terms of the explained variance, they do confirm Hypothesis 3'. This also implies confirmation for the idea that people are likely to create more buffers for affection than for behavioral confirmation and status, in that order.

CONCLUSION

The goal in this paper was to explain why people are still fairly satisfied with their lives even when they lack important resources such as a paid job or a partner. We argued that such objective indicators are often not strongly associated with subjective feeling of well-being, because of substitution processes and buffer effects. Social Production Function (SPF) theory helps us trace these effects. According to this theory, subjective well-being is the result of people's success in obtaining affection, behavioral confirmation and status for social well-being, and comfort and stimulation for physical well-being. People have multiple means for reaching each of these goals and they also use a variety of means simultaneously, thus building buffers against loss of subjective well-being should a particular means become inaccessible for whatever reason. Differences in marginal returns make it likely that people build more buffers for affection than for behavioral confirmation and least buffers for status. An indirect confirmation of this effect can be seen in a study on the elderly by Steverink (2001). She found that elderly people lose their means of production for social well-being over time in a specific order: status first, then behavioral confirmation. Affection (along with comfort) lasts the longest as a means to produce social well-being. At least in part, this may be due to the differences in buffer formation between the three means. People also are resourceful in substituting across different life-domains and different forms of well-being. For example, a loss of status can be compensated by focusing more on behavioral confirmation and affection and even by putting more emphasis on stimulation and comfort. The empirical test of these effects confirmed the hypotheses, even though the cross-sectional data put severe limitations on such a test. The results are also consistent with what we found in a pilot study (Nieboer & Lindenberg, 2000).

By specifying a hierarchical structure of goals and means for the production of subjective well-being, SPF theory opens possibilities to research more deeply the relationship of objective and subjective indicators of quality of life. People's ability to build buffers and to substitute has important consequences for how they deal with changes in their "objective" conditions. Clearly, people are by and large not passive victims of objective circumstance. At the same time, objective conditions that block buffer formation and substitution do make people unable to cope with changing circumstances. Thus, when we consider objective conditions, we might profitably focus on those that influence both buffer formation and substitution.

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[1] Utility (U) is achieved via physical well-being (PW) and social well-being (SW), thus the utility function is U = f (PW, SW). Social well-being is produced by three means: Status (S), behavioral confirmation (BC) and affection (A). Thus, the production function for social well-being is SW = f(S, BC, A). Each of these factors can, in turn, be an instrumental goal, produced by other factors. The lower we go in the hierarchy, the more context or domain-specific the production function will be.

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