Swiss Journal of Psychology 55 (4), 227–240 (1996)

The Program for Systematic Self-Monitoring and Reflection of Health Behavior and Health Attitudes (SySeRe)

Conception and Empirical Evaluation of a Group Program on Health Promotion

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The development of and results on the effectiveness of a program for the promotion of health- and development-related cognitions as well as personal well-being are presented. The aim of the program is the **Sy**stematic **Se**lf-Monitoring and **Re**flection of everyday life behavior (SySeRe-Program). It is conceptualized with reference to action and self-efficacy perspectives in developmental psychology, cognitive behavior modification as well as theories of health behavior. A randomized group design was employed to evaluate the effects of the SySeRe-Program on health locus of control, health value, personal control over development, personal self-regulation of development as well as well-being, psychosomatic complaints, and hopelessness. Participants were 60 adults (aged 59–76 years) who were randomly allocated to the SySeRe-Program or a wait-list condition. Measures were administered at baseline, at the end of the 8-week treatment, and at 2-months follow-up. Group comparisons performed at post-test and follow-up indicated statistically significant differences in favor of the group that received the SySeRe-Program on almost all measures. The discussion refers to the possibilities of program application and to its theoretical foundations.

With its focus on primary prevention (not only the correction of pathological behavior and experience) and competence development (not only the reduction of deficits in behavior and experience), health promotion programs share noticeable common features with the concept and methods of developmental intervention (e. g., Danish, 1981; Danish, Smyer & Nowak, 1980; Gräser, 1980). Furthermore, if health education takes into account the developmental status and the developmental possibilities of the participants, and if it is conceptualized with reference to a theory of human development, health promotion programs can be seen as developmental interventions.

Health education programs refrained to a large extend in the last decade from attempts to promote health behaviors and health attitudes primarily by the analysis and reduction of more or less disease-specific risk factors (e. g., Faber & Reinhardt, 1982; Freidman et al., 1984; Weiss, 1984). Newer health programs switched from the risk-factor orientation to broader, integrative concepts, which aim at more general, fundamental changes of the participants' lifestyle (e. g., Franke, 1991; Franke & Möller, 1993; Mittag, 1993; Ornish et al., 1990). Such integrative health education programs attempt to influence the everyday life of the person in a more holistic way in favor of general positive health attitudes and health behaviors. This not only runs the danger of becoming too difficult and demanding for (at least some of) the participants (e. g., because of bounded human information-processing capacities; Schwarzer, 1992; Simon, 1957), but there also seems to be a conceptual gap between the – for the most part eclectic – health education methods applied and the holistic, lifestyle oriented treatment objectives. As a rule, many conceptually different treatment techniques (like health information, group discussion, behavior analyses, role playing, individual and group counseling, learning by experience, relaxation methods, Yoga, meditation, obesity reduction, dietetics, etc.; see, e. g., Franke & Möller, 1993; Ornish et al., 1990) are realized within one program. This leads not only to some discrepancies in comparison to the holistic treatment objective of (positive) lifestyle change, but also to difficulties in the empirical evaluation of the effectiveness of the heterogeneous program ele-

ments. These difficulties increase due to the – for the most part – very general definition of the evaluative criterion of lifestyle change. In sum, much is done in the integrative (but eclectic) health education programs, but the outcome is measured in general terms (e. g., Mittag, 1993) or very specifically without reference to special program parts (e. g., Ornish et al., 1990).

Most of the problems and difficulties of the current health education programs seem to be a result of a wide-spread theoretical abstinence or theoretical non-commitment. One might also call it loose theoretical linking or theoretical indifference, because – at best – the applied different treatment techniques are only individually theoretically founded and substantiated (see, e. g., Franke & Möller, 1993; Haisch & Zeitler, 1993) without reference to a broader, integrative theoretical framework. In essence, existing integrative, large-scale theories of health psychology and developmental psychology are scarely used and taken advantage of by applied research and psychology practice. Instead, very pragmatic and – perhaps only – practical programs are developed, realized, and evaluated with the above described conceptual and evaluative problems. Furthermore, it must be seen that this eclectic strategy may hinder theoretical progress as well. Thus, the double functions of applied developmental psychology (Filipp, 1987) and applied health psychology – (a) to produce the scientific base for the responsible application of psychological knowledge and (b) to acquire scientific knowledge from applied research – are not fully met.

In the following, an alternative, theoretically well founded health promotion program is developed and evaluated empirically. This program is conceptualized with reference to action and self-efficacy perspectives in life-span developmental psychology, to concepts of cognitive behavior modification as well as to motivational and volitional theories of health behavior. These theoretical approaches were selected because they represent large-scale heuristics for the analysis of human experience and behavior making clear the above described linkages between developmental interventions (and their foundation in theories of human development) and health promotion programs (and their foundation in theories on health behavior) using theoretically compatible cognitive-behavioral modification techniques. However, in spite of this triple set of theoretical linkages, the program is not eclectic employing various, heterogeneous treatment techniques, but a homogeneous treatment method. In addition, it is economical: It can be applied in group sessions with up to 15 participants in eight weeks, with one group meeting (of ca. 90 minutes) per week. Further more, the theoretical foundations of the program allow a purposeful selection of the outcome variables which are most important in empirical program effectiveness evaluations.

The program for systematic self-monitoring and reflection of behavior (SySeRe-Program)

Theoretical foundations of the SySeRe-Program

The integrative SySeRe-Program for health promotion aims clearly at primary prevention and the development of self-regulation competencies, but also – depending on the psychological characteristics of the single participant or even the group – corrects pathological or risk behavior and attitudes as well as reduces behavioral and/or attitudinal deficits. As a developmental intervention, the SySeRe-Program incorporates concepts of development, more specifically, theories of adult development, into a practical framework.

Action and self-efficacy perspective in life-span developmental psychology

The first theoretical foundation of the SySeRe-Program is the action-theory founded, constructivistic approach to human development (e. g., Brandtstädter, 1984, 1989; Brandtstädter, Krampen & Heil, 1986; Lerner & Busch-Rossnagel, 1981). This theoretical orientation focusses on: (1) the development-related emotions of the person (his/her affective autobiographical retrospect and future outlook, e. g., hopelessness), and (2) the person's efforts to regulate his/her own development actively. Both variables are conceptualized within this approach as dependent on both subjective eval-

uations of developmental goals (e. g., health values) and subjective competence and control orientations. Of central relevance is the concept of personal control over development, which is defined as the (generalized) expectancy of the person with regard to his/her possibilities to control and to regulate his/her own development. Of course, these concepts are related to the constructs of locus of control of reinforcement (Rotter, 1982) and self-efficacy (Bandura, 1981, 1989). However, in the action perspective to life-span development, these constructs are specified and defined explicitly with reference to the individual's subjective perceptions and evaluations of his/her personal development. Implications of this theoretical perspective for developmental interventions refer to the treatment objectives of: (1) enhancing personal control over development, (2) optimizing development-related emotions (e. g., reducing hopelessness), and (3) promoting personal self-regulation of development (e. g., concerning health behaviors).

Social-cognitive process model of health-related action

The second theoretical foundation of the SySeRe-Program is its linkage to modern motivational and volitional theories of health behavior (or – more correctly – health-related and goal-directed actions; e. g., Eiser & Gentle, 1988; Gochman, 1988; Janz & Becker, 1984; Kristiansen & Eiser, 1986; Schwarzer, 1992; Wallston & Wallston, 1986). All modern theories on health attitudes and health behavior – the Health Belief Model as well as the Theory of Planned Behavior and the Protection Motivation Theory – can be characterized as more or less differentiated conceptions of the basic expectancy-value model (e. g., Feather, 1982). Schwarzer (1992) presented an attempt to integrate the relevant variables of these models and the variables of volitional theory on the realization of health behavior to a social-cognitive process model of health-related action. Health-related actions are conceptualized within this approach to be dependent upon: (1) subjective outcome-expectancies (refering to perceptions of the severity of diseases and of personal vulnerability), (2) subjective competence-expectancies (refering to perceptions of one's own action possibilities, i. e., freedom of behavior; Rotter, 1982), (3) objective and subjectively perceived barriers and ressources (i.e., social support, working conditions, information ressources, professional help ressources, etc.) as well as (4) subjective control orientations (i. e., personal beliefs about the effectiveness of one's own regulatory efforts and health behavior). Whereas the first two variables of this model constitute – together with the subjective reinforcement value of health (e. g., Seeman & Seeman, 1983) – the motivational process of intention formation, the last two constitute the volitional process of intention realization, i. e., the manifestation of health behavior and changes of health behavior. The application of these integrative theoretical considerations to health education programs and developmental interventions implies the necessity of analyses and reflections of the person's current health behaviors and attitudes. The treatment objective is the transformation of more or less (un-)reflected, habituated (health) behaviors to expectancy-regulated, goal-directed actions. Most importantly, these actions are reflected upon to the extent that they take into account the barriers and resources which impede or enhance one's health status. Thereby, health locus of control beliefs and personal self-regulation of development are affected. These are the same treatment objectives as those of developmental interventions (see above).

Cognitive behavior modification

The third theoretical foundation of the SySeRe-Program refers to approaches in modern behavior modification and cognitive therapy. Selected treatment methods developed within these models constitute the linkage between the two sketched theories and the realization of health education in the practice. The techniques of behavioral (self-)analysis, self-monitoring and self-management (e. g., Kanfer, 1975; Nell & Westmeyer, 1990) are used in the SySeRe-Program. These techniques are related to methods for the enhancement of self-control (Kanfer, 1975; Preiser, 1989) and self-actualization

(e. g., Paulus, 1993; Rogers, 1942), which are both – like self-regulatory competencies – significant aspects of mental health (Becker, 1982; Paulus, 1993). The focus of the SySeRe-Program is the firm action-theoretically oriented analysis of everyday life behaviors and experiences. The treatment objective is the transformation of everyday life behavior (which perhaps is not even conceptualized as relevant for one's own health) to goal-directed, expectancy-regulated, reflected health-related action. Therewith, the SySeRe-Program is not only founded on two (developmental and health psychological) theories, but it shows relations to cognitive behavior modification and the client-centered approach. These relations are practically relevant for the application of the program. In addition, the treatment objectives of these treatment concepts are consistent to those deduced from action and self-efficacy perspectives to human development and the social-cognitive process model of health-related action.

Preconditions and further objectives of program-application

Last not least, the developmental adequacy of the SySeRe-Program must be reflected upon. Behavioral analysis, self-monitoring, and self-management – realized in a predominating client-centered manner – imply relative high demands on the individual's willingness and abilities to analyze and to reflect upon his/her own thinking and behavior. Kaiser (1993) differentiated seven facets of self-reflexive thinking and action, all of which are relevant for the application of the SySeRe-Program (see Tab. 1). But it must be noted that the optimal willingness and ability to realize all seven facets of self-reflection is not an absolute precondition for the application of the SySeRe-Program. Instead of this, the minimal indicative criteria for its application are basic levels of development capability of: (1) the receptiveness to argumentation, (2) the perception of competences, (3) the reconstruction of actions, (4) the evaluation of actions, (5) problem sensitivity, (6) the revision of actions, and (7) the consensus orientation (for the exact explanation of these facets see Tab. 1). With reference to these criteria (which denote the individual's capability for self-reflexive development) the limits for the application of the SySeRe-Program are not widely restricted. Exceptions and absolute contra-indications are early childhood and certain psychopathological manifestations (e. g., dementias). Of relative indicative importance are interindividual differences in cognitive and behavioral rigidity (Schaie, 1960), the motivation of the participants, and the related willingness to engage personally in the program. Assuming a basic level of development capability in the facets of self-reflexive thinking and action, promotion of the seven facets itself is a significant treatment and developmental objective, one which is aimed at in the application of the SySeRe-Program. However, it must be emphasized that – in contrast to broad spreadable self-help materials and health information campaigns (with unknown acceptance too) – there must be a minimal personal and/or external motivation of the participants to come to the small group meetings.

Table 1: Facets of Self-Reflexive Thinking and Action (Kaiser, 1993)

Facet	Explanation
1. Receptiveness to argumentation	Willingness and capability to conceptualize one's own behavior as sensitive for argumentation
2. Perception of competencies	Willingness and capability to identify one's own action possibilities
3. Reconstruction of action	Willingness and capability to reconstruct one's own action orientations and their reasons
4. Evaluation of actions	Willingness and capability to evaluate one's own and others' actions in a balanced manner
5. Problem sensitivity	Willingness and capability to identify problematic, negative action orientations and situations
6. Revision of actions	Willingness and capability to revise the interpretations of and attributions for one's own and others' actions
7. Consensus orientation	Willingness and capability for consensus-oriented and revision-oriented description and analysis of one's own and others' action modalities

Construction and elements of the SySeRe-Program

The SySeRe-Program aims at the systematic self-monitoring and reflection of the participants' current everyday life behavior and experience as well as the self-determined and self-regulated search for possibilities to improve one's own behaviors and attitudes in the following six behavior and life domains (see upper part of Tab. 2):

(1) Eating and drinking habits (including alcohol consumption),
(2) drug and tobacco consumption (including nonprescribed and prescribed drugs),
(3) physical exercise and fitness,
(4) mass media consumption habits,
(5) social contact and interpersonal relations,
(6) stress reactions and coping with stress.

The selection of these six behavior and life domains was oriented towards existing conceptual and empirical taxonomies of health-related behavior domains (e. g., Becker, 1992; Gochman, 1988; Schmidt, 1990) as well as towards empirical results on their significance in the everyday life (e. g., Krampen, Fähse & Groß, 1994; Wahl & Schmidt-Fuhrstoss, 1988; Ziegler & Reid, 1983). A guiding principle was the syndrome-similar constellation of dysthymic mood, reduced social activities and contact frequencies (up to the point of isolation), reduced physical activities, frequent excessive (passive-receptive) mass media consumption patterns (for the most part television viewing) as well as resignative and perseverating cognitions (e. g., in withdrawn living , elderly persons). This aims at the corrective task of health education. The preventive task of the SySeRe-Program refers to the prevention of such a development, of a chronification of latent existing developmental trends and of related dangers and risks.

Each of the six behavior and life domains is treated in the SySeRe-Program in the following manner (see Tab. 2):

(1) *Systematic self-observation and description of the behavior:* Each participant constructs his/her own diary (like exercise books in school) and keeps it during the whole course. Diary keeping is trained by the systematic (retrospective) copying of the relevant behaviors into the diary for the days of the past week (day for day) and – much more generally – for the personal biography (roughly structured into early childhood, late childhood, adolescence, early adulthood, time of World War Two, time after World War Two, and time after one's own or one's partner's retirement in the empirical program evaluation reported below). After this training, the participants keep the diary for the

Table 2: Overview of the Elements in the SySeRe-Program

Program Part	Behavior Domains	Treatment Methods
		Four treatment steps with reference to all six behavior domains (8 group meetings):
SySeRe 1	– Eating and Drinking Habits (including alcohol consumption)	1. Systematic self-observation and behavior description – for the days of the last week – for one's own biography – ongoing diary keeping
SySeRe 2	– Drug and Tobacco Consumption	
SySeRe 3	– Physical Exercise and Fitness	2. Behavior analysis and reflection in the group – identification of gaps in the diary – S-O-R-C analyses
SySeRe 4	– Mass Media Consumption Habits	
SySeRe 5	– Social Contact and Interpersonal Relations	3. (Self-)Diagnosis and goal-definition in the group – identification of necessity of behavior changes – goal determination – identification of possibities of behavior change
SySeRe 6	– Stress Reactions and Coping with Stress	4. Ongoing self-monitoring and evaluation of efforts – ongoing diary keeping – reports in the group

ongoing weeks. After each group meeting, one more behavioral domain is added to the diary keeping.

(2) *Behavior analysis and reflection in the group:* First of all, gaps in the diary of each participant are identified during the group meetings. After this the concept of S-O-R-C analysis is explained and demonstrated. Each participant realizes at least one such analysis for his/her diary content and for each behavior domain.

(3) *(Self-)Diagnosis and goal-definition in the group:* The necessity of behavioral and attitudinal changes are discussed for each participant and for each behavior domain in the group. If there is any negative or problematic behavior or attitude, the goals of change are defined in a behavior-near (operationalized) form. Therewith, the objective and subjectively perceived barriers and resources of the single participant are considered and discussed.

(4) *Ongoing self-monitoring and evaluation of efforts to change behaviors:* The diary is kept for the critical behaviors during the whole course (the diary keeping of other, nonproblematic behavior domains is dropped after three or four weeks). At group meetings each participant reports his/her (critical and changed) behaviors in the last week. These reports are discussed, which leads – besides self-evaluations of one's own progress – to group evaluations of the success versus failure for each participant.

Application of the SySeRe-Program

Group size should not exceed 15 participants, who meet weekly for 90 to (maximally) 120 minutes in an open (round) seating plan including the group leader. The whole group program is oriented around the principles of the client-centered (non-directive) approach, focusing the stimulation of group discussion and group dynamics as well as the empathic understanding and reflection of the participants' behaviors, statements, and reports. Exceptions from this refer to: (1) the explanation and training of self-perception and diary keeping, (2) the illustrative demonstration of the behavior-modificational S-O-R-C analysis, and (3) cases of reported negative and risk behaviors (like excessive alcohol or tobacco consumption) and statements (like positive statements on unbalanced diets), if corrections (which are positively reinforced) do not come from other participants. All three exceptions result in a more directive leadership style, which moves after explanations and illustrative demonstrations again to a client-centered leadership style.

First program effectiveness evaluation: Promotion of development- and health-related cognitions as well as well-being in the elderly

The first program effectiveness evaluation refers to an empirical test of its impact on health- and development-related cognitions as well as well-being in the elderly. A randomized group design was employed. Program effectiveness was evaluated with reference to variables deduced from action and self-efficacy perspective in life-span developmental psychology (i.e., personal control of development, hopelessness, and personal self-regulation of development) and social-cognitive models of health attitudes and behavior (i.e., multidimensional health locus of control and health value). In addition, current health status was measured by indicators of psychosomatic complaints and subjective well-being.

Methods

Subjects

Participants were 60 German adults ($M = 68.8$, $SD = 6.2$ years; age range: 59–76 years; 34 females and 26 males) receiving no psychiatric or psychotherapeutic treatment, who lived in their own apartments or houses (18 of them lived alone, 42 with a partner or with their larger family). As regards (former) occupational status and level of education, the majority of the subjects belongs to the middle class. Subjects were recruited by community advertise-

ment of courses on "Health Education", announced with preventive treatment objectives for the healthy elderly in a community service for open adult education.

Participants can be characterized as relatively healthy Germans with no severe acute disorders (chronic diseases: $n=6$ diabetes, $n=4$ myocardial infarctions after remission, $n=4$ hypertension, $n=2$ arrhythmias; all in medical outpatient treatment). With reference to comparisons of pretest scale means (see Tab. 4) with norm data from German standardization samples, the present sample is described by slightly: (1) increased psychosomatic complaints (mean standard $T=56$), (2) lower internality in health locus of control ($T=45$), (3) higher chance health locus of control ($T=55$), and (4) increased hopelessness ($T=58$). To a large extent these deviations may be explained by age differences between the present sample and the test standardization samples. However, without indications of more severe mental or psychosomatic disorders, these data point toward some developmental as well as health risks in the sample under investigation.

Measures

Measures were administered at baseline (before program start), at the end of the 8-week SySeRe-program, and at 8-weeks follow-up. Outcome measures included: (1) a German symptom checklist (Krampen, 1991) including 4-point ratings of 48 psychosomatic and behavioral complaints (e.g., frequency – never (0) versus very often/strong (3) – of "sleep disorders," "nervousness," "respiration problems," "digestive troubles," "attention problems," "headache," etc.); (2) two graphical, 7-point rating scales on "My current personal physical fitness" and "My current personal mental well-being" using faces appearing very sad (rating point 1) versus very happy (rating point: 7); (3) the "Scale for the Assessment of Health Value" from Nentwig & Windemuth (1992; developed following Kaplan & Cowles, 1978, and Seeman & Seeman, 1983) which includes a 10-point rating of the item "How important to you is your health?" and 6-point ratings of 3 other items (e.g., "Better to be poor and healthy than rich and sick"); (4) the "Disease and Health Locus of Control Scales" (KKG; Lohaus & Schmitt, 1989), measuring: (a) internality in health locus of control (e.g., "When I take care of myself, I never have complaints"), (b) powerful others' externality in health locus of control (e.g., "If I have complaints, I ask others for help"), and (c) chance control in health locus of control (e.g., "Whether I feel good or not can not be influenced") similar to Wallston, Wallston & DeVellis (1978); (5) the "Scales for the Measurement of Personal Control over Development" (P-CON; Brandtstädter et al., 1986), a German questionnaire measuring subjective evaluations of 20 developmental goals and the expectancies about one's personal impact on goal attainment (Goal evaluations and control expectancies are aggregated to an indicator of internality in personal control over development; see Brandtstädter et al., 1986); (6) the "Questionnaire for the Measurement of Development-Related Action Efforts" (E-REGU; Krampen, 1992) assessing for ten life and behavior domains the individual's efforts to change something actively in the last two months (e.g., "In the last two months of my life, I have actively changed something for the best in the life domain of social relations"; "...of family relations"; "...of mass media consumption"; "...of eating habits"; "...of physical exercise"); (7) The German version of the "Hopelessness Scale" (H-Scale; Beck et al., 1974; Krampen, 1979, 1994) measuring generalized negative expectancies concerning one's own person and personal future life (e.g., "I never get what I want so it's foolish to want anything"). Test reliability and validity of all scales employed are assured for German samples (see Brandtstädter et al., 1986; Krampen, 1991, 1992, 1994; Lohaus & Schmitt, 1989; Nentwig & Windemuth, 1992).

Procedure

A randomized control group design was employed. After pretest and randomization (controlling for age, gender, and chronic disease), subjects in Group I ($n=30$) participated in SySeRe-Program courses in two small groups ($n=15$) which met weekly for 8 weeks. Subjects

in Group II ($n=30$) were the wait-list group which received the SySeRe-Program five months after Group I (after summer break). Measures were administered in Group I and Group II at baseline, at the end of the 8-week SySeRe-Program, and at 8-weeks follow-up. Experimentally controlled follow-up time could not be longer because of Group II-participants's motivation to receive the SySeRe-Program too.

Results

Mean comparisons for all pretest measures confirmed that the randomization procedure resulted in comparable groups (see Tab. 4; $t(58) < 1.31$). Coefficients of internal consistency for all scales exceed $r_{tt}=.66$ for all times of measurement. The main diagonal of Table 3 shows the coefficients of internal consistency for all pretest measures. Comparisons of alpha coefficients obtained from the same sample (following Feldt, Woodruff & Salih, 1987) did not point toward significant differences between times of measurement for all measures ($t(52) < 1.04$). There were three dropouts in each group during the program and follow-up. Two subjects of Group I and one subject of Group II dropped because of acute physical illness and hospitalization, one of Group II died, and one of each Group dropped because of motivational loss. Thus, evaluative results are based on a total sample of 54 subjects.

Intercorrelations of all pretest measures are summarized for the entire sample in Table 3. They are in line with existing results and confirm significant interrelations of indicators of well-being, psychosomatic complaints and hopelessness with indicators of locus of control in the aged (e.g., Krampen, Fähse & Groß, 1993; Ziegler & Reid, 1983). Furthermore, the results point toward relevant relations between health locus of control and personal control over development as well as personal self-regulation of development. The same is true for health value. These findings accord well with the existing data on personal control over development (see Brandtstädter, 1989; Brandtstädter et al., 1986) and empirically confirm the compatibility of action and self-efficacy perspectives to adult development with social-cognitive theories on health attitudes and behavior. Tests of differences in the mean intercorrelations of all measures obtained at pretest, posttest, and follow-up ($d(z) < .21$, $p > .05$) as well as between the two experimental groups ($d(z) < .17$, $p > .05$) confirm the stability of variable interdependences. Multiple regression analysis on subjective well-being at pretest resulted in a significant multiple correlation ($R=.52$, $p < .01$). Beta weights indicate that well-being is predicted best by internal health locus of control ($beta=.49$), personal self-regulation of development ($beta=.43$), and personal control over development ($beta=.39$). Health value ($beta=.17$), powerful others's ($beta=.08$) as well as chance health locus of control ($beta=-.19$) contribute less to the prediction of well-being.

Means and standard deviations of all pre-, post- and follow-up-measures are summarized for both groups in Table 4. A multivariate analysis of variance (MANOVA) with the grouping

Table 3: Intercorrelations Between Pretest Measures and (in Main Diagonal) Internal Consistencies (N=60)

Measure	1	2	3	4	5	6	7	8	9
1. Well-Being	(.78)	−.63**	.14	.36**	.04	−.15	.31*	.38**	−.40**
2. Psychosomatic complaints		(.92)	.23	−.35**	−.08	.29*	−.35**	−.25*	.43**
3. Health value			(.69)	.35**	.21	−.08	.31*	.37**	.08
4. Internal health locus of control				(.76)	.13	−.16	.25*	.27*	−.22
5. Powerful others' health locus of control					(.69)	.08	−.10	−.31*	.17
6. Chance health locus of control						(.72)	−.33**	−.26*	.41**
7. Personal Control over development							(. 75)	.37**	−.27*
8. Personal self–regulation of development								(.67)	−.26*
9. Hoplessness									(.87)

**p<.01; *p<.05

Table 4: Means and Standard Deviations of Measures in Group I (n = 27) and Group II (n = 27)

	Pretest		Posttest		Follow-up	
Measure	*M*	*SD*	*M*	*SD*	*M*	*SD*
Psychosomatic complaints						
Group I	57.4	19.1	40.3	18.0	41.0	18.7
Group II	56.6	18.1	58.1	19.4	59.8	19.1
Subjective well-being						
Group I	7.6	2.6	10.7	2.4	9.5	2.7
Group II	7.3	2.7	7.0	2.6	6.9	3.1
Health value						
Group I	25.9	3.3	27.0	3.1	26.5	2.8
Group II	26.1	2.9	26.8	3.2	26.7	3.0
Internal health locus of control						
Group I	25.2	4.7	29.4	4.6	28.8	5.2
Group II	24.9	4.9	23.8	4.8	24.3	5.3
Powerful others' health locus of control						
Group I	19.5	5.6	19.6	5.2	20.4	4.9
Group II	19.8	4.9	19.1	5.3	19.5	5.0
Chance health locus of control						
Group I	19.5	6.1	14.7	6.2	13.9	5.7
Group II	19.3	6.3	19.0	6.1	20.4	6.4
Personal control over development						
Group I	153.2	42.3	174.1	43.1	179.7	44.3
Group II	154.7	40.9	156.8	41.9	156.2	43.2
Personal self-regulation of development						
Group I	0.6	1.1	3.1	0.9	4.0	1.0
Group II	0.5	1.2	0.4	1.3	0.5	1.2
Hopelessness						
Group I	6.9	4.3	3.8	3.9	3.1	4.2
Group II	7.1	4.1	7.3	4.2	7.4	4.0

factor Groups (1, 2) and the repeated measurement factor Time (1, 3) was computed including all nine measures. Single mean comparisons between groups and times of measurement were computed by univariate analyses of variance (resulting in estimates of effect size d; Cohen, 1977) and validated by a posteriori contrasts (Duncan procedure). Significant results are – in addition to means presented in Table 4 – graphically presented in terms of T-scores standardized for the sample under investigation (see Fig. 1–7).

MANOVA yielded significant overall main effects for Group ($F(9,44)=6.37$, $p<.01$) and Time ($F(18,35)=16.84$, $p<.01$) as well as for the interaction between Group and Time ($F(18,35)=8.52$, $p<.01$). Single mean comparisons between the groups (treatment versus wait-list control group) for posttest measures showed the following results: (1) No significant group differences in health value ($p>.10$) and powerful others's externality in health locus of control ($p>.10$); (2) Significant differences in favor of Group I in: (a) psychosomatic complaints ($p<.01$, Effect size $d=.95$; see Fig. 1), (b) subjective well-being ($p<.01$, $d=1.47$; see Fig. 2), (c) internality in health locus of control ($p<.01$, $d=1.19$; see Fig. 3), (d) chance health locus of control ($p<.01$, $d=.69$; see Fig. 4), (e) personal control over development ($p<.01$, $d=.42$; see Fig. 5), (f) personal

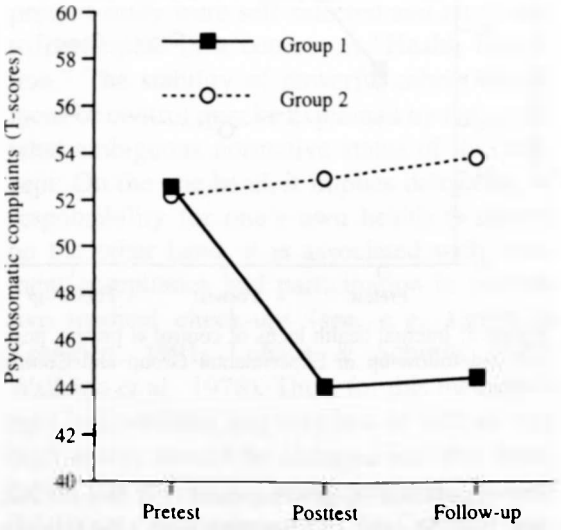

Figure 1: Psychosomatic complaints at pretest, posttest and follow-up in Experimental Group and Control Group

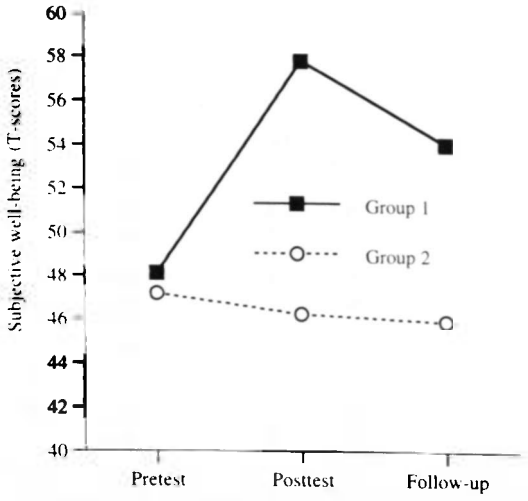

Figure 2: Subjective well-being at pretest, posttest and follow-up in Experimental Group and Control Group

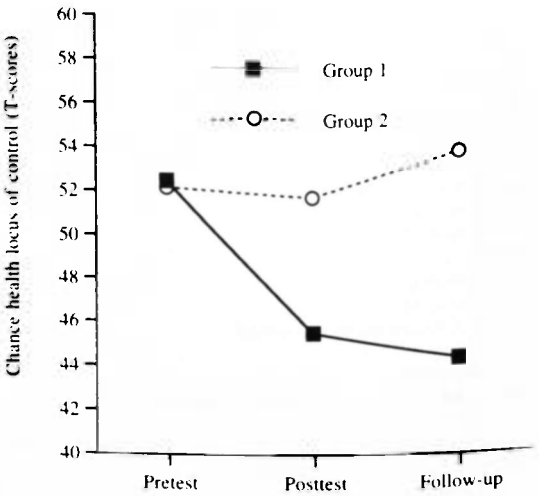

Figure 4: Chance health locus of control at pretest, posttest and follow-up in Experimental Group and Control Group

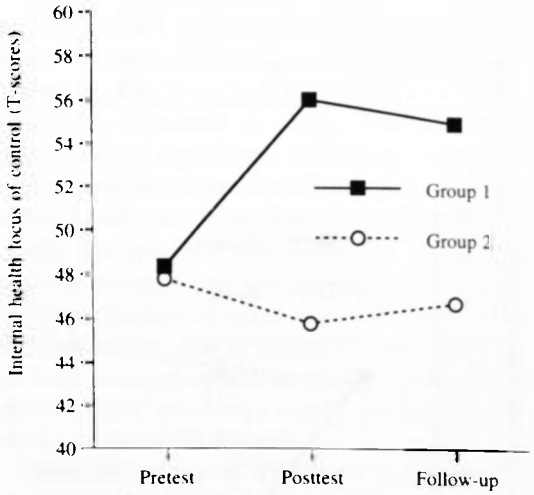

Figure 3: Internal health locus of control at pretest, posttest and follow-up in Experimental Group and Control Group

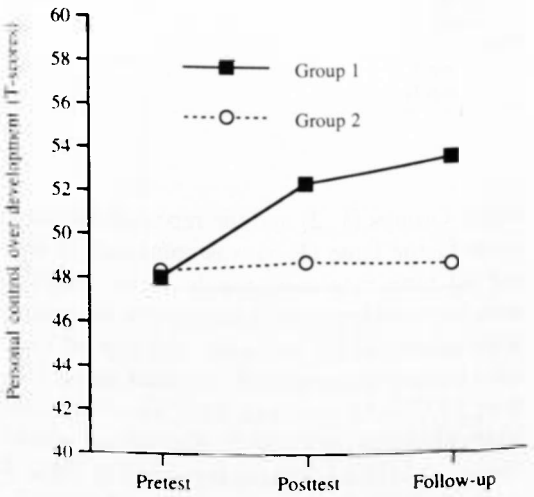

Figure 5: Personal control over development at pretest, posttest and follow-up in Experimental Group and Control Group

self-regulation of development ($p<.01$, $d=2.2$; see Fig. 6), and (g) hopelessness ($p<.01$, $d=.85$; see Fig. 7).

The between group results are confirmed by single within group mean comparisons: While there is hardly any significant change between pre- and posttest in Group II ($p>.30$), all significant between group comparisons proved to be significant in within group-tests for Group I: Psychosomatic complaints are reduced after the treatment ($p<.01$, $d=.92$), well-being increased ($p<.01$, $d=1.24$), internal health locus of control increased ($p<.01$, $d=.90$), chance control decreased ($p<.01$, $d=.78$), personal control over development is promoted ($p<.01$, $d=.49$), personal self-regulation of development increased ($p<.01$, $d=2.5$), and hopelessness is reduced ($p<.01$, $d=.75$). Follow-up data presented in Table 4 show that all changes observed in Group I at posttest were maintained at the 2-month evaluation (both between groups and within Group I: $p<.01$; see Fig. 1–7).

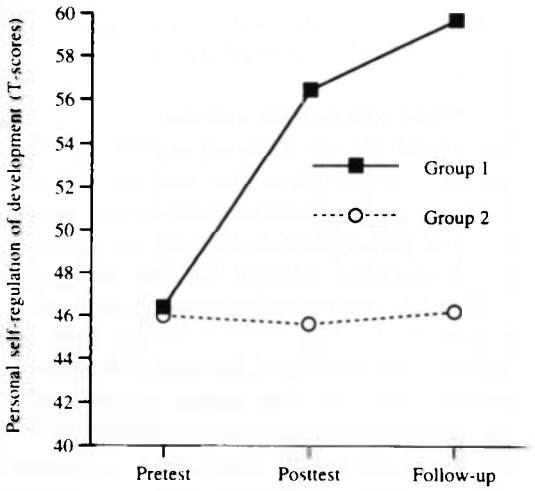

Figure 6: Personal self-regulation of development at pretest, posttest and follow-up in Experimental Group and Control Group

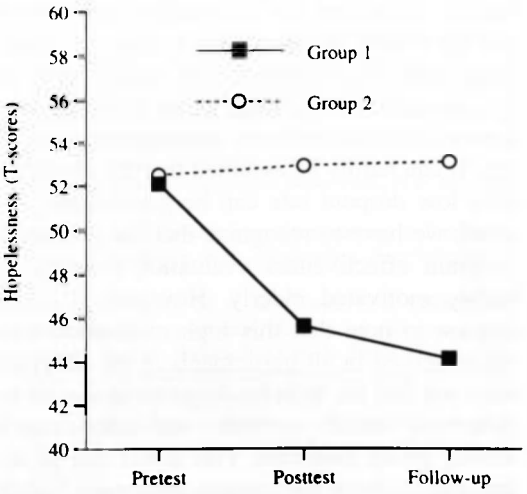

Figure 7: Hopelessness at pretest, posttest and follow-up in Experimental Group and Control Group

Discussion

The results presented confirm significant short-term as well as (at least) two-month effects of the Program for Systematic Self-Monitoring and Reflection of Everyday Behavior (SySeRe-Program) in the elderly. Effect sizes are large (following Cohen, 1977) in the promotion of personal self-regulation of development, subjective well-being, and internality in health locus of control as well as in the reduction of psychosomatic complaints. Medium effect sizes are reached in reductions of chance health locus of control and hopelessness as well as in increase of personal control over development. Thus, variables are affected by the SySeRe-Program which are both deduced from the action and self-efficacy perspective in life-span developmental psychology as well as from social-cognitive models of health attitude and behavior.

No program effects were observed in health value and powerful others's health locus of control. For health value this can be explained with a ceiling effect resulting from an *a priori* very positive valuation of health (pretest means: 25.9 and 26.1 with reference to a score-range from 4 to 28) which did not leave sufficient range for (significant) increase. This is in accordance with existing results on the general tendency of individuals to rate health very highly and to the related problems in the development of health value scales with sufficient score variances and sensitivity for change (e.g., Kaplan & Cowles, 1978; Nentwig & Windemuth, 1992; Seeman & Seeman, 1983). In addition, it must be considered that all subjects of the present study were self-selected and motivated to participate in a course on "Health Education." The stability of powerful others' health locus of control may be explained by the somewhat ambiguous normative status of this concept: On the one hand, it implies delegation of responsibility for one's own health to others; on the other hand, it is associated with treatment compliance and participation in preventive medical check-ups (see, e.g., Greve & Krampen, 1991; Lohaus & Schmitt, 1989; Wallston et al., 1978). Thus, for this measure it may be postulated that very low as well as very high scores should be changed and that treatments aim at medium scores. However, pretest data point (with reference to the German standardization sample) toward such a medium level in both groups right from the start.

To sum up, the SySeRe-Program is a theoretically based, economical health promotion program employing homogeneous treatment techniques. Its parts are more homogeneous than those of eclectic health education programs, which aim at lifestyle changes (e.g., Franke & Möller, 1993; Ornish et al., 1990).

The SySeRe-Program is theoretically well founded with reference to modern action and self-efficacy approaches in life-span developmental psychology, health psychology, and cognitive behavior modification. These theoretical foundations allow specific predictions of treatment outcomes, which – for the most – were confirmed in the domain of development- and health-related cognitions in the first empirical program effectiveness evaluation. Further on, conceptual compatibility and empirical findings show that developmental intervention and health education go hand-in-hand. Thus, using cognitive-behavioral modification techniques the SySeRe-Program brings together the concepts of developmental intervention (founded on theories on human development) and health promotion (founded on theories of health behavior).

Of course, the presented results on the effectiveness of the SySeRe-Program must be completed by further research. Admittedly, the results meet the requirements of an experimental randomized group design. But even here, treatment nonspecific factors (i. e., one small group meeting per week and the related social activities in the experimental group) may have influenced the findings. Therefore, we need studies which employ randomized cross-over designs in which the effects of the SySeRe-Program are tested in comparison to another group treatment (e. g., a group program on relaxation techniques). Such studies should include measures of health behavior as well as objective indicators of health status too. Furthermore, follow-up time should be extended. Future studies can – further on – refer to other application contexts (e. g., hospitalized or instutionalized old persons), and they can refer to other age groups (with the exception of young children; see above). Of special importance is the empirical analysis of the differential variables which are relevant for program effectiveness (relative treatment indication). The above-named variables of behavioral and cognitive flexibility versus rigidity (Schaie, 1960) as well as participants' motivation and compliance should be considered. It is hypothezised that participants' motivation is correlated with the differentiated facets of the willingness to be involved in self-reflexive thinking and action, and that rigidity is correlated with the facets of the capability to realize self-reflexive thinking and action (see Tab. 1).

In future research the extension and/or modification of the six behavior and life domains can be considered too. This can be done with reference to the characteristics of the specific group of participants or with reference to other life domains relevant for well-being and health (e. g., ecological behavior or political engagement). Ecological behavior has direct relations (e. g., individual avoidance of environmental stress) as well as indirect relations (e. g., engagement in social ecological movements) to well-being and health, which can be postulated for political participation as well, if humans are understood as beings who seek self-determination as well as control over their social and ecological environments. However, within the extension of the SySeRe-Program, the bounded human capacities for information processing and the effects of time (with its risks for dropouts) must be considered. The modification of the program and exchange of its elements (behavior domains) will be a more adequate strategy. It can hardly be assumed that the observed very low dropout rate can be generalized. Instead, we have to recognize that the presented program effectiveness evaluation referred to highly motivated elderly. However, it is of interest to note that this high motivation was not observed in all participants at the program start, but that the SySeRe-Program produced an infectious trend towards self-enhancement among group members. This effect can be attributed to those participants who were highly motivated at the program start and to the exercises on diary keeping just at the beginning. In addition, positive effects on motivation stem from the concrete, behavior-relevant "homework" given to the participants as well as from the direct feedback on their performance in the group. The participants knew very well, what should be done and how it should be done (and – even more – they had fun in doing it). This is a good prerequisite for SySeRe-Program applications and encouraging with reference to the existing problems in reaching potential participants and in the acceptance of the health promotion program.

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