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Evaluation of a Program on Systematic Self-Monitoring and Reflection of Health Behavior in Organisations: Results of Two Randomised Controlled Studies on Well-Being and Absenteeism of Employees and Skilled Workers

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Effects of a group health promotion program on well-being and absenteeism of employees and skilled workers were tested. The objectives of the program are systematic self-monitoring and reflection on everyday life health behavior as well as the promotion of health- and development-related cognitions and well-being. Randomised group designs were employed to evaluate the program's effects on well-being, psychosomatic complaints, personal regulation of own development, and absenteeism. Program effects were confirmed with reference to these outcome measures administered at the end of the 8-week treatment and at 2-month follow-up in samples of 56 public employees (Study 1) and 39 skilled workers (Study 2). Results demonstrate the effectiveness and usability of the SySeRe program as an economical individual-level health promotion intervention in occupational health psychology with large effect sizes in psychometric measures of well-being and in the reduction of employee sick leave as well.

Keywords: employee absenteeism, employee characteristics, health behavior, health promotion, organisational behavior, well-being

INTRODUCTION

Somewhat cautiously, Parks and Steelman (2008) conclude from their comprehensive meta-analysis on the effects of organisational wellness programs on absenteeism and job satisfaction that there is some empirical support for the effectiveness of these programs. Organisational wellness programs considered in this meta-analysis refer to attempts to promote good health or to identify and correct potential health-related problems by on- or off-site services sponsored by organisations (see Wolfe, Parker, & Napier, 1994).

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Neither type of wellness program (i.e. fitness only or comprehensive) nor methodological rigor of the primary studies (i.e. randomised control designs or pre-experimental designs) were significant moderators of the small to medium effect sizes observed for job satisfaction and absenteeism. However, primary studies differ markedly in the duration and in the "comprehensiveness" of programs under evaluation, but the number of studies with comparable program durations and activities—with the exception of fitness programs—was too small for separate evaluations in a meta-analysis.

But there are at least some randomised controlled studies on the effects of health promotion programs in organisations with specified durations and clearly defined activities. For example, Rosenfeld, Tenenbaum, Ruskin, and Halton (1990) randomly assigned 522 employees at two pharmaceutical industries to a fitness program versus a social program during work time. Both health promotion activities were offered during the 15 minutes prior to lunch over a period of 7 months, that is, in an economical, daily brief form, but over quite a long period of time. Repeated measurements analysis of variance results indicated that workers participating in the fitness program exhibited lower burnout, higher job motivation and job satisfaction as well as higher perceived workload and efficiency than workers participating in the social activity. It may be objected that program duration is quite long in this study, that fitness only—with reference to the many life and behavior domains being relevant for one's health and well-being—does not constitute enough content of a health promotion program, and that all dependent outcome variables in the study of Rosenfeld et al. (1990) are measured subjectively by questionnaires. These measures are sensitive for response sets and social desirability effects, which are highly probable in evaluations of health promotion programs implemented during work time.

Consequently, we are in need of studies that utilise objective data (e.g. on absenteeism) as outcome criteria as a complement to subjective indicators of occupational attitudes and well-being (for an overview see Parks & Steelman, 2008). Physical and mental health is strongly correlated to indicators of subjective well-being of employees, which itself is dependent on a broad range of organisational and workplace characteristics. These characteristics are reflected in job satisfaction, employee attitudes, and job involvement, which are correlated with absenteeism. Deficits in health and well-being of employees lead to sick leave being the most frequent cause of absenteeism. As a result, there are numerous, more comprehensive health promotion approaches with the objective of improving the psychosocial work environment and well-being of employees. For instance, Elo and Leppanen (1999) report on some positive effects of *departmental health promotion teams* in a 3-year project in a metal factory: Post-questionnaire data show that the majority of the factory's personnel participated in open planned activities on fitness and social climate and were satisfied with them as well. In a literature

overview, Aust and Ducki (2004) describe favorable effects on workers' health, well-being, and sickness absence for *organisational health circles*. However, they regret the limited scientific quality of the available data (only three quasi-experimental and eight pre-experimental, descriptive studies) and conclude with the demand for more methodologically rigorous studies. Butterworth, Linden, McClay, and Leo (2006) report as well on the positive effects of *motivational interviewing-based health coaching* on the physical and mental health status of 276 employees at a medical center. However, the participants of the 3-month health coaching intervention group were self-selected and were contrasted to a nonrandomised control group.

While the effects of the *departmental health promotion teams* tested by Elo and Leppanen (1999) and of the *organisational health circles* evaluated by Aust and Ducki (2004) are restricted to open planning health activities (mainly on physical fitness and social climate), the *motivational interviewing-based health coaching* applied in the study of Butterworth et al. (2006) refers to more life and behavior domains which are relevant for one's health and well-being. This behavioral intervention addresses various multiple behaviors, health risks, and illness management, ideas for which employees at medical centers may be especially motivated. To sum up, all these studies show methodological weaknesses in design as well as in the definition and in the range of the health promotion interventions applied in the organisations.

Hence, we were are in need of more randomised, controlled studies on the effects of health promotion programs in organisations, which—subsequently—should be theoretically underpinned and scientifically sound, that is, clearly defining the health promotion interventions that are implemented. With reference to models of health behavior and to the transtheoretical model of behavior change (see, e.g. Prochaska, Norcross, & DiClemente, 1994), Schwarzer (2008) describes such a modeling of health behavior change with the objectives of prediction and modification of the adoption and maintenance of health behaviors at the individual level. Initially, the transtheoretical (integrative) model was developed for the description of the stages and processes of self-change in smoking (Prochaska & DiClemente, 1983), and later the model was extended to professionally facilitated changes in addictive behaviors and to psychotherapeutic processes in general (Prochaska, DiClemente, & Norcross, 1992; Prochaska et al., 1994). The core of the transtheoretical model is the assumption that behavior change involves progression through five stages (i.e. stages of precontemplation, contemplation, preparation, action, and maintenance) and that most individuals involved in behavior change encounter at least one setback while moving through the stages of change. The transtheoretical approach views comprehensive treatment as the differential application of the processes of change at the stages according to the problem level being addressed. Modeling health behavior change (Schwarzer, 2008) focuses on:

1. the transition from the precontemplation to the contemplation stage (i.e. the transition from carefreeness about risk behaviors and no behavior change intentions to a rising awareness of the problems including the first weighing of advantages and personal gains versus disadvantages, personal costs, and barriers);
2. the transition from the contemplation to the preparation stage (i.e. the transition from a rising awareness of the problems to concrete behavior change intentions);
3. the transition from change intentions to actions (i.e. the transition from change intentions to concrete behavior changes with personal investment of effort, time, money, etc.);
4. the stabilisation of these behavior changes in everyday life without, or at least with little, risk of relapse to the risk behaviors.

The empirical test of parts of such an approach in occupational health psychology failed in the study of Budden and Sagarin (2007): They examined the impact of an implementation intention intervention on an exercise intention–behavior relationship among working adults. Their results show that the implementation intention instructions that were used (forming of specific if–then plans, e.g. if there is x, then I do y) came to nothing; even worse, that participants who did *not* form an implementation intention exercised more (*sic*) than participants who formed an implementation intention. Thus, instructions to form specific if–then plans are not at all sufficient for transitions from one stage to another of behavior change in the domain of physical exercise to improve physical fitness and health. Forming if–then plans is only one part of more comprehensive systematic self-monitoring and reflection of everyday life health behaviors, which can motivate participants to move from their current personal stage of behavior change to the next stage in a given behavior domain with risks for their health and well-being. Furthermore, effective health promotion programs should not only focus on one behavior domain (e.g. physical exercise), but should cover a broader range of health-relevant domains of life and behavior.

THE PROGRAM FOR SYSTEMATIC SELF-MONITORING AND REFLECTION OF HEALTH BEHAVIOR AND HEALTH ATTITUDES (SySeRe PROGRAM)

The Program for Systematic Self-Monitoring and Reflection of Health Behavior and Health Attitudes (SySeRe program; Krampen, 1996, 2008) aims at the systematic self-monitoring of and reflection on participants' current everyday life health behavior and experience as well as their self-determined and self-regulated search for options to improve their own health behavior and health attitudes. The standard comprehensive SySeRe program

refers to six behavioral and life domains: (a) eating and drinking habits (including alcohol consumption), (b) drug and tobacco consumption (including both nonprescription and prescription drugs), (c) physical exercise and fitness, (d) mass media consumption, (e) social contact and interpersonal relations, and (f) stress reactions and coping with stress. The selection of these six behavioral and life domains was driven by existing conceptual and empirical taxonomies of health-related behavior domains (see e.g. Gochman, 1988) as well as by empirical results concerning their significance in everyday life (e.g. Krampen, Fähse, & Groß, 1993; Ziegler & Reid, 1983).

The integrative SySeRe program for health promotion aims at prevention (all measures to strengthen mental, social, and physical well-being; World Health Organization, 1986) and the development of self-regulation competencies, but also—depending on the psychological characteristics of the participants—corrects pathological or risk behavior and attitudes as well as reducing 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. This program is conceptualised 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 and health behavior change. These theoretical approaches were selected because they represent large-scale heuristics for the analysis of human experience and behavior, making clear the linkages between developmental interventions and health promotion programs 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.

The first theoretical foundation of the SySeRe program is the *action-theory underpinned constructivist approach to human development* (e.g. Brandtstädter, 2001; Brandtstädter, Krampen, & Heil, 1986; Lerner & Busch-Rossnagel, 1981). This theoretical orientation focuses on the development-related emotions of the person and the person's efforts to actively regulate their own development. Both variables are conceptualised within this approach as dependent on both subjective evaluations 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 (generalised) expectancy of the person with regard to their possibilities to control and regulate their own development. Of course, these concepts are related to the constructs of locus of control of reinforcement and self-efficacy. 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 their personal development. Implications

of this theoretical perspective for developmental interventions refer to the treatment objectives of: (a) enhancing personal control over development, (b) optimising development-related emotions (e.g. reducing hopelessness and increasing well-being), and (c) promoting personal self-regulation of development (e.g. concerning health behavior).

The second theoretical foundation of the SySeRe program is its linkage to modern motivational and volitional *theories of health behavior and health behavior change* (e.g. Gochman, 1988; Schwarzer, 2001, 2008; Wallston & Wallston, 1984). 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 characterised as more or less differentiated conceptions of the basic expectancy-value model. Schwarzer (2001, 2008) presented an attempt to integrate the relevant variables of these models, the variables of volitional theory, and the transtheoretical stages of change to a social-cognitive process model of health-related action and of health behavior change. Health-related actions are conceptualised within this approach to be dependent upon (a) subjective outcome-expectancies (referring to perceptions of the severity of diseases and of personal vulnerability), (b) subjective competence-expectancies (referring to perceptions of one's own action possibilities), (c) objective and subjectively perceived barriers and resources (i.e. social support, working conditions, information resources, professional help resources, etc.), and (d) 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 value of health—the motivational process of intention formation, the last two constitute the volitional process of intention realisation, that is, the manifestation of health behavior and changes in health behavior. The application of these integrative theoretical considerations to health promotion programs and developmental interventions implies the necessity of analyses and reflections on the person's current health behavior and attitudes. The treatment objective is the transition from more or less (un)reflected, habituated (health) behavior in everyday life to expectancy-regulated, goal-directed actions. Most important, 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, personal self-regulation of development is affected.

The third theoretical foundation of the SySeRe program refers to approaches in *behavior modification and cognitive therapy*. Selected treatment methods developed within these models constitute the linkage between the two theories outlined above and the realisation of health promotion in practice. The techniques of behavioral (self-)analysis, self-monitoring, and self-management (e.g. Kanfer, 1975; Kanfer & Phillips, 1970) are used in the SySeRe program. These techniques are related to methods

for the enhancement of self-control (Kanfer, 1975) and self-actualisation (e.g. Rogers, 1942), which are both—like self-regulatory competencies—significant aspects of mental health. The focus of the SySeRe program is the firm action-theoretically oriented analysis of everyday life health behavior and experiences. The treatment objective is the transformation of everyday life behavior (which perhaps is—i.e. in the precontemplation stage—not even conceptualised as relevant for one's own health) to goal-directed, expectancy-regulated, reflected health-related action intentions (contemplation and preparation stages) and to actions. Thus, the SySeRe program is not only founded on two (developmental and health psychological) theories, but it is also related to cognitive behavior modification and the nondirective (client-centered) approach.

INTERVENTION PROGRAM

These conceptual relations and triple theoretical linkages of SySeRe are practically relevant for the application of the program. The treatment objectives of these intervention techniques are consistent with those deduced from action and self-efficacy perspectives to human development and the social-cognitive process model of health-related action and behavior change. Each of the six domains of life and behavior (see above) are treated in the SySeRe program in the following manner:

1. *Systematic self-observation and description of the behavior*: Each participant constructs his/her own diary (much like a school exercise book) and keeps it during the whole course of the program. Training in keeping a diary is carried out by the systematic (retrospective) copying of health-relevant behavior into the diary for each day of the previous week and, much more generally, by the construction of a personal biography (roughly structured into early childhood, late childhood, adolescence, early adulthood, etc.). Following this training, participants keep the diary for the subsequent weeks of the program. After each group meeting, one more behavioral domain is added to the diary.
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 stimulus-organism-response-consequences analysis (S-O-R-C analysis) is explained, demonstrated, and trained. Each participant conducts 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 is discussed for each participant and for each behavior domain in the group. If there is any negative or problematic health behavior or attitude, the goals of change are defined

in a behavior-proximate (operationalised) form. In this way, the objective and subjectively perceived barriers and resources of the individual participant are considered and discussed.

4. *Ongoing self-monitoring and evaluation of efforts to change behavior*: The diary is kept for all critical behavior during the whole course of the program, but diary recording for other, nonproblematic behavior domains is omitted. At group meetings, each participant reports his/her (critical and changed) behavior over the last week. These reports are discussed, and this leads in addition to self-evaluations of one's own progress, to group evaluations of the success versus failure of each participant.

Group size should not exceed 15 participants. The group meets once weekly for 90 to maximally 120 minutes in an open (round) seating plan including the professional group leader. The whole group program is oriented around the principles of the nondirective approach, focusing on the stimulation of group discussion and group dynamics as well as the empathic understanding and reflection of the participants' behavior, statements, and reports. Exceptions from this refer to (a) explanation and training of systematic self-monitoring and diary keeping, (b) illustrative demonstration of the behavior modification S-O-R-C analysis, and (c) cases of reported negative and risky behavior (such as excessive alcohol or tobacco consumption) and statements (such as positive statements on unbalanced diets), if corrections (which are positively reinforced) are not forthcoming from other participants. All three exceptions result in a more direct leadership style, which returns again after explanations and illustrative demonstrations to a nondirective, explorative interaction style.

Initial empirical results have been encouraging concerning the efficacy of the SySeRe program in promoting favorable health attitudes and health behavior as well as improvements in subjective well-being and personal control over development in samples of the elderly, of inpatients in a psychosomatic rehabilitation program, and of adolescents (Krampen, 1996, 2008). Randomised cross-over and randomised waiting-list control group designs were employed including pretests, posttests, and follow-ups. However, up to now there are no results on the efficacy and usability of the SySeRe program in occupational health psychology. Therefore, the effects of the SySeRe program—implemented during work time on behalf of two organisations with different organisational problems—were evaluated with reference to the well-being and absenteeism of employees. To examine program efficacy as well as its effectiveness and usability in organisational health promotion, most methodological details were retained from the original studies (Krampen, 1996, 2008) and held constant across the two new studies. These details include the randomised group design and the outcome measures

applied at pretests, posttests, and follow-ups. Thus, usability and effectiveness of an individual-level intervention program are tested within organisations without reference to organisational structure and organisational factors.

STUDY 1

Method

Participants. Participants were an unselected sample of 61 public employees working in civil service in a state administration organisation. The SySeRe program was implemented on behalf of the administration management in agreement with the staff council because of increasing absenteeism. With the exclusion of five severely, chronically, and partly terminally-ill employees with an absenteeism of more than 3 months during the last year, absenteeism during the year before was, on average, $M = 29.9$ working days ($SD = 4.2$; $N = 56$), that is, when taking vacation entitlement and public holidays into consideration approximately three days monthly. This absenteeism rate is 2.5 times higher than the average in Germany and has motivated the administration management to take action.

The age of employees ranged from 29 to 47 years ($M = 41.4$, $SD = 9.6$). There were 18 females and 38 males in the sample. Level of education and occupational status indicate that the employees were middle class. All of them were in more or less intensive outpatient medical treatment for various disorders (ranging from repeated colds and neurasthenia to orthopedic illnesses and psychosomatic disorders) resulting in frequent doctor's sick notes ($M = 4.3$ per year; $SD = 2.9$) being handed in by the employees. The number of days of sick leave increased even more in the two months prior to the start of the SySeRe program ($M = 3.4$ days/month; $SD = 1.98$).

Procedure. A randomised design with a waiting list control group was employed. After pretest and randomisation (controlling for age and gender), employees in Group I ($n = 32$) participated in the SySeRe program for 8 weeks with one session weekly. Employees in Group II ($n = 24$) were the waiting list controls. Posttests were administered in both groups after 8 weeks of SySeRe treatment versus after 8 weeks of waiting, follow-ups 8 weeks after the end of the SySeRe program versus after 8 more weeks of waiting. Thus, participants in Group II began the SySeRe program after waiting 16 weeks in total. The SySeRe program was implemented in small groups with 12 to 16 participants each. Randomisation controlling for age and gender succeeded in comparable groups (see pretest data in Table 1).

Measures. Measures were administered at baseline (before the start of the SySeRe program), 2 months later at the end of the SySeRe program,

TABLE 1
Means and Standard Deviations of Measures in SySeRe Group and Control Group as well as ANOVA Results ($N = 56$ Public Employees; Study 1)

	Pretest		*Posttest*		*Follow-up*		*Analysis of Variance*		
Measure	M	SD	M	SD	M	SD	*Group* F*(1/54)*	*Time* F*(2/108)*	*Group × Time* F*(2/108)*
Psychosomatic complaints (SYM)									
SySeRe group ($n = 32$)	70.3	20.1	52.4	19.2	53.8	19.9			
Control group ($n = 24$)	71.9	19.8	69.4	18.9	68.7	20.3	3.71	5.31**	4.53*
Subjective well-being (WELL)									
SySeRe group ($n = 32$)	8.0	1.2	9.3	0.8	8.4	1.4			
Control group ($n = 24$)	7.8	0.9	8.2	1.3	7.0	2.2	7.88**	6.34**	5.01**
Personal self-regulation of development (P-REGU)									
SySeRe group ($n = 32$)	1.0	1.0	5.8	1.2	6.9	1.3			
Control group ($n = 24$)	1.5	0.9	2.8	1.3	3.0	1.4	4.19*	4.66*	6.73**
Days of absenteeism in the last 2 months									
SySeRe group ($n = 32$)	6.7	2.8	2.5	2.4	1.9	2.2			
Control group ($n = 24$)	7.0	3.1	5.5	2.8	7.3	2.9	6.05*	5.99**	5.73**

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

and at 2-month follow-up. Test reliability and validity data for all scales employed are available for German samples (see Krampen, 1996, 2007, 2008). Outcome measures included:

1. A German symptom checklist (SYM; Krampen, 2007) including 4-point ratings of 48 *psychosomatic and behavioral complaints* (e.g. frequency from 0 [*never*] to 3 [*very often/strong*] of "sleep disorders", "nervousness", "breathing problems", "digestive troubles", "attention problems", "headache", etc.). Cronbach's alpha of SYM in the sample under study is $\alpha \geq .89$.
2. Two graphical 7-point rating scales on "My current personal physical fitness . . . " and "My current personal mental well-being . . . " illustrated with faces from 1 (". . . is very bad"; very sad face) to 7 (". . . is very good"; very happy smiley) were combined to form the variable *subjective well-being* (WELL). Intercorrelations of these two indicators are $r \geq .80$ ($p < .01$).
3. The questionnaire for the measurement of *Personal Self-Regulation of Development* (P-REGU; Krampen, 2008) assesses a total of 10 life and behavior domains in which the individuals have made an effort to actively change something during the previous 2 months as well as behavioral changes (e.g. "During the last 2 months, I have actively changed something for the better in the life domain . . . of social relations"; ". . . of physical exercise"; ". . . of family relations"; ". . . of mass media consumption"; ". . . of eating habits"; etc.). Cronbach's alpha of P-REGU is $\alpha \geq .79$.
4. *Days of absenteeism* at the workplace in the last year as well as in the 2 months prior to beginning the SySeRe program, during the SySeRe program, and after completion of the SySeRe program were measured with organisational statistics.

Results

Means and standard deviations of pretest, posttest, and follow-up measures are summarised for both groups in Table 1. A multivariate analysis of variance (MANOVA) with the grouping factor Groups (1, 2) and the repeated measurement factor Time (1, 3) was computed including all measures. Single mean comparisons between groups and times of measurement were computed by univariate analyses of variance (ANOVAs; see Table 1). In addition, some results are presented graphically to illustrate the short- and medium-term effects of the SySeRe program. Figures 1 and 2 illustrate the results from Study 1 for personal self-regulation of development (P-REGU) and days of absenteeism during the last 2 months before measurement.

MANOVA yielded significant overall main effects for Group, $F(1, 53) = 5.62$, $p < .05$, and Time, $F(2, 106) = 10.83$, $p < .01$, as well as for the overall

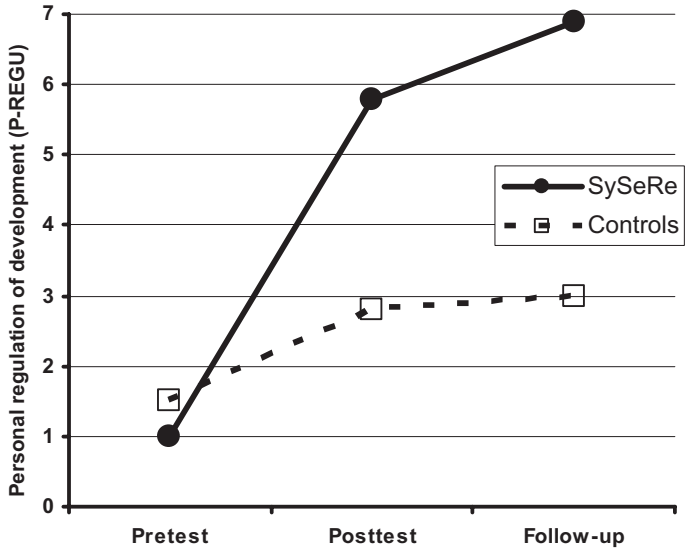

FIGURE 1. Personal self-regulation of development (P-REGU) in SySeRe group versus control group in Study 1.

Group × Time interaction, $F(3, 159) = 4.07$, $p < .01$. The results of the computed ANOVAs are presented in Table 1.

Besides the significant main effects of the grouping and repeated measurement factor, the interaction term Group × Time is more interesting (see Table 1). All of them are significant and differentiate *a posteriori* the significant MANOVA interaction effect (see above). Results show that Group I (i.e. the SySeRe group) improved significantly more in the reduction of psychosomatic complaints (short-term effect size: $d = .89$; medium-term: $d = .74$), in an increased well-being ($d = 1.04$ and $d = .80$, respectively), in much more effort to regulate their own development ($d = 2.44$ and $d = 2.95$, respectively; see Figure 1), and in fewer days of absenteeism ($d = 1.15$ and $d = 2.12$, respectively; see Figure 2) than the employees in the waiting list group (Group II). In terms of Cohen (1988), effects sizes are large for short-term and for medium-term effects.

Discussion

Consistent with earlier results gained in randomised waiting list control group designs in other health psychology application contexts (Krampen, 1996, 2008), the SySeRe program has proven to be an effective and efficient health promotion group treatment in occupational health psychology.

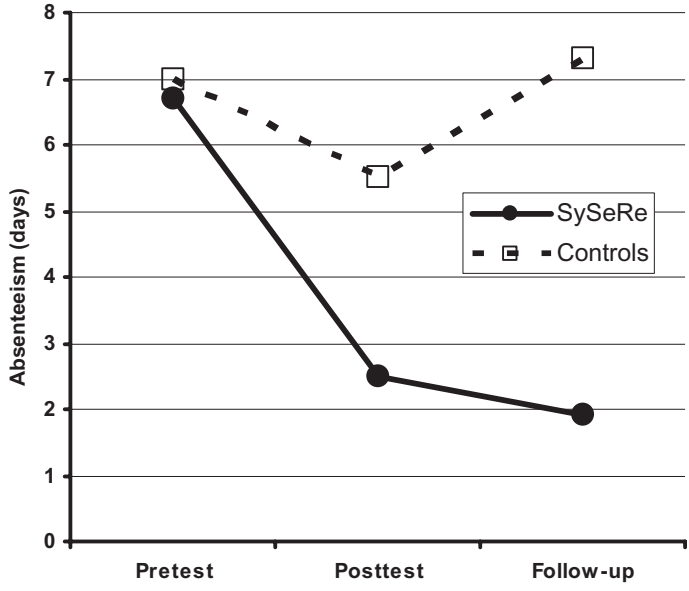

FIGURE 2. Absenteeism (days in the last 2 months) in SySeRe group versus control group in Study 1.

Participants in the intervention program improved significantly on personal self-regulation of development and subjective well-being, which was related to a very strong decrease in absenteeism. During SySeRe program participation, absenteeism among public employees dropped to an average of 1.2 days per month (at posttest) and 2 months after program participation to an average of 1 day per month (at follow-up)—rates which are in line with average absenteeism statistics in Germany.

STUDY 2

Method

Participants. Participants in Study 2 were an unselected sample of 39 skilled workers at a medium-sized metal factory in private ownership, which had strong economic problems. Because of medium-term liquidation, the management was legally in need of a written agreement between the employer and the works council which seeks to protect employees. The SySeRe program was implemented as a complementary measure on behalf of the management in agreement with the works council and the works committee.

Absenteeism of the skilled workers in the year before was on average $M = 9.8$ working days ($SD = 1.9$), that is, when taking vacation entitlement and public holidays into consideration, approximately one day per month. This absenteeism rate is not conspicuous, and is in line with the average rate of absenteeism in Germany.

The age of workers ranged from 48 to 61 years ($M = 57.1$, $SD = 8.7$; males only). Level of education and occupational status indicate that the employees were lower middle class. Number of days of sick leave increased in the 2 months prior to the start of the SySeRe program ($M = 2.8$ days/month; $SD = 2.40$). It may be assumed that this increase in absenteeism was related to the impending liquidation of the factory and the impending loss of jobs with—at least—unclear, if not downright bad, possibilities of getting a new job.

Procedure. A randomised design with a waiting list control group was employed. After pretest and randomisation (controlling for age), employees in Group I ($n = 19$) participated in the SySeRe program for 8 weeks with one session weekly. Employees in Group II ($n = 20$) were the waiting list controls. Again, posttests were administered in both groups after 8 weeks of SySeRe treatment versus waiting, follow-ups 8 weeks after the end of the SySeRe program versus after 8 weeks more of waiting. Thus, participants in Group II began the SySeRe program after waiting 16 weeks in total. The SySeRe program was implemented in small groups with 9 to 10 participants each. Randomisation controlling for age succeeded in comparable groups (see pretest data in Table 2).

Measures. As in Study 1, measures were administered at baseline (before the start of the SySeRe program), 2 months later at the end of the SySeRe program, and at 2-month follow-up. The same outcome measures on psychosomatic complaints (SYM; $\alpha \geq .87$), subjective well-being (WELL; $r \geq .78$; $p < .01$), and personal self-regulation of development (P-REGU; $\alpha \geq .84$) were administered to both groups. The days of absenteeism at the workplace in the past year as well as in the 2 months prior to beginning the SySeRe program, during the SySeRe program, and at completion of the SySeRe program were measured with organisational statistics.

Results

Means and standard deviations of pretest, posttest, and follow-up measures are summarised for both groups in Table 2. A multivariate analysis of variance (MANOVA) with the grouping factor Groups (1, 2) and the repeated measurement factor Time (1, 3) was computed including all measures. Single mean comparisons between groups and times of measurement were

TABLE 2
Means and Standard Deviations of Measures in SySeRe Group and Control Group as well as ANOVA Results ($N = 39$ Skilled Workers; Study 2)

	Pretest		*Posttest*		*Follow-up*		*Analysis of variance*		
Measure	M	SD	M	SD	M	SD	*Group* F(*1*/*37*)	*Time* F(*2*/*74*)	*Group* × *Time* F(*2*/*74*)
Psychosomatic complaints (SYM)									
SySeRe group ($n = 19$)	53.9	15.5	39.6	18.3	42.4	18.2			
Control group ($n = 20$)	49.3	16.5	53.2	17.1	65.5	19.7	5.71*	3.98*	4.81*
Subjective well-being (WELL)									
SySeRe group ($n = 19$)	7.4	0.9	10.7	1.7	11.7	2.5			
Control group ($n = 20$)	7.2	1.3	8.3	1.9	7.5	3.3	4.20*	4.92**	6.03**
Personal self-regulation of development (P-REGU)									
SySeRe group ($n = 19$)	2.4	1.9	4.6	1.4	4.6	1.6			
Control group ($n = 20$)	2.3	2.2	2.9	1.8	2.0	1.7	5.02*	6.76**	4.55*
Days of absenteeism in the last 2 months									
SySeRe group ($n = 19$)	5.8	3.0	3.0	2.2	2.7	2.3			
Control group ($n = 20$)	5.9	2.9	5.5	2.8	7.5	3.1	4.29*	4.51*	5.30**

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

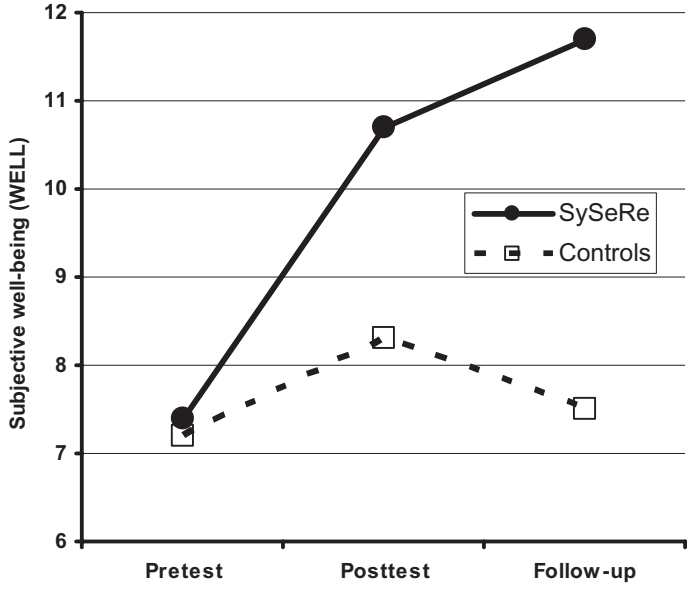

FIGURE 3. Subjective well-being (WELL) in SySeRe group versus control group in Study 2.

computed by univariate analyses of variance (ANOVAs; see Table 2). In addition, some results are presented graphically to illustrate the short- and medium-term effects of the SySeRe program. Figures 3 and 4 illustrate the results from Study 2 for subjective well-being (WELL) and for the days of absenteeism in the 2 months prior to measurement.

MANOVA yielded significant overall main effects for Group, $F(1, 36) = 4.13$, $p < .05$, and Time, $F(2, 72) = 5.03$, $p < .01$, as well as for the overall Group × Time interaction, $F(3, 108) = 5.22$, $p < .01$. The results of the computed ANOVAs are presented in Table 2.

As in Study 1, the interaction term Group x Time is more interesting than the significant main effects of the grouping and repeated measurement factor (see Table 2). All of them are significant and differentiate *a posteriori* the significant MANOVA interaction effect (see above). Results show that Group I (i.e. the SySeRe group) improved significantly more in the reduction of psychosomatic complaints (short-term effect size: $d = .77$; medium-term: $d = 1.22$), in increased well-being ($d = 1.32$ and $d = 1.45$, respectively; see Figure 3), in much more effort to regulate their own development ($d = 1.05$ and $d = 1.57$, respectively), and in fewer days of absenteeism ($d = 1.01$ and $d = 1.71$, respectively; see Figure 4) than the employees in the waiting list

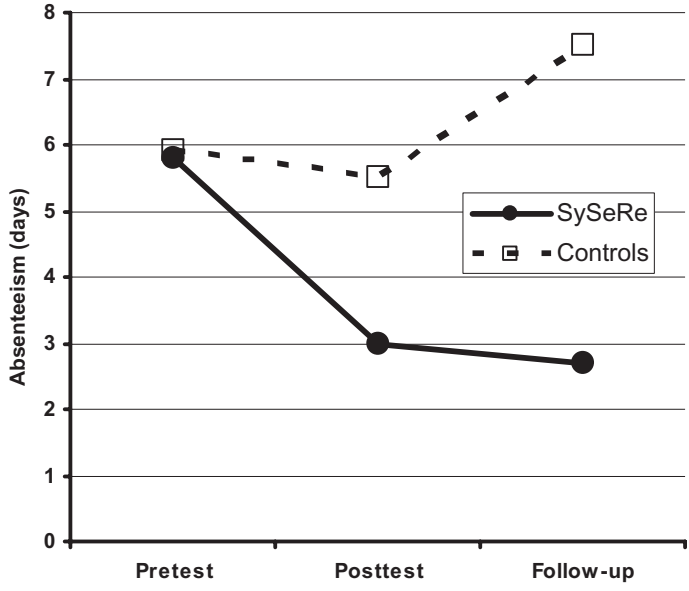

FIGURE 4. Absenteeism (days in the last 2 months) in SySeRe group versus control group in Study 2.

group (Group II). In terms of Cohen (1988), effects sizes are large for short-term and for medium-term effects.

Discussion

Consistent with the results gained in Study 1, the SySeRe program has proven to be an effective and efficient health promotion group treatment in occupational health psychology. Participants in the intervention program improved significantly on personal self-regulation of development and indicators of well-being, which was related to a strong decrease in absenteeism. During SySeRe program participation, absenteeism of skilled workers, who are under the threat of impending job loss, dropped from an average of 2.9 days per month (at pretest) to an average of 1.5 days per month (at posttest) and 2 months after program participation to an average of 1.4 days per month (at follow-up)—rates which are very close to the average absenteeism statistics in Germany. Furthermore, not only did well-being and psychosomatic symptomatology improve markedly, so did personal efforts to regulate their own development. With reference to the results of qualitative (narrative)

post-interviews with the workers it can be assumed that these efforts include improved motivation and actions invested in their search for a new job as well.

GENERAL DISCUSSION

The results presented here on the effects and usability of the SySeRe program in occupational health psychology are promising. By applying experimental designs with randomisation (RCTs), SySeRe proved to be a success in two rather different organisations with very different organisational problems. In both the civil service of a state administration organisation with dramatically increased absenteeism and in a medium-sized metal factory in private ownership facing impending liquidation, public employees and skilled workers, respectively, profit significantly from SySeRe program participation in comparison to waiting list controls at the individual level. As hypothesised, employees and workers improve in psychosomatic symptomatology and subjective well-being as well as in their personal efforts to actively regulate their personal development and future. These results confirm previous findings on the impact of SySeRe program participation in the elderly, inpatients in psychosomatic rehabilitation hospital programs, and adolescents (Krampen, 1996, 2008). The results presented here extend the application of SySeRe to on-site health promotion programs in organisations and—most impressive—to significant decreases in the markedly increased absenteeism prior to participation to a sick leave rate that corresponds to the average occupational absenteeism statistics in Germany. It can be hypothesised that the systematic consideration of behavior-relevant organisational factors may even extend the effectiveness of the health program applied. Further research on this question is needed for the replication of the results at the individual level in larger samples with extended follow-up times.

Effect sizes of the SySeRe program are large (following Cohen, 1988) in the promotion of personal self-regulation of development and subjective well-being, in the reduction of psychosomatic complaints, and in the reduction of absenteeism as well. Thus, variables are affected by the SySeRe program that are both deduced from its theoretical foundations, that is, the action and self-efficacy perspective in life-span developmental psychology (Brandtstädter, 2001; Brandtstädter et al., 1986; Lerner & Busch-Rossnagel, 1981), and indicated by models of health attitude and behavior changes (Schwarzer, 2001, 2008). It can be assumed that these improvements—measured by questionnaires which are potentially sensitive for response sets and effects of social desirability—are prerequisites for the drop in the average number of sick leave days taken by employees, a main cause of absenteeism in companies (as measured by the available organisational statistics).

Of course, the efficacy and effectiveness of the SySeRe program, as with most measures in health psychology, stand or fall with treatment motivation, treatment compliance and, ideally, adherence of participants to treatment objectives and methods. Thus, self-selection of participants is a good precondition for positive outcomes (see, e.g. Krampen, 2008). An alternative good precondition is the strong and clear integration of SySeRe within an organisation and its implementation on behalf of the management in agreement with the staff council or the works committee, respectively. Implementation of SySeRe as an on-site health promotion program during work time in organisations and carried out by external professional health psychologists resulted in the personal commitment of the employees involved. This was achieved in Study 1 and Study 2, which resulted not only in positive outcomes, but also in no dropouts. In this way, through organisational integration, high levels of participation are achieved in the first group meetings, initially perhaps with little personal involvement or treatment motivation among some of the participants. However, it is of interest to note that the SySeRe program produces something like a contagious trend toward self-enhancement among the group members. This motivating go-with-the-group effect of the treatment itself was apparent in the earlier studies as well (Krampen, 1996, 2008). This effect can be attributed not only to those participants who were highly motivated at the outset of the program, but also to the self-determined exercise in diary keeping introduced 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. Participants in SySeRe know very well and very quickly what should be done and how it should be done, and, moreover, they have fun doing it. This is a good prerequisite for SySeRe program applications and is encouraging with reference to existing problems in reaching potential participants and in acceptance of a health promotion program.

To sum up, the SySeRe program is a theoretically based, economical health promotion program employing homogeneous treatment techniques at the individual level. It is more homogeneous than eclectic and open planning health promotion activities, that is, organisational health circles (Aust & Ducki, 2004) and departmental health promotion teams (Elo & Leppanen, 1999). The SySeRe standard program refers to six life and behavior domains which are relevant for one's health and well-being. Its behavioral interventions address multiple everyday life health behaviors and health risks in an easily trained behavior modification approach under the control of the participants and under the supervision of a health psychologist. SySeRe is theoretically well founded with reference to modern action and self-efficacy approaches in life-span developmental psychology, health psychology, and cognitive behavior modification.

Finally, the SySeRe program can easily be adapted to the special conditions of an organisation, that is, one or more life domains can be omitted (if not necessary in the target group), one or more life domains can be focused upon (if highly relevant in the target group), new life domains can be added (if desirable, e.g. the domain of working behavior, ecological behavior, of relaxation and resting, or that of sociopolitical behavior). Also the number of group meetings and/or the duration of SySeRe can be shortened (see, e.g. Krampen, 2008) or indeed extended. Thus, SySeRe is a very flexible individual-level intervention heuristic for health promotion and health attitude as well as health behavior changes in occupational health psychology.

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