

HEALTH COMPLAINTS AND UNEMPLOYMENT: THE ROLE OF SELF-EFFICACY IN A PROSPECTIVE COHORT STUDY

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The present study examined the influence of self-efficacy on health complaints and the duration of unemployment in an age-homogeneous sample. Data resulted from a prospective cohort study that begun in 1987. Participants answered several questionnaires in 2002 and 2009.

Results indicate that people with a low level of self-efficacy have higher levels of physical and mental health complaints and experience twice the length of unemployment compared to people with a medium or high level of self-efficacy. Thus, self-efficacy predicts health complaints and the duration of unemployment in the total sample seven years later. Even after controlling for base line levels in 2002, self-efficacy could significantly add explained variance in health complaints and duration of unemployment, but the variance explained incrementally is small.

Concerning the life span of young adults, we found self-efficacy to be a protective factor relating to health complaints and the duration of experienced unemployment.

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During the last decade, research that focuses on more than only the negative effects of life events has attracted growing interest, especially considering Seligman and Csikszentmihalyi's (2000) highlighting of the important role of personal resources. In this field, the construct of general and domain-specific self-efficacy is a vital personal resource enabling individuals to cope better with stressful life events including unemployment (Kanfer & Hulin, 1985). Self-efficacy, as postulated in Bandura's social cognitive theory (Bandura, 1977), is defined as the personal belief in one's ability to cope with and to solve prospective demands and challenges. From a developmental perspective, the following four general sources, in order of salience, were defined: individual performance history (success and failure), observation of others' success and failures—possibly leading to efficacy expectations through imitation, verbal persuasion (encouraging or discouraging feedback from others), and the subjective interpretation of one's own physiological level of arousal in response to situations the person desires to cope with, whereas a lower level of arousal is more likely to be associated with a positive outcome (Bandura, 1986).

Dependent on the level of individual self-efficacy, "people choose what challenges to undertake, how much effort to expend in the endeavour, how long to persevere in the face of obstacles and failures, and whether failures are motivating or demoralizing" (Bandura, 2001). This shows self-efficacy as a predisposing variable for prospective actions.

Hence, the concept of self-efficacy was further specified in general and domain-specific self-efficacy and expanded into many fields of the research literature. It has been widely used in studies concerning health promotion and health behaviors (O'Leary, 1985; Posadzki & Glass, 2009; Stretcher, De Vellis, Becker, & Rosenstock, 1986; Woodgate & Brawley, 2008), where the encouraging influence of higher self-efficacy could be verified in most cases on the basis of empirical evidence. Furthermore, higher self-efficacy goes along with a lower level of experienced stress (Bandura, 2001; Boyd, Lewin, & Sager, 2009; Lent, do CéuTaveira, Sheu, & Singley, 2009) and may also act as a buffer (Heuven, Bakker, Schaufeli, & Huisman, 2006). In addition, many papers described its significant relationship with symptoms of mental diseases like depression (Adejumo, 2010; Bandura, 2001; Rahman, Reed, Underwood, Shipley, & Omar, 2008), burnout (Alarcon, Eschleman, & Bowling, 2009) or well-being in general

(Karademas, 2007; Lent et al., 2009; Lubbers, Loughlin, & Zweig, 2005). In addition to mental symptoms, lower self-efficacy also has been shown to accompany more somatic symptoms and lower physical health (Adejumo, 2010; Bandura, 2001; Holmes & Werbel, 1992; Lubbers et al., 2005; O'Leary, 1985; Rahman et al., 2008; Sardá, Nicholas, Asghari, & Pimenta, 2009).

Concerning gender aspects, only a few studies have examined differences in psychosocial outcome variables between men and women that are related to self-efficacy. In general, men report a higher level of self-efficacy than women (Schmitt, 2008; Hinz, Schumacher, Albani, Schmid, & Brähler, 2006). Furthermore, some studies found self-efficacy to be variously linked to several outcome variables in men and women. Caprara, Caprara, and Steca (2003) reported behavior-specific differences in the level of self-efficacy between men and women and dissimilar relationships to age. Moreover, Mittag and Schwarzer (1993) found low self-efficacy to be related to higher alcohol consumption in unemployed men but not in women. Therefore, the present study also concerns possible gender differences in the relation of self-efficacy and health complaints.

Individual generalized self-efficacy in adults is seen as a relatively stable personal disposition (Bray, Nash, & Froman, 2003; Lightsey, Burke, Henderson, & Yee, 2006), but nevertheless is accessible to interventional enhancement (Ashford, Edmonds, & French, 2010; Bandura, 1997; Eden & Aviram, 1993). This is an important facet in research that focuses not only on the relationship of self-efficacy and health on an individual level but also focuses on aspects that affect interests of the entire society. One such aspect is unemployment, including its relationship with health, with economical resources and with questions like: how can we help unemployed people find a new job? Which personal resources need to be strengthened to accelerate reemployment?

Addressing these questions becomes increasingly important with more discontinuous and unstable work biographies in comparison to the past decades. Regarding the future, it will become more common to change the work place several times during one's own working period, while periods of unemployment are not avoidable at all times (Fleig-Palmer, Luthans, & Mandernach, 2009; Kanfer, Wanberg, & Kantrowitz, 2001). Regarding unemployment and its relation to lower health status, two conflicting perspectives emerged in the past. The causation hypothesis argues that unemployment

causes subsequent negative health effects, whereas the selection hypothesis advances the view that ill people lose their job more frequently in consequence of their disease. While there are many empirical indicators for both hypotheses, it is assumed that both effects exist and probably influence each other in a circular way, whereas the effect of the causation hypothesis is supposed to be stronger (Gallo, Bradley, Siegel, & Kasl, 2000; Paul & Moser, 2009). In this field of research, job-related self-efficacy as a personal resource was shown to play a key role relating to job search motivation, job search intention, and reemployment. Unemployed people with higher self-efficacy and accordingly higher job search self-efficacy were found to have shorter times of unemployment, more job interviews, more job offers and higher job search intensity (Crossley & Stanton, 2005; Eden & Aviram, 1993; Holmes & Werbel, 1992; Kanfer et al., 2001; Rahman et al., 2008; Saks, 2006; van Ryn & Vinokur, 1992; Vinokur & Schul, 2002; Wanberg, Glomb, Song, & Sorenson, 2005; Wanberg, Kanfer, & Rotundo, 1999).

Most of the studies cited above were conducted with special subgroups of patients (e.g. in chronic pain clinics or rehabilitation centers), very young or older people (pupils, college students, retirees) and with unemployed men and women. Studies with healthy people in general that are employed and especially longitudinal studies over a longer time span are rare. The aims of this study are to examine the relationship of general self-efficacy and symptoms related to physical as well as mental illness and complaints in a prospective cohort study covering a time span of seven years. Additionally, the influence of self-efficacy on the experienced time of unemployment was investigated. A further aim was to quantify the predictive value of self-efficacy for physical and mental symptoms with and without the corresponding base level. This analysis was conducted for the whole sample as well as for men and women separately.

MATERIAL AND METHODS

DESIGN

Results of this study are part of The Saxony Longitudinal Study, a prospective cohort study that was launched in 1987. At this time, a total of 1,407 pupils aged 14 years took part in this study (52.9% males, 47.1% females). This sample was representative for the birth

cohort 1973 in the German Democratic Republic (GDR). After the third annual wave in 1989, participants were asked to give informed consent for further investigations, where 587 participants agreed (48.0% males and 52% females). After the German reunification, The Saxony Longitudinal Study could be pursued with almost annually conducted surveys until today. The number of participants from 1990 to 1994 varied between 170 and 276; from 1995 to 1999 between 316 and 368; from 2000 to 2004 between 353 and 423; and from 2005 to 2009 between 364 and 391. The main focus of the study dealt with political and social topics like the individual experience of the reunification, long-term outcomes of the socialization in the GDR and changes in the living conditions. Later on, other psychosocial issues and questions about experienced unemployment periods were introduced into the cohort study. The results reported here derive from the panel wave 16 in 2002 (aged 29) and wave 23 in 2009 (aged 36).

QUESTIONNAIRES

Beside socio-demographic parameters, the following questionnaires were sent by mail in 2002 and 2009, including a prepaid envelope:

General Self-Efficacy Scale (GSES). To assess the subjective evaluation of one's own capability to cope with and to solve prospective demands and challenges, the General Self-Efficacy Scale was developed by Schwarzer and Jerusalem (1995). This scale was validated in a representative sample of the German general population and its one-dimensional structure was confirmed (Hinz et al., 2006). Items have to be confirmed on a four point scale, ranging from 1 = not at all to 4 = exactly. Thus, the sum score ranges between 10–40, higher sum scores showing higher self-efficacy. Internal consistency is excellent: ($\alpha = .92$).

Giessen Subjective Complaint List-24 (GGB-24). The Giessen Subjective Complaint List by Brähler, Hinz, & Scheer (2008, Brähler & Scheer, 1995) is a validated questionnaire to measure several body complaints. It consists of 24 items defining the following four subscales: exhaustion ($\alpha = .88$), gastrointestinal complaints ($\alpha = .82$), limb complaints ($\alpha = .84$), heart-related complaints ($\alpha = .85$). Furthermore, a total sum score can be calculated by summing up all 24 items ($\alpha = .94$). Each item has to be rated on a five point scale,

ranging from 0 = not existing to 4 = strong, where higher scores reflecting a higher degree of body complaint.

Symptom Checklist-9 (SCL-9). The Symptom Checklist-9 (Klaghofer & Brähler, 2001) is a short validated screening instrument for psychological complaints that derives from Derogatis' Symptom Checklist-90-Revised (SCL-90-R; 1977). The questionnaire consists of 9 Items, covering a broad range of psychological impairments. Concerning the impairment during the last week, each item has to be rated on a five point scale from 0 = not at all to 4 = very much. A sum score of all items reflects the overall burden, with higher scores showing higher degrees of psychological complaint ($\alpha = .87$).

DURATION OF UNEMPLOYMENT

The cumulative time of experienced unemployment of the panel has been investigated since 1996. Participants were asked to give information about the duration of unemployment (in months) since 1990. As a mnemonic device, the duration each participant had denoted at the last wave was given.

STATISTICAL METHODS

The statistical analysis of the data was conducted with the SPSS 18.0 software. To test differences between the subgroups with different levels of self-efficacy, an analysis of variance (ANOVA) was used. To examine the temporal stability of different variables and to investigate relationships between several variables and different points in time, Pearson's correlation coefficients were calculated. More specific details are presented in the results section.

Only participants who took part in both examinations (2002 and 2009) were included in the procedure to enhance the validity of the results.

RESULTS

Finally, 348 (82.9%) out of 420 eligible participants took part in both examinations of this study in 2002 (T1) and 2009 (T2). A total of 72

TABLE 1. Socio-Demographic Characteristics of the Study Population at T1

	Respondents N = 348	Non-respondents N = 72	Total N = 420
Age (SD)	29.01 (0.41)	29.14 (0.61)	29.03 (0.45)
Gender			
Male	165 (47.4%)	34 (47.2%)	199 (47.4%)
Female	183 (52.6%)	38 (52.8%)	221 (52.6%)
Partnership			
Yes	276 (79.3%)	57 (79.2%)	333 (79.3%)
No	72 (20.7%)	15 (20.8%)	87 (20.7%)
Occupation			
Blue-collar worker	80 (23.0%)	16 (22.2%)	96 (22.9%)
White-collar worker	153 (43.9%)	28 (38.9%)	181 (43.1%)
Freelancer	19 (5.5%)	6 (8.3%)	25 (6.0%)
Homemaker	40 (11.5%)	10 (13.9%)	50 (11.9%)
Currently unemployed	19 (5.5%)	3 (4.2%)	22 (5.2%)
Student	14 (4.0%)	3 (4.2%)	17 (4.0%)
Other	23 (6.6%)	6 (8.3%)	29 (6.9%)
No. of children			
none	200 (57.5%)	38 (52.8%)	238 (56.7%)
One	109 (31.3%)	17 (23.6%)	126 (30.0%)
Two	38 (10.9%)	16 (22.2%)	54 (12.8%)
Three	1 (0.3%)	1 (1.4%)	2 (0.5%)

men and women did not respond to the questionnaire at T2. Socio-demographic characteristics of the study population are shown in Table 1.

Regarding gender, partnership and occupation, distributions of socio-demographic parameters in respondents and nonrespondent were nearly equal. The percentage of people having no or only one child was higher in the sub-group of participants, whereas nonrespondents usually had two children.

Concerning the time of unemployment, only 107 participants (30.7%) in 2009 reported never having been unemployed during their life time. Thus, the majority of the participants already experienced at least one period of unemployment.

TABLE 2. Standardized Regression Coefficients, Mean Scores and Standard Deviations of Giessen Complaint List (GGB) Subscales and SCL-9 Sum Score, and Duration of Unemployment at T2 Dependent on Self-Efficacy Scores at T1 (ANOVA)

Dependent variables at T2	Beta	p	Self-efficacy score at T1			F	p
			Low N = 125	Medium N = 119	High N = 104		
GGB exhaustion	-.24	<.001	6.45 (4.57)	4.71 (4.68)	4.66 (4.47)	5.93	.003
GGB gastrointestinal	-.22	<.001	3.36 (3.15)	2.24 (2.48)	2.13 (2.67)	7.14	.001
GGB limb	-.18	.001	7.77 (4.98)	6.53 (4.23)	6.48 (4.67)	2.97	.053
GGB heart-related	-.22	<.001	2.44 (3.11)	1.69 (2.63)	1.19 (1.88)	6.54	.002
GGB sum score	-.26	<.001	20.02 (13.19)	15.16 (11.35)	14.46 (11.62)	7.40	.001
SCL-9 sum score	-.26	<.001	7.86 (6.00)	4.66 (4.62)	5.10 (5.27)	12.74	<.001
Duration of unemployment	-.25	<.001	20.91 (34.37)	10.44 (15.85)	10.44 (21.60)	6.72	.001

REGRESSION ANALYSES AND GROUP DIFFERENCES

At first, scores of health complaints and duration of unemployment at T2 were separately regressed on self-efficacy scores at T1 to test for linear effects. All standardized regression coefficients ranged between -.18 and -.26 and were statistically significant (Table 2).

Additionally, according to the self-efficacy scores at T1, the group of participants was divided into three groups with low, medium, and high self-efficacy to examine differences in physical and psychological complaints as well as in the duration of unemployment at T2 dependent on different levels of self-efficacy at T1. Groups were classified as follows: participants with low self-efficacy had a sum score ≤ 28 , scores ranging from 29–31 reflected medium self-efficacy, and people with scores ≥ 32 had high self-efficacy. This classification was done according to the calculated norm values of the general German population (Hinz et al., 2006) and reflects the 34th- and the 64th-percentile rank. Mean differences of the dependent variables at T2 in relation to the level of self-efficacy at T1 are given in Table 2.

In comparison to participants with a low level of self-efficacy, men and women with medium or high self-efficacy showed a significantly lesser degree of exhaustion and fewer gastrointestinal as well

TABLE 3. Calculated Effect Sizes and Confidence Intervals of Mean Differences Between Low and Medium/High Self-Efficacy

	ES	CI
GBB exhaustion	0.39	0.17–0.61
GBB gastrointestinal	0.41	0.19–0.63
GBB limb	0.27	0.05–0.49
GBB heart-related	0.36	0.14–0.58
GBB sum score	0.42	0.20–0.64
SCL-9 sum score	0.54	0.32–0.77
Duration of unemployment	0.38	0.16–0.60

Note. Abbreviations: ES = effect size; CI = confidence interval

as fewer heart-related complaints seven years later. They also had significantly fewer psychological complaints. Furthermore, participants with low self-efficacy at T1 experienced a time of unemployment twice as long compared to the other groups.

Due to the fact that results of the groups with medium and high self-efficacy were nearly equal, both groups were combined and contrast with the low level group by calculating effect sizes (Cohen's *d*) of the mean differences. Results are shown in Table 3. Effect sizes range between 0.27 and 0.54.

SELF-EFFICACY AS A PREDICTOR OF COMPLAINTS AND DURATION OF UNEMPLOYMENT

The aim of the following analysis was two fold. The first part examined the correlation between self-efficacy at T1 and variables of several complaints and time of unemployment at T2. This was done for the total sample as well as for men and women separately to investigate possible gender differences. The upper part of Table 4 shows that all but one correlation is statistically significant. Coefficients range between $-.15$ and $-.30$.

Thus, higher self-efficacy predicts lesser complaints and shorter times of unemployment in the total sample. Regarding gender differences, self-efficacy is a stronger predictor for physical complaints in men (except for exhaustion) and a stronger predictor for psychological complaints in women. Correlation coefficients between self-efficacy and unemployment are nearly the same in men and women.

TABLE 4. Correlation and Partial Correlation Coefficients of Self-Efficacy at T1 and Physical and Psychological Complaints, and Duration of Unemployment at T2

	Self-Efficacy Total N = 348		Self-Efficacy Men N = 165		Self-Efficacy Women N = 183	
	r	p	r	p	r	p
GBB exhaustion T2	-.24	<.001	-.19	.016	-.21	.004
GBB gastrointestinal T2	-.22	<.001	-.30	<.001	-.15	.039
GBB limb T2	-.18	.001	-.24	.002	-.07	.351
GBB heart-related T2	-.22	<.001	-.28	<.001	-.15	.050
GBB sum score T2	-.26	<.001	-.30	<.001	-.17	.019
SCL-9 sum score T2	-.26	<.001	-.19	.016	-.25	.001
Duration of unemployment T2	-.25	<.001	-.22	.005	-.24	.001
GBB exhaustion T2 controlled for exhaustion at T1	-.07	.102	-.06	.230	-.05	.274
GBB gastrointestinal T2 controlled for gastrointestinal at T1	-.17	.001	-.22	.002	-.12	.060
GBB limb T2 controlled for limb at T1	-.03	.266	-.12	.060	.06	.202
GBB heart-related T2 controlled for heart-related at T1	-.13	.008	-.22	.003	-.04	.281
GBB sum score T2 controlled for sum score at T1	-.10	.039	-.16	.021	-.02	.379
SCL-9 sum score T2 controlled for SCL-9 sum score at T1	-.11	.017	-.05	.278	-.13	.046
Duration of unemployment T2 controlled for duration at T1	-.17	.001	-.11	.090	-.17	.013

Since earlier measurements of the same variable are generally the best predictor for later measures, correlations between T1 and T2 within the same questionnaires were calculated. The coefficients were as follows: GBB exhaustion .54 ($p < .001$); GBB gastrointestinal .42 ($p < .001$); GBB limb .54 ($p < .001$); GBB heart-related .54 ($p < .001$); SCL-9 sum score .46 ($p < .001$); and duration of unemployment .58 ($p < .001$).

The second part examined the explained variance that was added by the GSES additionally to the explained variances by T1 within the same variables. For this purpose, partial correlation coefficients of GSES and the different questionnaires were calculated, controlling for the values of T1. As the lower part of Table 4 shows, differences between men and women emerged. GSES could significantly add explained variance in the sub-scales of gastrointestinal and heart-related complaints in men, with proportions of 4.9% and 4.6%, respectively. On the other hand, GSES added explained variance in women concerning psychological complaints (1.6%) and the duration of unemployment (2.8%).

MEDIATOR ANALYSES

In addition to these correlations between self-efficacy and health related variables as well as the duration of unemployment, we tested the hypotheses that (1) unemployment at T2 mediates negative links between self-efficacy at T1 and psychological (SCL sum score) as well as physical (GBB sum score) complaints at T2, and (2) health complaints at T2 mediate the negative relation of self-efficacy at T1 and the duration of unemployment at T2.

Following Frazier, Tix, and Barron (2004), the prerequisites for mediation analyses in terms of significant relationships between all variables were given for the mediation model a): self-efficacy (T1) is negatively related to unemployment (T2): $\beta = -.25$ ($p < .001$); unemployment (T2) is positively related to GBB (T2): $\beta = .21$ ($p < .001$), and to and SCL (T2): $\beta = .15$ ($p = .006$). For model (2) we found self-efficacy (T1) negatively related to GBB (T2): $\beta = -.26$ ($p < .001$) and SCL (T2): $\beta = -.26$ ($p < .001$); GBB (T2) and SCL (T2) were positively related to unemployment (T2): $\beta = .21$ ($p < .001$) and $\beta = .15$ ($p = .006$), respectively. Further prerequisites were also fulfilled, as already shown in Table 4. Results are shown in Table 5 and 6.

TABLE 5. Linear Regression Testing Whether Unemployment at T2 Mediates the Relationship Between Self-Efficacy at T1 and GBB/SCL at T2

	GBB		SCL		Unemployment Duration	
	Stand. β	p	Stand. β	p	Stand. β	p
Self-Efficacy	-.26	<.001	-	-	-	-
	-.22	<.001	-	-	.15	.005
	-	-	-.26	<.001	-	-
	-	-	-.25	<.001	.09	.097

Table 5 presents the result for physical complaints (GBB) and psychological complaints (SCL) alone and in conjunction with unemployment duration. When adding unemployment in the model, the relationship between self-efficacy at T1 and both health complaints indicators were minimally weakened ($\Delta\beta$.04 and $\Delta\beta$.01, respectively) and remained significant. Additionally, the relationship between unemployment and SCL became insignificant. The test for significance (Baron & Kenny, 1986; Frazier et al., 2004) revealed that the declined associations between self-efficacy and GBB ($z = 3.01$; $p = 0.002$) is statistically significant.

As the results in Table 6 show, the relationships between self-efficacy at T1 and unemployment at T2 decreased in a minimum range ($\Delta\beta = .04$ and $\Delta\beta = .02$, respectively), and the relationship between SCL and unemployment became insignificant. The declined associations between self-efficacy and unemployment is statistically significant ($z = 3.06$; $p < 0.001$).

In sum, there was a small and negligible partial mediation effect of unemployment duration, which mediated the relationships between self-efficacy and physical health complaints as well as a similar partial mediation effect of physical complaints in the relationship of self-efficacy and unemployment. Furthermore, we did not find a mediation effect in relation to psychological complaints. Thus, self-efficacy almost independently predicts health complaints and unemployment duration seven years later.

DISCUSSION

The results of this prospective cohort study provide evidence that there is a relationship between the personal disposition of general self-efficacy on the one hand and the amount of health complaints

TABLE 6. Linear Regression Testing Whether GBB/SCL at T2 Mediates The Relationship Between Self-Efficacy at T1 and Unemployment at T2

	Unemployment Duration		GBB		SCL	
	Stand. β	p	Stand. β	p	Stand. β	p
Self-Efficacy	-.25	<.001	—	—	—	—
	-.21	<.001	.15	.005	—	—
	-.23	<.001	—	—	.09	.097

and the duration of experienced unemployment on the other hand. People with higher self-efficacy showed fewer symptoms of physical and mental health complaints and were unemployed for a shorter time period than people with lower self-efficacy. Categorizing men and women as participants with low, medium, and high self-efficacy according to the distribution of the norm values of the general population published by Hinz et al. (2006), differences with small to medium effect sizes in health complaints and the time of unemployment emerged. This is in line with the outcome of many other studies, such as those of Rahman et al. (2008), Alarcon et al. (2009) and Adejumo (2010). Thus, the results emphasize the protective impact of self-efficacy. As people choose which challenges they undertake and how much effort they invest in an action depending on their level of self-efficacy (Bandura, 2001), it is linked to health behavior and health promotion in a circular way. This means, for example, that higher self-efficacy goes along with higher physical activity (see also Anderson, Wojcik, Winett, & Williams, 2006) and may thus lead to higher self-efficacy and well-being by enhancing the level of mastery (McAuley, Elavsky, Jerome, Konopack, & Marquez, 2005; Netz, Wu, Becker, & Tenenbaum, 2005). Additionally, several studies found lower self-efficacy directly related to physical indicators like higher blood pressure, heart rate, and serum levels of catecholamines (Bandura, Reese, & Adams, 1982; Bandura, Taylor, Williams, Mefford, & Barchas, 1985; Schaubroeck & Merritt, 1997; Schwerdtfeger, Konermann & Schönhofen, 2008). Furthermore, people with a higher level of self-efficacy are less vulnerable to psychological complaints. Several studies found higher self-efficacy to be correlated with lower stress appraisals, anxiety, depression, and neuroticism (Bandura, 2001; Boyd et al., 2009; Judge & Ilies, 2002; Lent et al., 2009). Notwithstanding, one outcome of this study needs further consideration. As the results in Table 2 show, participants

with medium and high levels of self-efficacy did not differ significantly from each other in regard to all outcome variables. These results suggest that only low self-efficacy leads to an increase in health complaints, and a moderate amount of self-efficacy would be sufficient to maintain health and social benefits. Thus, the data suggest a curvilinear relationship between self-efficacy and outcome variables, including a point of saturation at a medium level. But this suggestion needs to be examined and clarified in further investigations.

A further aim of the present study was to examine the influence of self-efficacy on the cumulative duration of unemployment. As we have shown, people with a low level of self-efficacy experienced twice the time of unemployment seven years later compared to people with medium or high levels of self-efficacy. On the one hand, this result provides evidence for the selection hypothesis, i.e., people with lower psychosocial functioning become unemployed more frequently and for longer time spans. On the other hand, the relationship of self-efficacy and duration of unemployment already existed at T1. So, we cannot falsify that the unemployment experienced before study entry had a negative influence on the level of self-efficacy, which would be indicative of the causation hypothesis. Therefore, the direction of effect probably has to be seen in a circular way. This means that lower self-efficacy leads to higher unemployment, which in turn provokes a further deterioration of individual self-efficacy beliefs. Nevertheless, we found significant correlations between self-efficacy and the duration of unemployment as in other studies before (Kanfer et al., 2001). This finding has important practical implications, since several studies have shown that the level of self-efficacy is modifiable through tailored interventions (Bandura, 1997; Eden & Aviram, 1993). To enhance or at least to stabilize the level of self-efficacy among the unemployed would prevent further deterioration and could lead to a more stable job search intention and job search behavior.

After reconsidering the relationship of self-efficacy and the dependent variables that were included in this study, we conducted a more detailed analysis of the additional predictive value of the General Self-Efficacy Scale after controlling the base levels. The results indicate that the level of self-efficacy at study entry provides a significant additional predictive value for health complaints and

duration of unemployment seven years later, but the variance incrementally explained is small. Besides, mediator analyses revealed two small mediator effects of unemployment at T2, which declined the strength of the association between self-efficacy at T1 and physical health complaints at T2—and vice versa, but the amount of these effects was not of practical relevance.

Regarding the influence of self-efficacy on health complaints in relation to gender, differences between men and women emerged. Whereas the prospective relationship between self-efficacy and complaints related to gastrointestinal, limb, and heart-related symptoms was stronger in men, the results show a stronger relationship to mental health complaints in women. The latter might be due to lower levels of emotional stability in women, as it was found by Schmitt (2008) in a longitudinal study with college students. Based on the results, he arrives at the assumption that emotional stability is related to self-efficacy in women, but not in men, which in turn may lead to the stronger relationship to mental health complaints that were found in our study. The higher correlation between self-efficacy and somatic complaints in men may result from a stronger relationship between self-efficacy and health behavior and health promotion in men than in women. This assumption needs additional verification through further studies in the future.

Concerning the generalizability of these findings, several limitations need to be noted. Since the Saxony Longitudinal Study started in 1987 with more than 1,400 participants, the rate of drop out up to the 24th study wave is quite high, and the remaining sample is not as representative for the general population as it was at the beginning. On the other hand, only 587 participants had given informed consent for further examinations in 1989 after the first study period. Compared to this number, the actual drop out rate is not that high, and a sample of more than 300 persons still allows drawing confident and reliable conclusions. Since the participants of the present study are age-homogeneous, we can neither control for cohort effects nor examine the influence of age on the relationship between self-efficacy and health complaints. A further limitation of this study is the relatively high level of education of this sample. Compared with the general population, participants of the Saxony Longitudinal Study are better educated, which hampers the generalization.

Conclusively, we found self-efficacy to be a protective factor relating to health complaints, covering a time span of seven years. People with higher levels of self-efficacy reported less physical and mental complaints compared to people with a low level of self-efficacy. Additionally, low self-efficacy goes along with a longer cumulative duration of unemployment experiences.

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