

# The Struggle of Giving Up Personal Goals: Affective, Physiological, and Cognitive Consequences of an Action Crisis

Veronika Brandstätter<sup>1</sup>, Marcel Herrmann<sup>1</sup>, and Julia Schüler<sup>2</sup>

## Abstract

A critical phase in goal striving occurs when setbacks accumulate and goal disengagement becomes an issue. This critical phase is conceptualized as an *action crisis* and assumed to be characterized by an intrapsychic conflict in which the individual becomes torn between further goal pursuit and goal disengagement. Our theorizing converges with Klinger's conceptualization of goal disengagement as a process, rather than a discrete event. Two longitudinal field studies tested and found support for the hypothesis that an action crisis not only compromises an individual's psychological and physiological well-being, but also dampens the cognitive evaluation of the respective goal. In Study 3, marathon runners experiencing an action crisis in their goal of running marathons showed a stronger cortisol secretion and a lower performance in the race 2 weeks later. Results are interpreted in terms of action-phase-specific mindsets with a focus on self-regulatory processes in goal disengagement.

## Keywords

motivation, goal disengagement, action crisis, well-being, self-regulation, mindset

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Persistence in pursuing personal goals is a core aspect of successful goal striving. However, when striving for a goal becomes unrealistic or too troublesome, disengagement from the goal is imperative (Brandstätter, 2003; Brandstätter, 2007; Wrosch, Scheier, Carver, & Schulz, 2003). The inability to disengage from such goals is not only associated with losses in self-regulatory efficiency (Kuhl, 1992) but also with impairments in psychological and physical well-being (e.g., Wrosch, Miller, Scheier, & de Pontet, 2007).

Disengagement from goals, after being introduced in one of Klinger's (1977) early works, has only recently received renewed interest (Brandstätter, 2007; Carver & Scheier, 2005; Jostmann & Koole, 2009; Rothermund & Brandstätter, 2003; Wrosch et al., 2003). The aim of the present studies is, therefore, to contribute to this research by introducing the concept of an *action crisis*, a critical phase in goal striving closely related to issues of disengagement. One of the central tenets of our approach is that goal disengagement is not a binary event but rather a process that starts well before individuals definitively let go of their goals. An action crisis is conceptualized as a situation in which individuals have already invested a great deal into their goal, but suffer from repeated setbacks and/or a substantial loss in the perceived desirability of the goal, and thus become caught between further goal pursuit and disengagement from the goal, asking themselves whether to stop or to go (Brandstätter, 2003;

Brandstätter & Schüler, 2013). The resulting intrapsychic conflict is supposed to be associated with specific affective, physiological, and cognitive consequences relevant to self-regulation. Hence, on the one hand, we will take a closer look at well-being and health markers of an action crisis, and, on the other hand, at goal-related cognitive evaluations resulting from a so-called mindset shift that is associated with an action crisis (Brandstätter & Schüler, 2013). To underline our specific theoretical point of view, we will briefly summarize the present research on disengagement from goals.

## Research on Disengagement from Goals

In his seminal research on the dynamics of commitment to goals, Klinger (1977) covered issues of goal disengagement. He suggested that whenever a goal is either no longer attainable or no longer worth an effort, a four-phase sequence

<sup>1</sup>University of Zurich, Switzerland

<sup>2</sup>University of Berne, Switzerland

### Corresponding Author:

Veronika Brandstätter, Department of Psychology, University of Zurich, Binzmühlestrasse 14/6, Zurich, CH 8050, Switzerland.  
Email: [v.brandstaetter@psychologie.uzh.ch](mailto:v.brandstaetter@psychologie.uzh.ch)

of events starts: the so-called *incentive–disengagement cycle*. First, the individual tries harder to reach his or her goal (*invigoration*). If these efforts go astray, a phase of anger (*aggression*) begins, followed by a phase of resignation and inner distancing from the goal (*depression*). In the final phase, commitment to the respective goal dissolves and the individual is open to becoming committed to new goals (*recovery*). Although Klinger's phase model has never been tested empirically, it is of high heuristic value to our research for two reasons. First, it reveals that disengagement from a goal is a process rather than a discrete event, and second, it stresses the interplay between affective and disengagement processes.

A second approach to disengagement from goals investigates developmental trajectories across the life span with a focus on individual differences with respect to goal disengagement capacities (Brandstätter, 2007; Rothermund & Brandstätter, 2003). Brandstätter's (2007) analysis of disengagement from personal goals is embedded in his dual-process model of *assimilative* and *accommodative* coping, which focuses on self-regulation across the life span. More specifically, it describes two classes of strategies at one's disposal when confronted with discrepancies between one's aspirations and one's actual life situation: the *assimilative* (e.g., attempts to diminish losses by corrective activities) and the *accommodative* (e.g., disengagement from blocked goals) modes of coping that are conceptualized as individual difference variables measured on two orthogonal scales—*flexible goal adjustment* and *tenacious goal pursuit* (Brandstätter & Renner, 1990).

In cross-sectional comparisons (e.g., Brandstätter & Renner, 1990) as well as longitudinal designs (e.g., Rothermund & Brandstätter, 2003), it has been shown that tenacity (assimilative coping) substantially decreases from middle to late adulthood, whereas flexibility (accommodative coping) increases over time. The shift from assimilative to accommodative strategies and the adaptation to changing life circumstances (i.e., disengaging from unattainable goals) is thought to happen automatically.

However, everyday experience and scientific analysis (e.g., Klinger, 1977) both show that disengagement from a goal does not occur spontaneously. In contrast, individuals are very often doubtful and disoriented when confronted with continuing setbacks (Brandstätter & Schüler, 2013).

Another approach to the analysis of individual differences in people's general tendencies to adjust to unattainable goals has been developed by Wrosch et al. (2003). The authors propose that a person's capacity to adjust to unattainable goals is characterized by two distinct processes: *goal disengagement*, defined as a withdrawal of effort and commitment from a goal, and *goal reengagement*, which means selecting, committing to, and starting to pursue alternative goals. Cross-sectional as well as longitudinal studies have shown that goal adjustment capacities are associated with higher psychological well-being and better physical health (Wrosch et al., 2007).

Existing empirical research on goal disengagement focused exclusively on general-level constructs (i.e., age, individual differences) as determinants of goal disengagement and thus does not include a microanalysis of affective and cognitive processes in individuals for whom goal disengagement is becoming an issue. In contrast, we propose an analysis on the level of concrete goals. The analysis on the level of concrete goals has been proven to be of great theoretical value in the research on self-regulation, especially because it enables the monitoring of temporal dynamics (Brunstein, Schultheiss, & Maier, 1999; Emmons, 1986; Little, 1989).

### The Present Research: Action Crises and Disengagement Processes on the Level of Concrete Goals

With the concept of an action crisis, we introduce a methodologically new approach to goal disengagement that focuses on the critical phase in the course of goal pursuit when disengagement becomes an issue and, thereby, allows for an analysis of the involved self-regulatory processes. Central to our reasoning is therefore Klinger's (1977) notion that goal pursuit and goal disengagement are not discrete and mutually exclusive states following an all-or-nothing law, but rather the two endpoints along a continuum of gradually changing instances of goal-directed engagement. The concept of an action crisis pinpoints the critical phase of goal pursuit when "a venture comes to grief" (Klinger, 1977, p. 137) and the individual is caught between further goal pursuit and disengagement from the goal, and experiences an intrapsychic conflict with specific affective, physiological, and cognitive characteristics. This assumption is consistent with Carver and Scheier's (1998) account of goal failure. Goal failure is thought not only to elicit negative affect but also to change the cognitive self-regulatory processes normally operating to secure smooth goal progress.

In the present research, we pursued two objectives. First, by looking at affective and physiological consequences, we intended to provide empirical evidence for the predictive validity of an action crisis for health and well-being. Based on empirical evidence on the relationship between goal conflict and well-being (Emmons & King, 1988; Kehr, 2003; Riediger & Freund, 2004), an action crisis, which is conceptualized as an intrapsychic conflict between further goal pursuit and goal disengagement, is hypothesized to compromise psychological and physiological well-being. This line of thought corresponds to research by Wrosch and colleagues (e.g., Wrosch et al., 2007) that showed that an individual's dispositional inability to disengage from an unattainable goal, which should be associated with prolonged action crises, results in impairments in health and well-being. If we established an empirical link between an action crisis and impairments in health and well-being, we would gain evidence on the dynamics that may underlie individuals' poor goal adjustment tendencies.

Even more importantly, a second aim of the present research was to scrutinize the cognitive self-regulatory processes resulting from an action crisis. A cognitive analysis seems particularly promising as self-regulation theories agree on the assumption that the cognitive representation of goal-related concepts (e.g., desirability, attainability) plays a pivotal role for self-regulatory efficiency in goal striving (Carver & Scheier, 2005; Gollwitzer, 1990, 2012; Kuhl, 1992).

One of the most influential theories with respect to cognitive aspects of self-regulation in different phases of goal striving is the *action-phase model* (Gollwitzer, 1990, 2012) that is particularly relevant to the analysis of action crises. The action-phase model conceives of goal striving as a sequence of two distinct tasks—*setting goals* and *realizing goals*—which are seen as being governed by distinct cognitive *mindsets* (i.e., deliberative vs. implemental mindset). As a matter of fact, in the implemental mindset, information processing is biased toward the chosen goal and thereby promotes persistence and progress in goal striving (Armor & Taylor, 2003; Brandstätter & Frank, 2002). More specifically, there is a clear bias in favor of positive aspects of one's goal that affirms the goal's desirability (e.g., E. Harmon-Jones & Harmon-Jones, 2002) and attainability ("illusionary optimism"; e.g., Armor & Taylor, 2003; Gagné & Lydon, 2001; Gollwitzer & Kinney, 1989; Taylor & Gollwitzer, 1995) and, in that way, immunizes the individual against untimely goal disengagement in the face of difficulties.

One might ask, however, how an individual would ever disengage from an unfruitful goal pursuit if this implemental orientation prevailed. There must be a mechanism that reduces the implemental bias and prepares the ground for goal disengagement. This notion is supported by J. Heckhausen and Heckhausen (2008) who speculate that "goal disengagement is an active process whereby the processes typical of goal engagement are counteracted. It involves degrading the original goal" (p. 2). Completely in line with this idea, we propose that the cognitive "degrading of the goal" is an essential characteristic of an action crisis, opening up the possibility for goal disengagement. We postulate that the experience of an action crisis changes the cognitive orientation characteristic of the implemental mindset by dampening the firm resolution to achieve a goal (Brandstätter & Schüler, 2013). This mindset shift, in turn, should be associated with a devaluation of a goal's desirability and attainability. Notably, the postulated mindset shift, fully in accordance with the action-phase model, is thought to be a cognitive process, which does not depend on affective influences. For example, the attenuation of the positive bias with respect to the goal's desirability should come about by a widening of an individual's attentional focus on negative aspects of the goal which, in the implemental mindset, typically are blinded out. In the same vein, the "optimistic estimations of the degree of personal control over intended outcomes" (Gollwitzer & Kinney, 1989, p. 532) typical of the

implemental mindset should, in an action crisis, be more aligned with the deliberative mindset. The latter "orients people toward a realistic scrutiny of available information, thus hindering illusionary optimism with respect to action-outcome expectancies" (Gollwitzer & Kinney, 1989, p. 532).

In three longitudinal field studies, each encompassing two measuring points with a time lag of several months (Studies 1 and 2) or 2 weeks (Study 3), we tested the hypothesis that experiencing an action crisis in the pursuit of a personal goal leads to a decrease in psychological (e.g., life satisfaction) and physiological (i.e., symptoms and biological markers of stress) well-being over time (Hypothesis 1). In our second hypothesis, we postulate that an action crisis decreases the subjective desirability and attainability of the respective goal.

In Studies 1 and 2, we adopted a *nomothetic-idiographic* approach to personal goals to test our assumptions. Participants had to rate their goals at two measuring points, 3 months apart. Our longitudinal design allows for cross-lagged panel analyses to be performed, which can provide evidence for presumed causal directions in the temporal sequence of measures (Kenny & Harackiewicz, 1979).

Cross-lagged path models (Studies 1 and 2) and mediation analyses (Studies 1 and 3) were performed using the AMOS software (Version 18; Arbuckle, 2009). Model fits were estimated using the maximum-likelihood method. Bootstrap estimates in mediation analyses were based on 1,000 bootstrap samples. Because our mediation models have zero degrees of freedom, fit indices could not be estimated (Byrne, 2010).

## Study 1

In Study 1, we examined the relationship between an action crisis and subjective well-being. In the literature, subjective well-being is most often defined by an affective (i.e., frequent positive and infrequent negative affect) and a cognitive component (i.e., high life satisfaction; for a review, see Diener, Suh, Lucas, & Smith, 1999). Here, we included a measure of satisfaction of life as well as a measure of everyday affect to test our hypothesis with respect to both, the cognitive and affective components of subjective well-being.

Furthermore, the relationship between an action crisis and an individual's cognitive evaluation of goal attainability was analyzed. On the one hand, goal attainability is one of the core goal characteristics relevant to self-regulation (Carver & Scheier, 1998, 2005); on the other hand, it is clearly affected by an individual's cognitive orientation (i.e., mindset; Gollwitzer & Kinney, 1989; Taylor & Gollwitzer, 1995).

## Method

**Participants and procedure.** Ninety-six (64 women) undergraduates of the University of Zurich filled out a paper-and-pencil questionnaire at Time 1 (T1) at the beginning of the

**Table 1.** Means (SDs) and Zero-Order Correlations Between the Major Study Variables (Study 1).

Variable	M (SD)	1	2	3	4	5	6	7
1. Action crisis (T1)	2.30 (0.60)	—						
2. Action crisis (T2)	2.27 (0.63)	.76***	—					
3. Satisfaction with life (T1)	5.10 (1.06)	-.50***	-.36**	—				
4. Satisfaction with life (T2)	5.12 (1.02)	-.55***	-.43***	.74***	—			
5. Affect (T1)	4.89 (0.89)	-.58***	-.36**	.65***	.60***	—		
6. Affect (T2)	5.10 (0.99)	-.56***	-.46***	.45***	.58***	.62***	—	
7. Goal attainability (T1)	3.62 (0.45)	-.37**	-.28*	.30*	.15	.11	.12	—
8. Goal attainability (T2)	3.54 (0.49)	-.40**	-.44***	.33*	.30*	.29*	.21	.64***

Note. T (in T1-T2) = time. For action crisis and goal attainability, values are averaged over all four personal goals.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

semester. A total of 58 students (42 women,  $M_{\text{age}} = 20.7$  years,  $SD_{\text{age}} = 2.54$ ) also participated at Time 2 (T2), 4 months later, at the very end of the semester. Analyses are based on the latter sample of participants.

**Personal goals.** At T1, participants were asked to state four personally relevant goals (two study and two leisure goals) they intended to strive toward during the following semester. By asking participants to list four relevant personal goals, we aimed to accurately capture the “pillars” of an individual’s goal system. All four goals had to be assessed along a set of nomothetic variables (e.g., action crisis), which were averaged across the four goals for the statistical analyses.

**Action crisis.** The degree of an action crisis experienced by participants with respect to each goal at T1 and T2 was measured using the Action Crisis Scale (ACRIS; Brandstätter & Schüler, 2013). The ACRIS consists of six items describing different aspects that have been proven to be constitutive of an action crisis in personal goals (e.g., “I have doubts whether I should continue striving for my goal or disengage from it”; “I repeatedly ruminate about my goal”; “I have thought of disengaging from my goal”). Each item was rated on a scale ranging from 1 (*no agreement*) to 5 (*very much agreement*;  $\alpha \geq .73$  at T1, and  $\alpha \geq .73$  at T2).

**Satisfaction with life.** Life satisfaction at T1 and T2 was assessed using the five-item Satisfaction With Life Scale (Diener, Emmons, Larsen, & Griffin, 1985). The level of agreement with each statement (e.g., “I have been satisfied with my life”) was rated on a scale ranging from 1 (*no agreement*) to 7 (*very much agreement*;  $\alpha = .79$  at T1, and  $\alpha = .81$  at T2).

**Affect.** Affect at T1 and T2 was measured using a 20-item scale consisting of 10 adjectives representing positive affect (e.g., happy) and 10 adjectives representing negative affect (e.g., sad). The adjectives were taken from instruments designed to measure affect related to goal striving, introduced by Brunstein (1993). Participants had to indicate the extent to which they had felt these affects “during the past few days”

(from 1 = *not at all* to 7 = *very frequently*). After recoding the negative items, items were averaged to yield an overall measure of positive affect ( $\alpha = .92$  at T1;  $\alpha = .94$  at T2).

**Goal attainability.** At T1 and T2, participants’ evaluation of the attainability of the listed personal goals was assessed using a three-item scale adapted from Brunstein (1993) that taps into quite diverse aspects of a goal’s attainability (“I don’t have many opportunities in my everyday life to work on this goal,” reverse coded; “It depends entirely on me whether or not this goal is fulfilled”; “Concerning this goal, I can definitely rely on the support of those close to me”). The level of agreement with each statement was rated on a scale ranging from 1 (*no agreement*) to 5 (*very much agreement*). Due to the fact that these items relate to completely different aspects of a goal’s attainability, which are substitutable in everyday life, we did not expect a high internal consistency ( $\alpha < .13$ ).

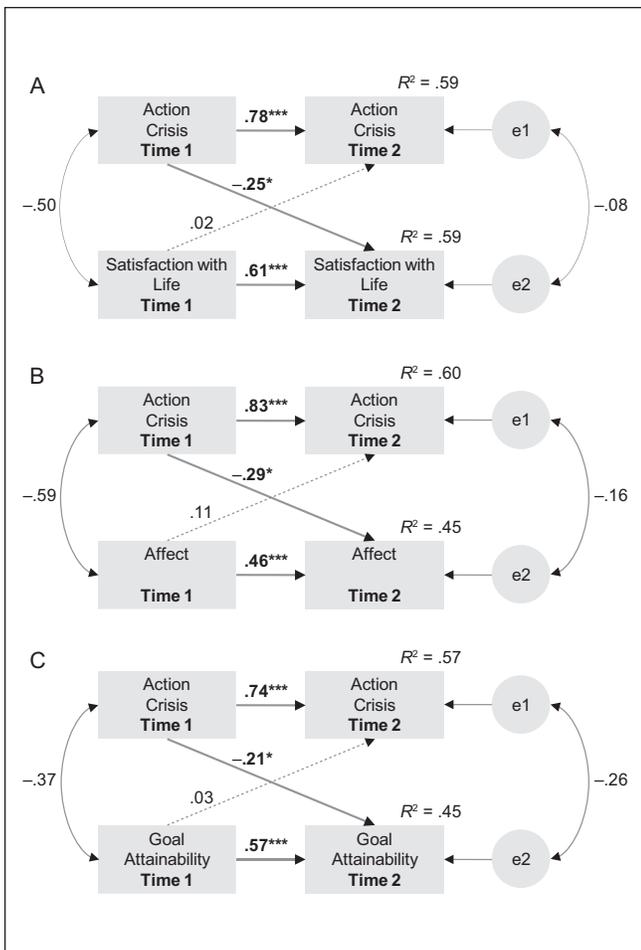
## Results and Discussion

Means (SDs) and zero-order correlations between the continuous study variables are reported in Table 1.

As shown in Table 1, the degree of an action crisis is negatively correlated with satisfaction with life, positive affect, and goal attainability, both at T1 and T2. However, to test our hypothesis that an action crisis negatively influences affective and cognitive variables over time and not vice versa, we performed cross-lagged path analyses.

**Cross-lagged path models.** The cross-lagged panel correlation technique was used to explore the longitudinal relationship between action crisis at T1 and affective and cognitive constructs at T2 (see Figure 1).

First, we examined full cross-lagged path models for each of the dependent variables. The full models showed statistically significant cross-lagged effects of action crisis at T1 on satisfaction with life ( $\beta = -.25$ , critical ratio [CR] =  $-2.51$ ,  $p = .012$ ) and everyday affect at T2 ( $\beta = -.29$ , CR =  $-2.34$ ,  $p = .019$ ), whereas satisfaction with life at T1 ( $\beta = .02$ , CR =  $0.06$ ,



**Figure 1.** Cross-lagged path models for affective and cognitive constructs. (A) For the prediction of satisfaction with life,  $\chi^2(1) = .025$ ,  $p = .875$ ,  $\chi^2/df = .025$ , NNFI = 1.092, CFI = 1.000, RMSEA = .000 (95% confidence interval [CI] = [.000, .180]; PCLOSE = .884). (B) For the prediction of affect,  $\chi^2(1) = 1.089$ ,  $p = .297$ ,  $\chi^2/df = 1.089$ , NNFI = .991, CFI = 0.999, RMSEA = .039 (CI = [.000, .356]; PCLOSE = .330). (C) For the prediction of goal attainability,  $\chi^2(1) = .102$ ,  $p = .749$ ,  $\chi^2/df = .102$ , NNFI = 1.112, CFI = 1.000, RMSEA = .000 (CI = [.000, .242]; PCLOSE = .766).

Note. Squares indicate observed variables. A circle indicates a residual error in the prediction of an observed variable. Single-headed arrows represent regression paths. Double-headed arrows represent synchronous correlations. From the aforementioned endogenous observed variables,  $R^2$  indicates the total explained variance. Dotted regression paths were not significant in the full model and were removed to calculate fit indices of the theoretically derived models. Standardized maximum-likelihood parameters are used. NNFI = non-normed fit index; CFI = comparative fit index; RMSEA = root-mean square error of approximation; CI = confidence interval; PCLOSE =  $p$  of close fit.

Bold regression paths are statistically significant at \* $p < .05$ , \*\* $p < .01$ , and \*\*\* $p < .001$ .

not significant [*ns*]) as well as everyday affect at T1 ( $\beta = .11$ ,  $CR = 1.03$ , *ns*) did not significantly affect action crisis at T2. Furthermore, the full models showed a statistically significant effect of action crisis at T1 on goal attainability ( $\beta = -.21$ ,  $CR = -1.94$ ,  $p = .053$ ) at T2. As expected, the

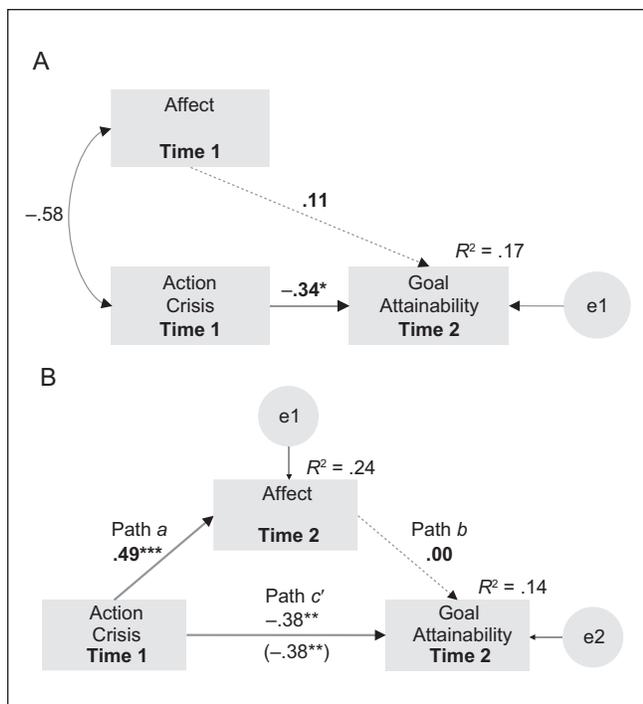
cross-lagged effect of goal attainability ( $\beta = .03$ ,  $CR = 0.32$ , *ns*) at T1 on action crisis at T2 was not statistically significant (see Figure 1).

However, because these full models were saturated, fit indices, which are used to accept or reject a model, could not be estimated (Byrne, 2010).

Secondly, to obtain the most parsimonious model, which allows fit indices to be estimated, as well as for theoretical reasons, we removed all nonsignificant regression paths from the saturated models. All resultant theoretically derived models had excellent indices of fit (cf. Figure 1) and, statistically, are to be preferred to the full models (model comparisons:  $\Delta df = 1$ ,  $\Delta \chi^2 \leq 1.09$ ,  $p \geq .30$ ; Byrne, 2010).<sup>1</sup> Moreover, as can be seen in Figure 1, results of cross-lagged path analyses confirmed the hypothesized longitudinal relationships between action crisis at T1 and affective and cognitive goal-related constructs at T2. We repeated these analyses separately for the two types of personal goals (i.e., studies, leisure) that yielded, to the greatest possible extent, the same results as the aggregated goal measures. Therefore, the conclusion seems warranted that the hypothesized pattern of results holds for multiple as well as single domains of goals.

**Action crisis, affect, and goal attainability.** To test whether affect directly influences goal attainability or mediates the relationship between action crisis at T1 and goal attainability at T2 (cf. Figure 1C), we first analyzed the effects of action crisis at T1 and affect at T1 on goal attainability at T2 in a multiple regression analysis. As can be seen in Figure 2A, goal attainability at T2 could not be predicted from affect at T1 ( $\beta = .11$ ,  $CR = 0.69$ ,  $p = .492$ ), whereas action crisis at T1 was negatively associated with goal attainability at T2 ( $\beta = -.34$ ,  $CR = -2.22$ ,  $p = .026$ ), even when controlling for affect at T1. Second, it was tested whether the effect of action crisis at T1 on goal attainability at T2 was mediated by affect at T2 (see Figure 2B). In line with our reasoning, the effect of action crisis at T1 on goal attainability at T2 was not mediated by affect at T2 (see Table 2). When controlling for action crisis at T1, affect at T2 did not affect goal attainability at T2. The fact that action crises impacted the evaluation of goal attainability over and beyond concurrent affect strengthens the core assumption of the action-phase model according to which mindsets unfold their cognitive effects independent of affective processes (Gollwitzer, 2012).

In summary, Study 1 yields initial evidence that action crises in personal goals compromise psychological well-being over time, independent of goal content (i.e., studies vs. leisure). Based on these effects in Study 1, we went on, in Study 2, to analyze the question whether, beyond its effect on well-being, an action crisis also results in health problems. Another issue in Study 2 was to replicate the influence of action crises on the cognitive evaluation of goal attainability and to supplement this analysis by examining the consequences of an action crisis on the cognitive evaluation of goal desirability.



**Figure 2.** (A) Multiple regression analysis predicting goal attainability at T2 from affect at T1 and action crisis at T1 (Study 1). (B) A mediation model of action crisis at T1, affect at T2, and goal attainability at T2. Affect was not a significant mediating factor between action crisis at T1 and goal attainability at T2 (Study 1). Note.  $R^2$  indicates the total explained variance. Dotted regression paths are not significant. Bold regression paths are statistically significant at \* $p < .05$ , \*\* $p < .01$ , and \*\*\* $p < .001$ .

## Study 2

### Method

**Participants and procedure.** A total of 333 (263 women) psychology students of a first-semester course at the University of Zurich filled out a questionnaire at Time 1 (T1), at the beginning of the semester. A 15% attrition rate at Time 2 (T2), at the end of the semester (14 weeks later), resulted in a total of 283 students (228 women;  $M_{\text{age}} = 23.5$  years,  $SD_{\text{age}} = 6.58$ ) participating in the study. As in Study 1, web-based questionnaires were used at T2.

**Personal goals.** As in Study 1, at T1, participants were asked to state four goals (two study and two leisure goals) they would be striving toward during the winter semester.

**Action crisis.** Action crises in personal goals were assessed using the Action Crisis Scale (Brandstätter & Schuler, 2013; cf. Study 1;  $\alpha \geq .74$  at T1, and  $\alpha \geq .78$  at T2).

**Satisfaction with life.** Life satisfaction at T1 and T2 was assessed using two items: “At the moment, I’m absolutely

satisfied with my life” and “To be satisfied, my life would have to change drastically” (inversely coded),  $r = .71$  at T1,  $p = .000$ ;  $r = .65$  at T2,  $p = .000$ . Level of agreement was rated on a scale ranging from 1 (*no agreement*) to 7 (*very much agreement*).

**Health.** At T1 and T2, health was measured using a six-item scale. For each item, participants had to assess the extent to which they had suffered from the listed symptoms of illness (e.g., “unpleasant feeling of fullness, stomachache, nausea, or constipation”, “rheumatic pain, shoulder pain, lower back pain, or neck pain”) during the last 2 weeks (from 1 = *never* to 4 = *more than once a week*). Because of the wide range of the different groups of symptoms, reliability was acceptable at both time points ( $\alpha = .58$  at T1;  $\alpha = .66$  at T2).

**Sleeping disorders.** To assess sleeping disorders at T1 and T2, participants were requested to indicate how frequently they had had problems falling asleep over the past 2 weeks (from 1 = *never* to 4 = *more than once a week*).

**Goal desirability.** Participants rated goal desirability (item: “This goal is important to me”) for every personal goal on a scale ranging from 1 (*no agreement*) to 5 (*very much agreement*).

**Goal attainability.** Goal attainability (item: “I think chances are high that I’m going to attain this goal”) was assessed on a scale ranging from 1 (*no agreement*) to 5 (*very much agreement*).

## Results and Discussion

Means ( $SD$ s) and zero-order correlations between the continuous study variables are illustrated in Table 3.

As illustrated in Table 3, the degree of experienced action crises is negatively correlated with satisfaction with life, health, goal attainability, and goal desirability, and positively correlated with sleeping disorders both at T1 and T2, with one exception (sleeping disorders). Again, we performed cross-lagged path analyses to test our hypothesis that an action crisis negatively influences well-being and cognitive variables (i.e., ratings of goal attainability and desirability) over time.

**Cross-lagged path models.** As in Study 1, the cross-lagged panel correlation technique (for details, see Study 1) was used to explore the longitudinal relationships between action crisis at T1 and affective, health-related, and cognitive goal-related constructs at T2 (see Figure 3).

First, we examined full cross-lagged path models. The full (saturated) models showed statistically significant cross-lagged effects of action crisis at T1 on satisfaction with life ( $\beta = -.13$ ,  $CR = -2.30$ ,  $p = .022$ ), health ( $\beta = -.21$ ,  $CR = -4.33$ ,  $p < .001$ ), and sleeping disorders at T2 ( $\beta = .11$ ,

**Table 2.** Mediation Analysis Testing Whether Affect at T2 Partly Accounts for the Association Between Action Crisis at T1 and Goal Attainability at T2 (Study 1).

Effect	Standardized estimate	CR	SE	95% CI	<i>p</i>
Path c (total effect)	-.38	-2.98			.003
Path a	-.49	-4.13			<.001
Path b	.00	0.00			.997
a × b (indirect effect)	.00		.076	[-.151, .168]	.991
Path c' (direct effect)	-.38	-2.60			.009

Note. CI = confidence interval; CR = critical ratio. Maximum likelihood estimates are provided for the Paths c, a, b, and c'. For the standardized indirect effect (a × b), bootstrap estimates with CIs are provided.

**Table 3.** Means (SDs) and Zero-Order Correlations Between the Major Study Variables (Study 2).

Variable	M (SD)	1	2	3	4	5	6	7	8	9	10	11
1. Action crisis (T1)	2.29 (0.51)	—										
2. Action crisis (T2)	2.28 (0.54)	.73***	—									
3. Satisfaction with life (T1)	4.96 (1.23)	-.45***	-.33***	—								
4. Satisfaction with life (T2)	4.75 (1.38)	-.33***	-.38***	.49***	—							
5. Health (T1)	2.81 (0.56)	-.21***	-.15**	.30***	.23***	—						
6. Health (T2)	2.88 (0.61)	-.32***	-.34***	.31***	.42***	.59***	—					
7. Sleeping disorders (T1)	2.23 (1.02)	.08	.04	-.18**	-.10	-.52***	-.34***	—				
8. Sleeping disorders (T2)	2.39 (1.07)	.16**	.19**	-.18**	-.25***	-.42***	-.60***	.64***	—			
9. Goal desirability (T1)	4.60 (0.36)	-.28***	-.19**	.16**	.10	-.05	.05	-.03	-.07	—		
10. Goal desirability (T2)	4.51 (0.50)	-.36***	-.32***	.21***	.26***	.07	.18**	-.00	-.06	.64***	—	
11. Goal attainability (T1)	3.73 (0.52)	-.50***	-.40***	.31***	.27***	.12	.23***	-.08	-.16**	.35***	.33***	—
12. Goal attainability (T2)	3.73 (0.63)	-.40***	-.56***	.16**	.36***	.06	.28***	-.03	-.15*	.31***	.50***	.62***

Note. T (in T1-T2) = time. For action crisis, goal desirability, and goal attainability, values are averaged over all four personal goals.  
\**p* < .05. \*\**p* < .01. \*\*\**p* < .001.

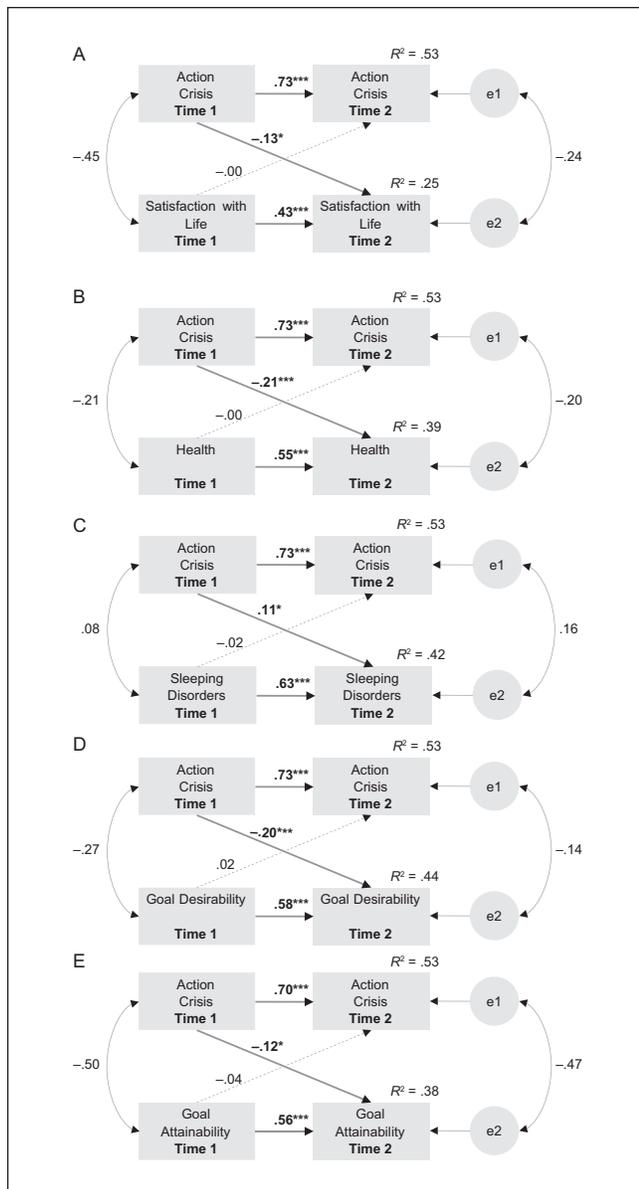
CR = 2.43, *p* = .015), whereas satisfaction with life ( $\beta = -.00$ , CR = -0.06, *ns*), health ( $\beta = -.00$ , CR = -0.08, *ns*), and also sleeping disorders at T1 ( $\beta = -.02$ , CR = -0.40, *ns*) did not significantly affect action crises at T2. Furthermore, the full models showed statistically significant effects of action crisis at T1 on goal desirability ( $\beta = -.20$ , CR = -4.33, *p* < .001) and goal attainability ( $\beta = -.12$ , CR = -2.18, *p* = .029) at T2. As expected, the cross-lagged effects of goal desirability ( $\beta = .01$ , CR = 0.35, *ns*) and goal attainability ( $\beta = -.04$ , CR = -0.93, *ns*) at T1 on action crisis at T2 were not statistically significant. Because these full models have zero degrees of freedom, fit indices could not be estimated (Byrne, 2010).

Second, in line with theoretical predictions and to obtain the most parsimonious model, which allows fit indices to be estimated, we removed all nonsignificant regression paths from the saturated models. All resultant models had excellent indices of fit and, statistically, are to be preferred to the full models (model comparisons:  $\Delta df = 1$ ,  $\Delta\chi^2 \leq 0.865$ , *p* ≥ .35; cf. Figure 3; Byrne, 2010).

As illustrated in Figure 3, Study 2 replicated the effects of Study 1. As in Study 1, the degree to which an individual experienced action crises in personal goals at T1 predicted affective and cognitive goal-related parameters at T2. Furthermore, over and above the results obtained in Study 1,

a high degree of action crises in personal goals at T1 was associated with a significant decline in health-related parameters as well as goal desirability at T2. Again, we repeated these analyses separately for the two types of personal goals (i.e., studies, leisure) that largely yielded the same results as with the composite goal measures. Accordingly, it can be concluded that the effect of action crises on affective, physiological, and cognitive outcome variables holds for goals from different contexts.

On the premise that an action crisis represents an intrapsychic stressor (Emmons & King, 1988), it was predicted and demonstrated in Studies 1 and 2 that experiencing action crises in personal goals leads to a deterioration of psychological and physical well-being over time. In a next step, we sought to gain further supporting evidence for this theoretical assumption by looking at objective indicators of stress (i.e., cortisol secretion). Theoretically, such psychophysiological processes oscillate with the salience of the conflict. With respect to an action crisis, its salience should reach its critical stage in the course of goal pursuit, that is, when an individual is actually performing goal-related activities. Therefore, in Study 3, we analyzed a sample of individuals pursuing the same goal (i.e., running marathons) while performing goal-relevant activities (i.e., while running).



**Figure 3.** Cross-lagged path models for satisfaction with life, health, sleeping disorders, goal desirability, and goal attainability. (A) For the prediction of satisfaction with life,  $\chi^2(1) = .000$ ,  $p = .987$ ,  $\chi^2/df = .000$ , NNFI = 1.016, CFI = 1.000, RMSEA = .000 (CI = [.000, .000]; PCLOSE = .991). (B) For the prediction of health,  $\chi^2(1) = .007$ ,  $p = .934$ ,  $\chi^2/df = .007$ , NNFI = 1.016, CFI = 1.000, RMSEA = .000 (CI = [.000, .044]; PCLOSE = .954). (C) For the prediction of sleeping disorders,  $\chi^2(1) = .159$ ,  $p = .690$ ,  $\chi^2/df = .159$ , NNFI = 1.014, CFI = 1.000, RMSEA = .000 (CI = [.000, .117]; PCLOSE = .778). (D) For the prediction of goal desirability,  $\chi^2(1) = .124$ ,  $p = .724$ ,  $\chi^2/df = .124$ , NNFI = 1.013, CFI = 1.000, RMSEA = .000 (CI = [.000, .112]; PCLOSE = .803). (E) For the prediction of goal attainability,  $\chi^2(1) = .865$ ,  $p = .352$ ,  $\chi^2/df = .865$ , NNFI = 1.002, CFI = 1.000, RMSEA = .000 (CI = [.000, .153]; PCLOSE = .502).

Note. For adequate interpretation of the cross-lagged path models, see Figure 1. NNFI = non-normed fit index; CFI = comparative fit index; RMSEA = root-mean square error of approximation; CI = confidence interval; PCLOSE =  $p$  of close fit.

### Study 3

Running marathons is a goal that calls for steady investments of time and effort (e.g., Martin & Coe, 1997). Athletes who are committed to this goal experience phases of progress and satisfaction as well as phases of setbacks and resignation. Hence, the goal of running marathons constitutes an excellent field for the analysis of an action crisis in personal goals (cf. Brandstätter & Schüler, 2013, Study 4). In the present study, we assessed the degree of an action crisis with respect to the goal of running marathons 2 weeks prior to a marathon competition and collected objective indicators of stress (i.e., cortisol levels) while our participants were running the marathon. Moreover, we were able to collect data on the running times of the athletes, allowing us to test the hypothesis that experiencing an action crisis has a negative impact on the objective performance in the race and that such an impairment is mediated by the degree of cortisol secretion. To control for running-specific physical complaints (e.g., a weak physical condition or injuries) that may lead to both the experience of an action crisis and increased cortisol excretion during the marathon competition, we also measured athletes' exhaustion and pain felt during the marathon training sessions preceding the contest.

Marathon runners concordantly report that they often experience a cave-in of their (physical and psychological) resources during the marathon race. By and by, physical resources are drained, and often failures to keep up one's speed are experienced that become more and more stressful for the athletes (Martin & Coe, 1997). Over the race, the continuously increasing mental and physical demands are mirrored by an increase in cortisol secretion (e.g., Cook, Ng, Read, Harris, & Riad-Fahmy, 1987). However, over and above these demands on the athletes, we predict an incremental increase in cortisol secretion over the race, identifiable in a steeper individual slope, for athletes experiencing an action crisis with respect to running marathons.

### Method

**Participants and procedure.** Sixty-five male runners participating in a Swiss marathon race were recruited for the study. Two weeks prior to the competition, participants filled out an initial questionnaire, which they received by post. Saliva samples were collected at four measuring points during the marathon (at Kilometer 10, 20, 30, and 40), and 2 weeks prior to the marathon (baseline), for the purpose of analyzing cortisol secretion. Study assistants were waiting for the participants at all four measuring points during the marathon. Even though only 1 of the 65 study participants did not complete the marathon, due to the large number of runners participating in the marathon overall and the complicated sampling procedure, not all runners could be contacted by a study assistant at all four measuring points along the marathon course. As the present study aimed to assess the cortisol

**Table 4.** Means (SDs) and Zero-Order Correlations Between the Major Study Variables (Study 3).

Variable	M (SD)	1	2	3	4	5	6	7	8
1. Action crisis	1.73 (0.56)	—							
2. Marathon experience 1	10.22 (13.76)	-.15	—						
3. Marathon experience 2	9.73 (7.44)	-.12	.61***	—					
4. Preparation time (weeks)	15.46 (13.15)	-.03	-.28	-.14	—				
5. Running distance per weeks (km)	41.15 (19.27)	-.22	.22	.05	-.23	—			
6. Physical exhaustion (in training sessions)	2.80 (0.97)	.22	-.08	-.01	-.03	.05	—		
7. Pain (in training sessions)	1.92 (0.85)	.31*	-.29*	-.35*	.07	.03	.57***	—	
8. Cortisol slope	5.04 (6.19)	.35*	-.24	-.21	-.02	-.17	.06	.18	—
9. Running time (min)	224.14 (29.86)	.35*	-.38**	-.14	.07	-.43*	.08	.09	.40**

Note. Marathon experience 1 = number of marathons run; Marathon experience 2 = number of years of long-distance running experience. Due to the skewness of the variable Marathon experience 1, nonparametric Spearman's correlation analysis was performed to measure the correlations between Marathon experience 1 and the remaining study variables.

\* $p < .05$ . \*\* $p < .01$ . \*\*\* $p < .001$ .

trajectory<sup>2</sup> over the course of the marathon, 14 participants, who completed fewer than three measuring points, had to be excluded from further data analysis.<sup>3</sup> On average, the remaining 51 participants ( $M_{\text{age}} = 43.8$  years,  $SD_{\text{age}} = 9.16$ ) weighed 72.04 kg ( $SD = 7.91$ ), had a height of 176.0 cm ( $SD = 4.91$ ), and a body mass index (BMI) of 23.23 kg/m<sup>2</sup> ( $SD = 2.10$ ).

**Action crisis.** To assess the extent to which participants were experiencing an action crisis with regard to being a marathon runner, they were given a slightly modified goal-specific version of the ACRISS (Brandstätter & Schuler, 2013) 2 weeks prior to the marathon. Thus, in contrast to Studies 1 and 2, the six items were adapted to the specific goal (e.g., "I have thought of disengaging from running marathons";  $\alpha = .82$ ).

**Cortisol.** Two weeks prior to the marathon (baseline) and at Kilometer 10, 20, 30, and 40 during the marathon, saliva samples were collected using a sampling device called *Salivette* (Sarstedt Inc., Rommelsdorf, Germany). After the marathon, saliva samples were stored at  $-20^{\circ}\text{C}$ . Samples were thawed and centrifuged at 3,000 rpm for 10 min to obtain 0.5 to 1.0 ml clear saliva with low viscosity. Free cortisol in nmol/l was determined by means of a commercial luminescence immunoassay (LIA) kit (IBL, Hamburg, Germany). The inter- and intra-assay coefficients of variation were  $<8\%$ . The slope of the regression line was chosen as a measure of the dynamic change in cortisol over the marathon.<sup>2</sup> For every individual, we obtained data for at least three measuring points.

**Marathon experience.** Previous marathon experience was operationalized by means of the number of marathons run ( $M = 10.22$ ,  $SD = 13.76$ ) and the number of years of long-distance running experience ( $M = 9.73$ ,  $SD = 7.44$ ).

**Marathon preparation.** To control for the individual preparation program, participants were asked how many weeks they had been preparing for the marathon ( $M = 15.46$ ,  $SD = 13.15$ )

and how many kilometers their training program contained per week ( $M = 41.15$ ,  $SD = 19.27$ ).

**Running-specific complaints.** Prior to the marathon, participants had to indicate to what extent (from 1 = *not at all* to 5 = *very*) a typical training session had led to exhaustion ( $M = 2.80$ ,  $SD = 0.97$ ) and pain ( $M = 1.92$ ,  $SD = 0.85$ ).

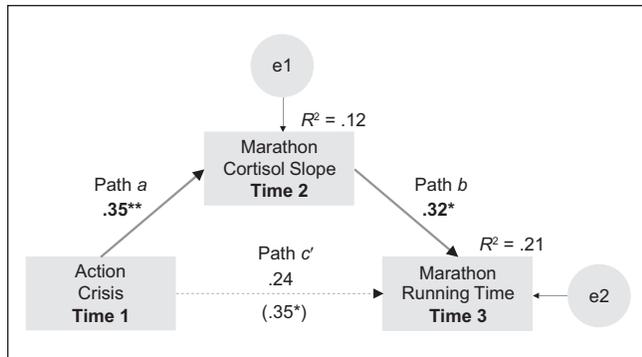
**Running time.** Athletes carried a computer chip in their sports shoes that recorded the time at which they passed the starting line and the finish line. Participants had disclosed their starting number and thereby agreed to allow the investigators to consult the web-based list of their running times after the race.

## Results and Discussion

Zero-order correlations among the major study variables are shown in Table 4.

Having established significant relationships between action crisis and the running time ( $\beta = .35$ ,  $p = .009$ ) and action crisis and the cortisol slope ( $\beta = .35$ ,  $p = .009$ ) by calculating regression analyses, we examined whether the relationship between action crisis and running time was mediated by the cortisol slope. Conducting a mediation analysis seems particularly appropriate in methodological terms since the predictor variable (i.e., action crisis) and the outcome variable (i.e., running time) are assessed at different time points, whereas the mediating variable (i.e., the cortisol slope) was measured chronologically between the predictor and outcome variable (Maxwell & Cole, 2007).

**Mediation analysis.** In line with our hypothesis, the dynamic change in the cortisol level over the course of the marathon, by explaining 32% of the relationship between action crisis and running time, partially mediated the relationship between predictor and outcome variables (see Figure 4; statistical details are provided in Table 5).



**Figure 4.** A mediation model of an action crisis with regard to being a marathon runner, dynamic change in the cortisol level during the marathon, and running time. Dynamic change in the cortisol level during the marathon was a significant mediating factor between action crisis and running time.

Note.  $R^2$  indicates the total explained variance. Dotted regression paths are not significant.

Bold regression paths are statistically significant at  $*p < .05$  and  $**p < .01$ .

In addition, to ascertain that the relationship between action crisis and cortisol slope, and between action crisis and running time, was independent of age, BMI, previous marathon experience, the individual preparation program, and running-specific complaints, we performed two longitudinal regression analyses. In Step 1, control variables (BMI and age) were entered into the regression model. In Step 2, the number of marathons run (i.e., Marathon experience 1) and the number of years of long-distance running experience (i.e., Marathon experience 2) were entered to allow an assessment of their independent contributions to the cortisol slope and running time. Step 3 included the individual preparation program, that is, preparation time (in weeks) and running distance per week (in kilometers). In Step 4, we controlled for running-specific complaints, that is, physical exhaustion and experienced pain in the training sessions. Finally, in Step 5, the main effect of action crisis was entered. We estimated two regression equations: one for each of the two outcome variables (cortisol slope and running time). The results of the two regression analyses are shown in Table 6.

As can be seen in Table 6, previous marathon experience, marathon preparation in weeks, and running-specific complaints predicted neither the cortisol slope nor running time, whereas running distance per week was negatively associated with running time ( $\beta = -.38, p = .015$ ) but not with the cortisol slope. However, in accordance with our hypotheses and in support of the results of the mediation analysis, even when previous marathon experience, marathon preparation, and running-specific complaints were controlled for, action crisis was a significant predictor of the cortisol slope ( $\beta = .36, p = .040$ ) as well as running time ( $\beta = .35, p = .027$ ). Evidently, a high degree of action crisis with regard to being a marathon runner was associated with increased physiological stress

during the marathon which, in turn, interfered with goal pursuit (i.e., running time).<sup>4</sup>

In the present study, for the first time, we collected evidence that experiencing an action crisis, especially when performing goal-relevant activities, affects psychophysiological processes indicative of an intrapsychic conflict and stress. Evidently, being torn between persisting in the goal of running marathons and disengaging from it was associated with a steeper slope in cortisol secretion in the marathon race across the four kilometer marks of 10, 20, 30, and 40 km. Running a marathon is a taxing and stressful endeavor per se (Cook et al., 1987). With one exception, all athletes in our study showed an increase in cortisol secretion during the marathon race. Interestingly, however, the increase in cortisol secretion was markedly steeper for athletes who, 2 weeks prior to the race, had indicated that they were facing an action crisis with respect to their goal of running marathons. Not only did athletes in an action crisis show a higher increase in cortisol production, they also showed a poorer running performance in the marathon race. The physiological stress reaction mediated the relationship between action crisis and running performance. Notably, cortisol secretion during the marathon race was not related to the degree of physical complaints (i.e., exhaustion, pain) felt during the preparatory training sessions weeks before the competition. Thus, the alternative explanation that exhaustion or pain, and not goal-related action crises, was responsible for the pattern of results for cortisol secretion can be ruled out.

## General Discussion

In the present research, we analyzed affective, physiological, and cognitive consequences of action crises in personal goals. An action crisis is conceived of as the critical phase in the course of goal pursuit, in which individuals have already invested heavily in the goal, nonetheless encounter recurring difficulties, and are eventually caught in the decision between further goal pursuit and disengagement.

Our hypotheses centered on two different issues. First, we hypothesized that an action crisis represents an intrapsychic conflict that should, over time, be associated with a reduction in psychological well-being as well as an increase in physical complaints and biological indicators of stress (i.e., cortisol). Our findings support the validity of these hypotheses. Studies 1 and 2 provided evidence that the intensity of action crises in personal goals is predictive of a decline in satisfaction with life, reduced positive everyday affect, and an increase in health symptoms over 4 (Study 1) or 3 (Study 2) months. Moreover, in Study 3, individuals experiencing an action crisis with respect to their goal of running marathons showed a higher increase in objective stress markers (i.e., steeper cortisol slopes) across the four kilometer marks of 10, 20, 30 and 40 km in a marathon race 2 weeks later. In addition to a higher physiological stress level, an individual's action crisis was associated with a lower running performance, partially

**Table 5.** Mediation Analysis Testing Whether the Dynamic Change in the Cortisol Level During the Marathon Partly Accounts for the Association Between Action Crisis and Running Time (Study 3).

Effect	Standardized estimate	CR	SE	95% CI	<i>p</i>
Path c (total effect)	.35	2.63			.009
Path a	.35	2.62			.009
Path b	.32	2.37			.018
a × b (indirect effect)	.11		.063	[.018, .276]	.018
Path c' (direct effect)	.24	1.78			.075

Note. Maximum likelihood estimates are provided for Paths c, a, b, and c'. For the standardized indirect effect (a × b), bootstrap estimates with CIs are provided. CI = confidence interval; CR = critical ratio.

**Table 6.** Hierarchical Multiple Regression Analysis Predicting Dynamic Change in the Cortisol Level over the Marathon and Running Time from Previous Marathon Experience, Marathon Preparation, Running-Specific Complaints, and Action Crisis with Regard to Being a Marathon Runner (Study 3).

Predictor	Action crisis as a predictor of dynamic change in cortisol over the marathon and running time			
	Cortisol slope		Running time	
	$\Delta R^2$	$\beta$	$\Delta R^2$	$\beta$
Step 1	.15*		.03	
Control variables <sup>a</sup>				
Step 2	.00		.13	
Marathon experience 1		.10		-.22
Marathon experience 2		.02		-.15
Step 3	.02		.14	
Preparation time (weeks)		-.06		.02
Running distance per week (km)		-.09		-.38*
Step 4	.02		.01	
Physical exhaustion (in training sessions)		-.05		.14
Pain (in training sessions)		.05		-.22
Step 5	.10*		.10*	
Action crisis		.36*		.35*
Total $R^2$	.28		.41*	
<i>n</i>	43		43	

Note. Marathon experience 1 = number of marathons run; Marathon experience 2 = number of years of long-distance running experience. Owing to missing values in relevant control variables (Steps 2-4), the sample, for the two regression analyses, was reduced to 43 participants.

<sup>a</sup>Control variables included age and body mass index (BMI).

\* $p < .05$ .

mediated by an increased physiological stress level. These results illustrate the relevance of action crises for goal-directed behavior. Experiencing a conflict between further persistence and disengagement from a goal obviously compromises successful goal striving, which could in turn aggravate an already existing action crisis (creating a vicious circle), an issue that is open to further research.

Our second set of hypotheses addressed cognitive correlates of an action crisis highly relevant to self-regulation. We postulated that an action crisis would trigger a "mindset shift" (Brandstätter & Schüller, 2013, p. 551) that might over time predispose individuals to distance themselves from their goals. More specifically, we reasoned that an

action crisis would be associated with a lowered cognitive evaluation of the goal's attainability and desirability, and would thereby counteract the optimistic and positive bias of the implemental mindset. The results of Studies 1 and 2 supported our assumptions. The stronger the reported action crisis, the steeper was the decline in attainability and desirability ratings during the observational time interval of several months. Moreover, in Study 1, we could show that the decline in subjects' evaluation of the goal's attainability was not mediated by affect that is fully in accordance with the core assumption of the action-phase model (Gollwitzer, 1990, 2012) that mindsets unfold their effects through their impact on cognitive processes.

The results were consistent across different samples and a variety of personal goals. In Studies 1 and 2, participants listed personal goals stemming from different areas of life (e.g., studies, leisure); in Study 3, participants reported on one and the same goal (i.e., running marathons). Despite the heterogeneity of goal contents, we obtained the same pattern of results.

Our participants reported a mean degree of action crises (Study 1 at T1:  $M = 2.30$ ; Study 2 at T1:  $M = 2.29$ ; theoretical range = 1-5) that suggests a mean level of distress. However, strictly speaking, the question which intensity of action crisis leads to clinically relevant levels of distress has to be answered in future research.

In Studies 1 and 2, we used a repeated measurement design covering time periods of up to 4 months. Hence, we conducted cross-lagged panel analyses, which allowed the directions of the time lag relationships between our main constructs to be tested. In all analyses, T1 action crises predicted T2 well-being and T2 cognitive judgments of the goal's attainability and desirability, but not vice versa.

### *An Action Crisis as an Intrapsychic Conflict*

In everyday life, individuals are rarely confronted with completely unattainable goals—for example, having passed a developmental deadline (e.g., J. Heckhausen, 1999) or being plagued by a loss of physical or mental resources (e.g., J. Heckhausen, Dixon, & Baltes, 1989). In contrast, the difficulties from which people typically suffer in their everyday goal striving are more innocuous. In the vast majority of situations, it is anything but clear whether the goal should be abandoned or not; what follows is a full-blown decision conflict (Diederich, 2003; Janis & Mann, 1977) between “hanging on or letting go” (Jostmann & Koole, 2009, p. 338). Usually, despite repeated setbacks, there remains a glimmer of hope that, with increased effort, one will be able to realign one's goal striving (Carver & Scheier, 1998; Klinger, 1977) or that changing environmental circumstances might again support goal striving in the future. Future research will have to look at the decision conflict associated with an action crisis in more detail. It would, for example, be intriguing to analyze how individuals in an action crisis construe their concrete decision alternatives and how this is related to outcome variables, depending on the type of conflict.

### *Changes in the Cognitive Evaluation of the Goal in an Action Crisis*

According to Klinger (1977), goal devaluation is a necessary prerequisite for the disengagement process. In the same vein, Carver and Scheier (1998) underscore the role of expectancy for goal disengagement. They state that “if the expectancies are sufficiently unfavorable, the person begins to disengage from the attempt at goal attainment” (p. 21). But how can these arguments be reconciled with evidence regarding the

positive bias prevalent in the implemental (volitional) phase of goal striving with respect to feasibility-related (Gagné & Lydon, 2001; Gollwitzer & Kinney, 1989; Puca, 2001; Taylor & Gollwitzer, 1995) and desirability-related information (E. Harmon-Jones & Harmon-Jones, 2002)? Evidently, a shift in the mindset (Brandstätter & Schüler, 2013) has to take place that dampens the positively biased outlook on the goal and, metaphorically, opens the back door of the volitional mindset. In our view, in an action crisis, the volitional bias of the implemental mindset is attenuated, allowing individuals to objectively reassess their goal with respect to its desirability and attainability.

### *Theoretical Implications of the Present Research*

Our research contributes to a better understanding of goal striving and goal disengagement processes, in two important ways. A first theoretical advance lies in its potential for fine-grained analyses of affective and bodily processes when goal striving is thwarted. Our studies transcend previous work on goal disengagement focusing on the relationship between general-level constructs (e.g., goal adjustment tendencies) on the one hand and well-being correlates on the other hand (Brandstätter & Renner, 1990; Wrosch et al., 2007). In contrast, our approach centers on processes on the level of concrete personal goals and thus reveals a mechanism by which a lack of goal adjustment tendencies might affect psychological and physiological well-being. The dispositional inability to disengage from an unattainable goal in a timely fashion and to commit oneself to an alternative goal (goal reengagement) should, in everyday life, be associated with a higher probability of experiencing conflicts on the level of concrete personal goals, that is, being caught between letting go of a goal and sticking tenaciously to it.

Second, our theorizing widens the scope of the mindset theory of action phases (Gollwitzer, 1990, 2012) to instances in which the implementation of a goal becomes problematic. The implemental mindset that arises after making a decision and committing oneself to a goal is assumed to prevail until the goal has been successfully reached. Goal achievement is thought to be supported by a one-sided positive view of one's goal (E. Harmon-Jones & Harmon-Jones, 2002; Taylor & Gollwitzer, 1995) and an overly optimistic estimation of the goal's attainability (illusionary optimism; Bayer & Gollwitzer, 2005; Gagné & Lydon, 2001; Gollwitzer & Kinney, 1989; Taylor & Gollwitzer, 1995). However, one might wonder how an individual could ever be able to disengage from a goal if the positive judgment of the goal persisted on and on. We posit that an action crisis is one condition under which the implemental mindset might be attenuated, opening the avenue for goal disengagement. As we have shown in a series of studies, an action crisis does indeed expel an individual from the typical implemental mindset (Brandstätter & Schüler, 2013).

### Limitations and Future Directions

Certain limitations of our research that need to be addressed in the following, concurrently, lead to several intriguing research questions. First, in Studies 1 and 2, we had our participants list the four most important personal goals (two study goals, two leisure goals) they were tackling at the moment. In future research, one might want to scrutinize the role of goal importance<sup>5</sup> for the postulated relationship between action crises and affective, physiological, and cognitive outcome variables. In addition, besides goal importance, different other goal characteristics might qualify as a moderator (e.g., the degree to which a goal represents a self-defining identity goal, Gollwitzer & Kirchhof, 1998; the degree of investments in terms of time and others resources devoted to the goal so far, Brockner & Rubin, 1985). It is well conceivable, for example, that experiencing an action crisis in goals in which the individual has already invested a great deal in the past will lead to more negative consequences with respect to psychological and physiological well-being compared with goals with lower investments.

Second, as we tapped into our participants' goal-striving processes at a specific point in time and tracked these for some time, our data are silent with regard to the antecedents of action crises. Future studies should analyze the specific conditions that change an individual's firm orientation toward goal achievement and allow doubts about the goal to seep in. There are several variables that are likely candidates for antecedent conditions of an action crisis (low self-concordance of a goal, Sheldon & Elliot, 1999; motive-goal incongruence, Baumann, Kaschel, & Kuhl, 2005; insufficient progress in advancing one's goal, Carver & Scheier, 1998).

Third, in looking at the cognitive correlates of an action crisis, we focused exclusively on changes in the cognitive representation of the goal's attainability and desirability. However, it is perfectly conceivable that an action crisis is additionally associated with other cognitive changes, for example, a more open focus toward alternative goal engagements or an increased susceptibility to goal-irrelevant temptations.

Fourth, future research definitely needs to go a step further in the analysis of the role of affective, physiological, and cognitive processes for ultimate goal disengagement or goal reengagement. Does suffering from one's goal help individuals to disengage from a goal and commit to a new one, as Klinger (1977) theorized? Is there a critical value below which the subjective attainability and desirability of a goal has to fall for an individual to be ready to disengage from his or her goal? Do these critical values vary depending on the type of goal and personality characteristics?

Throughout adult life, individuals inevitably and repeatedly experience more or less severe action crises. Thus, the concept of an action crisis refers to a general human experience in the lifelong course of goal striving that arises under specific antecedent conditions and leads to specific affective, cognitive, and behavioral consequences. An action crisis is a

state—not a trait—construct, because it refers to a concrete subjective experience and not to a person's dispositions. Nevertheless, there are probably individual differences in the liability to experience action crises. Hence, a fifth important issue for a future research agenda is the role of individual differences in the predisposition toward experiencing an action crisis. Possible candidates could be action/state orientation (Kuhl, 1992), neuroticism (Costa & McCrae, 1992), and general goal adjustment tendencies (Wrosch et al., 2003). For example, state-oriented individuals are "more rigidly attached to a goal even after repeatedly failing to reach it and less inclined to replace an unattainable goal by some substitute goal" (Kuhl, 1981, p. 161). Accordingly, one should analyze whether state-oriented individuals are more prone to experience an action crisis and actually tend to experience more serious affective impairments than action-oriented individuals. In the same vein, one might speculate that state-oriented individuals in an action crisis do not devalue a goal to the same extent as action-oriented individuals.

In conclusion, the present research contributes to the study of goal disengagement, a fundamental aspect of successful goal striving. By analyzing action crises in personal goals, we have gained deeper insights into affective, physiological, and cognitive dynamics in goal disengagement. Hence, the concept of an action crisis offers a new approach to the analysis of disengagement processes.

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### Authors' Note

This article (Studies 1 and 2) is partly based on data previously used in a published report concerning goal-relevant resources (Schnelle, Brandstätter, & Knöpfel, 2010). The present findings have no overlap with previously reported data.

### Declaration of Conflicting Interests

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### Notes

1. Due to the high reliability of the variables, the low level of model complexity, the homogeneity of the sample, and the relatively strong cross-lagged effects, using structural equations modeling (SEM) appeared to be the best way to statistically evaluate the data, despite the small sample size (cf. Iacobucci, 2010).

2. Random coefficient modeling (RCM; Bliese & Polyhart, 2002), calculated with the help of the freely available statistical software package *R* (<http://cran.r-project.org>), was used to assess the form of the cortisol trajectory over the marathon. Analysis using orthogonal polynomials revealed a significant and predominant linear trend over time,  $t(128) = 6.53, p < .001$ .
3. Of the 51 participants who completed at least three measuring points, 29 participants completed all four measuring points and 22 participants completed three measuring points.
4. The cortisol slope was positively correlated ( $r = .34, p = .029$ ) with morning cortisol ( $M = 13.26, SD = 10.43, n = 42$ ) but not correlated ( $r = .05, p = .759$ ) with evening cortisol ( $M = 3.61, SD = 4.15, n = 50$ ), the baseline of which was measured 2 weeks prior to the marathon. Morning cortisol and evening cortisol were not significantly correlated ( $r = .26, p = .179, n = 41$ ). However, the relationship between action crisis and cortisol slope remained significant when controlling for morning cortisol and evening cortisol ( $r = .34, p = .034, n = 41$ ).
5. Goal desirability, in Study 2, was high (cf. Table 3). As intended by the study design, participants listed personal goals that indeed captured the “pillars” of their goal system. As a consequence, the role of varying degrees of goal desirability on outcome variables could not be evaluated due to very restricted variance.

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