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Downgrading goal-relevant resources in action crises: The moderating role of goal reengagement capacities and effects on well-being

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Abstract
If the pursuit of a goal falls short of expectations, doubts can arise as to whether a followed path should be changed. This decisional conflict is defined as *action crisis*. In two longitudinal studies of university students, an action crisis resulted in a downgrading of goal-relevant resources among participants with limited *goal reengagement capacities*, who struggle to identify and commit to new projects when unattainable goals are encountered. Theoretically, this devaluation of goal-relevant resources is explained by a shift from an optimistic towards an unbiased cognitive orientation in action crises. However, an action crisis did *not* result in a downgrading of resources if unattainable goals, in the past, could generally be replaced with viable alternatives (high goal reengagement capacities). Downgrading goal-relevant resources, furthermore, was identified as a mediating mechanism partly underlying reported effects of action crises on health and well-being. The present article provides new insights into self-regulatory processes during goal striving.

Keywords Action crisis · Goal reengagement capacities · Goal-relevant resources · Goal striving · Self-regulation

Introduction

Individuals have some control over their lives and can deliberately choose from a variety of very different life tasks (Cantor et al. 1987). Decisions about a career goal (e.g., studying marine biology) often reflect long-lasting personal preferences and therefore usually require little effort. More difficult decision situations may arise if a goal is already being pursued and obstacles (e.g., financial difficulty) or setbacks (e.g., failing grades) obstruct the path to a desired future. In such circumstances, an individual may become preoccupied with the pros (e.g., pursuing one's interests) and cons (e.g., limited job opportunities) of a goal and torn between further investments (e.g., money and effort) and disengagement. This decisional conflict (regarding a personal goal; Emmons 1996) is termed *action crisis* (Brandstätter and Herrmann 2017).

In the present research, we build on the well-documented link between action crises and reduced levels of well-being and health (Brandstätter and Herrmann 2017) and identify potential moderators and mediators in this association. To this end, we posit that (a) action crises can result in a psychological downgrading of goal-relevant resources if the dispositional capacity to identify, commit to, and (re) engage in new goals (i.e., *goal reengagement capacities*) is limited (*step 1: moderation hypothesis*). Thereby, downgrading refers to a reduction in the perceived availability of goal-relevant resources. Additionally, we evaluate whether (b) a psychological downgrading of goal-relevant resources in action crises (provided that goal reengagement capacities are limited) mediates the previously reported relation between action crises and health/well-being (*step 2: moderated mediation hypothesis*; cf. Fig. 1) (Brandstätter and Herrmann 2017).

The article is based on data collected in the context of two larger research projects that, partly, have already been published [cf. Brandstätter and Herrmann 2016 (Study 2); cf.; Herrmann and Brandstätter 2013 (Study 1)]. The present findings do not overlap with previously reported data.

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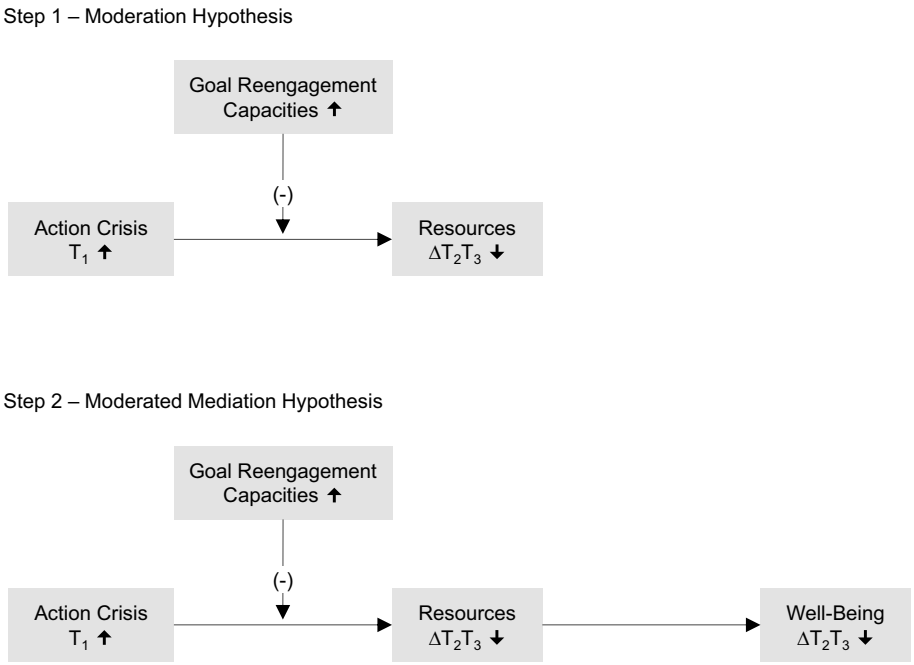

Fig. 1 Conceptual models of **a** a moderation analysis testing for a conditional effect of action crisis (T1) on resources (T3) depending on goal reengagement capacities (step 1: moderation hypothesis) and **b** a moderated mediation analysis testing for a conditional indirect effect of action crisis (T1) on well-being (T3) through resources (T3) depending on goal reengagement capacities (step 2: mediated moderation hypothesis)

The action crisis—conceptualization and functionality

An action crisis describes the decisional conflict and transitional (*motivational*) phase that is located in between an individuals' unwavering commitment and striving to achieve a desired goal (*volitional mindset*; Gollwitzer 2012) and goal abandonment. Action crises may be triggered by a series of setbacks (Bettschart et al. 2018), a lack of opportunity, or changing circumstances, and call the legitimacy of a goal into question. Although an action crisis typically precedes and thus predicts disengagement, not every action crisis necessarily results in the total abandonment of a goal (Herrmann and Brandstätter 2015). Alternatively, an emergent action crisis could be resolved by implementing new strategies for successful goal attainment. This strategy may include extra effort and/or the adaptation (i.e., downgrading) of high aspirations (Brandstätter and Herrmann 2017; Wrosch et al. 2003).

Independent of the ultimate outcome, an action crisis involves the unbiased *re*-evaluation and comparison of a goal with desirable alternatives. Hence, attention is *re*-focused in an action crisis from goal-related performance to expectancy- and value-related information (Gollwitzer 2012) regarding a goal. As a consequence, a goal is both pursued (volitional "how" level) *and* evaluated (motivational "why" level) at the same time. Two conflicting tasks, which compete for resources, are performed simultaneously (Brandstätter and Schüler 2013; Herrmann et al. 2014; Trope and Liberman 2010).

In the goal striving process, an action crisis provides a more balanced perspective that takes away some of the "rose colored glasses" (i.e., goal shielding) with which the goal is usually viewed. Thereby, an action crisis opens the door to doubts about further goal pursuit by neutralizing goal shielding (Shah et al. 2002) and may provide a way out of problematic circumstances (e.g., investing in a failing project; Brandstätter and Herrmann 2016). Consistent with this assumption, it has been demonstrated that an action crisis can predict devaluations of goal desirability and feasibility (Brandstätter et al. 2013; Ghassemi et al. 2017).

Action crisis as a predictor of goal-relevant resources

"Resources are material, social, or personal characteristics that a person possesses that he or she can use to make progress toward her or his personal goals" (Diener and Fujita 1995, p. 926). The importance of goal-relevant resources for health and well-being has been repeatedly highlighted (e.g., Demerouti et al. 2001; Eshbaugh et al. 2006; Schaufeli et al. 2009) and is based on their critical role in fulfilling physical and psychological needs through the achievement of personal goals (Diener and Fujita 1995). In the present research, we focus on general and *not* specific goal-relevant resources. General goal-relevant resources such as self-discipline, physical energy, or power of concentration are required to pursue a variety of goals, whereas goal-specific resources are especially relevant to one particular goal. General goal-relevant resources are therefore typically both relevant to goals that have been abandoned and goals that are

being pursued as an alternative (for the distinction between goal-specific and general goal-relevant resources, see Wagner 2012).

The relation between action crises and goal-relevant resources has not yet been subjected to empirical testing. During goal pursuit, an individual's cognitive orientation (i.e., "the sum total of the activated cognitive procedures"; Gollwitzer 2012, p. 528) is typically characterized by selectively processing and partially analyzing goal-relevant information (e.g., performance feedback) *in favor* of the goal (i.e., *closed-mindedness*). "The person evaluates the feasibility of the chosen goal in an overly optimistic way, and views the desirability of the chosen goal in a partial manner (i.e., pros exceed cons"; Gollwitzer 2012, p. 529). An action crisis, however, has been associated with a switch to an *open-mindedness* that reflects an *unbiased* evaluation of goal-related costs and benefits (Brandstätter and Schüler 2013; Herrmann et al. 2014). This shift in the cognitive orientation during an action crisis has been shown to result in a devaluation of the feasibility and desirability of a goal (Brandstätter et al. 2013; Ghassemi et al. 2017). As the feasibility of a goal is dependent on the availability of goal-relevant resources (e.g., Schnelle et al. 2010), the reported effects of action crises on goal feasibility are likely attributable to a downgrading of goal-relevant resources in action crises. Especially when triggered by a series of setbacks (Bettschart et al. 2018), an action crisis is hypothesized to result in the open-minded re- and devaluation of available goal-relevant resources, that is, a less optimistic assessment of the chances of success.

The moderating role of goal reengagement capacities

Drawing on literature on self-serving biases in the attribution process (Bradley 1978), we assumed that action crises do not always lead to a devaluation of goal-relevant resources but may also result in more self-serving attributions. In order to maintain self-esteem, individuals may attribute difficulties in the goal-striving process to external (e.g., bad luck) or internal and controllable causes (e.g., effort). Particularly with general resources that are relevant to the pursuit of very different (e.g., educational) goals, self-esteem is maintained by attributing difficulties to external or more controllable (internal) causes like a lack of effort than to less controllable (internal) causes like a lack of goal-relevant resources (Mezulis et al. 2004).

Attribution theory suggests that past experiences (i.e., a person's history of success and failure) affect how attributions are formed (Bradley 1978; Weiner 2000). Accordingly, we argue that whether setbacks (e.g., failing grades) in action crises are attributed to limited goal-relevant resources depends on an individual's *goal reengagement capacities* (Wrosch et al. 2003) that are based on past experiences with the pursuit of personally relevant goals (Bradley 1978; Haines et al. 1999). More specifically, goal reengagement capacities describe an individual's general ability to identify, commit to, and (re)engage in new goals when, in the past, she or he had to stop pursuing an important goal (Wrosch et al. 2003).

If, in the past, individuals have always been able to identify new goals and pursue them successfully when former goals had to be abandoned, this capacity appears to serve as evidence that the general goal-relevant resources are available. The abandonment of a replaced goal, in this case, should be less likely to be attributed to a lack of general goal-relevant resources because these resources are likewise required for the new goal. For individuals with high goal reengagement capacities, an action crisis may therefore *not* result in the downgrading of goal-relevant resources but more self-serving attributions. Especially if the goal to be replaced and the newly selected alternative require similar goal-relevant resources, it seems more likely that initial setbacks are attributed to more self-serving causes (e.g., a lack of interest, motivation, and effort).

Applied to the academic context, a student of marine biology undergoing an action crisis should be less inclined to question her or his academically relevant resources if personal experiences have taught her or him that difficult classes can be easily replaced by alternatives with the same course load. In this case, it would be reasonable to conclude that not a lack of academically relevant internal and uncontrollable resources but, for example, low teacher-student compatibility or a lack of interest in the course content lied at the root of the difficulties (Bradley 1978).

Goal reengagement capacities, the *dispositional* tendency to *re*-engage in new goals when unattainable goals are being encountered, is typically assessed by a six-item self-report scale that includes three components of goal reengagement (i.e., identifying, committing to, and start pursuing alternative goals; for a review, see Wrosch et al. 2013). Goal reengagement capacities have shown high internal consistency and moderate test–retest reliability, which is attributable to the possibility that goal reengagement capacities may develop over time and with experience (Mens et al. 2015; Wrosch and Miller 2009). Moreover, research using this scale has demonstrated in numerous studies, samples, and areas of life that goal reengagement capacities predict adaptive outcomes over and above other personality constructs (e.g., Big Five, coping, or optimism; Dunne et al. 2011; Wrosch et al. 2003).

Building on the documented adaptive value of goal reengagement capacities, our approach assumes that this general tendency could alter a person's *attributional pattern* (Bradley 1978) in action crises. More specifically, high goal reengagement capacities may *prevent* individuals from ascribing setbacks to a lack of goal-relevant resources that, as a

consequence, should *not* be devalued. Moreover, such preserved goal-relevant resources in action crises may provide individuals who are able to reengage in new goals with the confidence and capacity to take an alternative path and predict subjective well-being and health (Wrosch et al. 2013).

Action crises, goal-relevant resources, and well-being

The emergence of an action crisis has been related to lower levels of well-being and health. For example, longitudinal studies have documented adverse effects of action crises on affect, life-satisfaction, physiological stress (cortisol in saliva), and health (for an overview, cf. Brandstätter and Herrmann 2017). Such associations may be observed because goal disengagement can pose a serious threat to self-worth (Crocker and Wolfe 2001), especially if a goal has become part of a person's core identity (Carver and Scheier 1990). As long as an action crisis persists (e.g., due to repeated failures despite extra effort), goal disengagement remains an option and a person's goal-related identity cannot be conclusively established (Crocker and Wolfe 2001). As postulated by Brandtstädter and Rothermund (2002), "such *unstable action orientations* [emphasis added] are experienced as stressful" (p. 123) and thus have the potential to compromise a person's health and well-being.

Whereas the negative consequences of action crises for health and well-being have been explored in a number of studies, no evidence exists with respect to mediating and/or moderating mechanisms. Based on the previous considerations, our theoretical rationale assumes that the expected buffering effect of goal reengagement capacities on the association between action crises and reduced resources provides a mechanism by which action crises undermine health and well-being. As such, it seems reasonable to expect that a mediating effect of reduced resources on the association between action crises and reduced health/well-being can be observed only among participants with reduced goal reengagement capacities but not among their counterparts who are better able to reengage in new goals.

The present research

This research attempted to identify mediators and moderators in the associations between action crises and health/well-being. To this end, we postulated that an action crisis can result in a downgrading of goal-relevant resources and that this relation is moderated by individual differences in goal reengagement capacities. High, but not low, goal reengagement capacities may rebuild an individual's goal-related confidence (e.g., self-perceived academic competence) in an action crisis and thereby prevent goal-relevant resources from being devalued (*step 1—moderation hypothesis*) (Wrosch et al. 2003). Additionally, we hypothesized that the reported consequences of an action crisis for health and well-being are partly mediated by a more negative evaluation of one's goal-relevant resources (if goal reengagement capacities are limited) (*step 2—moderated mediation hypothesis*).

The conceptual models of the two hypotheses are depicted in Fig. 1 and were tested and replicated in two studies with university students over the course of one semester. Experiencing an action crisis at the beginning of the semester (at T_1) was assumed to be a predictor of a devaluation of goal-relevant resources at the end of the semester (at T_3, controlled for T_2), provided that goal reengagement capacities are limited (*moderation hypothesis*). A decline in goal-relevant resources, furthermore, was posited to function as a mediating mechanism between action crisis and an array of subjective well-being indicators (Brandstätter et al. 2013; Herrmann and Brandstätter 2013), again considering that goal reengagement capacities are limited (*moderated mediation hypothesis*).

Study 1

Method

Participants and procedure

The research questions of the present article were addressed with data from a larger longitudinal research project including three assessments, at the beginning (T_1), in the middle (T_2), and at the end (T_3) of the fall term. The first measurement took place two weeks after the start of the fall term. Data, via online questionnaires, were collected from $N = 357$ students pursuing a bachelor's ($n = 187$, $M_{age} = 24.00$ years, $SD_{age} = 6.47$), master's ($n = 162$, $M_{age} = 28.14$ years, $SD_{age} = 6.32$), or doctoral degree ($n = 8$, $M_{age} = 30.75$ years, $SD_{age} = 9.04$). All participants were enrolled at the *University of Zurich* (Zurich, Switzerland) at the time of assessment. The sample relevant to the present report consisted of $n = 190$ students at the bachelor's and master's level ($M_{age} = 25.96$ years, $SD_{age} = 7.19$, age range 19–61 years, $n = 136$ females, 15 psychology students) who completed all three online questionnaires of the study. Thus, in order to reduce methodological heterogeneity, doctoral students ($n = 7$) were excluded from the analyses. The (occupational) daily routine as well as the annual calendar (e.g., exams and term breaks) of doctoral students fundamentally differ from the everyday life of bachelor and master students. Furthermore, bachelor and master students who had already completed their studies at T_3 ($n = 13$, $M_{age} = 30.69$ years, $SD_{age} = 7.42$) were likewise *not* included in the analyses as it was assumed that an action crisis, immediately before goal attainment, gives

rise to different affective, physiological, and cognitive processes than an action crisis unfolding at the beginning or in the middle of the goal-striving process. For analyses testing for sample selectivity, see Footnote[1].

At the beginning of the fall term, the study was advertised (to non-freshman students) via an email that was approved of and delivered by the legal department of the *University of Zurich*. Whereas the completion of the questionnaire at T_1, which took approximately 10 min, was not remunerated, participants, at T_2 and T_3, were emailed a coupon (of the value of € 7) of a popular mail-order company in compensation for half an hour's effort. As the study, originally, was planned and announced to include only one measurement (at T_1), attrition at T_2 ($n = 111$, 31.1%), but not at T_3 ($n = 36$, 14.6%), was comparatively high (see Footnote 1).

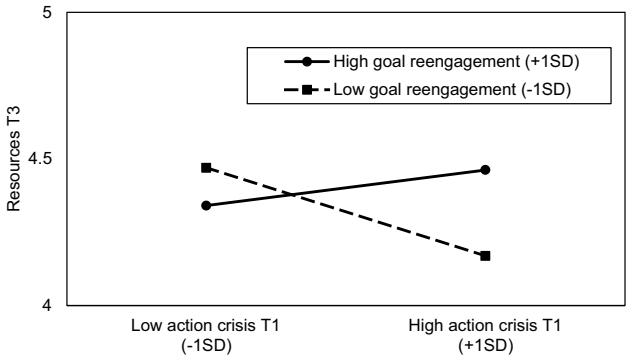

Fig. 2 Resources at T_3 (controlled for resources at T_2) as a function of the extent of experienced action crisis at T_1 and goal reengagement capacities (Study 1). For statistical details, see Tables 2 and 3

Measures

Action crisis in personal goals

At the time of measurement, all participants (without exception) were studying at the *University of Zurich*. Therefore, the pursuit of the respective bachelor's or master's degree was defined as the (*idiographic*) personal goal relevant to the study they were participating in. This personal goal was assessed along the *nomothetic* variable action crisis allowing for "quantitative comparisons between different persons independent of idiosyncratic goal content" (Emmons et al. 1998, p. 398). Thus, a nomothetic-idiographic approach was applied as (a) the idiosyncratic goal content (e.g., attended courses of study) as well as (b) aspired (higher-order) values (Kruglanski et al. 2002) inevitably varied between participants. However, because the idiographic goal was pursued within the same institutional framework (of the *University of Zurich*), some of the heterogeneity (e.g., regarding hierarchicality or criterions of goal attainment) characteristic of studies employing an idiographic-nomothetic strategy could be reduced (e.g., Brunstein 1993; Emmons 1996).

The extent to which participants were experiencing an action crisis with respect to the particular bachelor's or master's degree, at T_1, was assessed using the *Action Crisis Scale (ACRISS)* (Brandstätter and Schüler 2013). The six items of the ACRISS, which are constitutive of a postdecisional goal conflict, were adapted to the academic context and rated on a 5-point Likert scale ranging from 1 (*no agreement*) to 5 (*very much agreement*) ($\alpha = 0.79$; items: "I doubt whether I should continue my studies or drop out of university." [*conflict*], "Pursuing my studies goes without any problems.", reverse-coded [*setbacks*], "When pursuing my studies, I am repeatedly confronted with situations where I do not know how to continue." [*implemental disorientation*], "I repeatedly ruminate about my studies." [*rumination*], "I have thought of quitting my studies." [*disengagement impulses*], and "I repeatedly have not done anything for my studies despite the intention to do so." [*procrastination*]).

Goal reengagement capacities

Goal reengagement capacities, at T_2, were measured with the theoretically developed and empirically validated *Goal Reengagement Scale* (Wrosch et al. 2003). Participants indicated how they *generally* react when they can no longer pursue an important goal in their life. This six-item scale consists of three two-item sets that assess the general tendency

[1] All hypotheses of the present article were tested with PROCESS (Hayes 2013), a computational tool for path analysis-based moderation and mediation analysis that "assumes complete data and will exclude cases from the analysis that are missing" (p. 433). As a consequence, for Study 1, we tested for sample selectivity by comparing the *subsample* relevant to the present report ($n = 190$) with the *total sample* of students participating at T_1 ($n = 336$) except for doctoral students ($n = 8$) and students that had already completed their studies at T_3 ($n = 13$). Therefore, using the AMOS software package (version 22; IBM® SPSS® Statistics Inc., Armonk, NY) and the full information maximum likelihood (FIML) technique, it was evaluated whether the subsample (in comparison to the total sample), with respect to the reported moderation analysis, showed evidence of selectivity. FIML, to minimize any bias in the estimation of model parameters, makes use of all available data, regardless of missing data pattern, and is therefore equivalent to other missing data strategies (e.g., multiple imputation; Graham et al. 2007). In order to statistically evaluate whether the parameter estimates (i.e., regression weights, cf. Table 2) in the two samples differed, we applied the result of the total sample (model 1) to the subsample with complete data (cf. Arbuckle 2013; Byrne 2004). More specifically, the covariances and regression weights of the resulting model 3 ($n = 190$, $df = 3$) were fixed to the estimates obtained in model 1. The non-significant Chi square difference ($\Delta X^2_{(3)} = 0.001$, $p = 0.999$) between model 3 and the saturated (i.e., just-identified) model 2, in which parameters were freely estimated, indicated no statistical difference (with respect to parameter estimates) between the total sample and the subsample with complete data. Due to the absence of evidence of selectivity, statistical analyses reported for the subsample with complete data may be generalized to the total sample (cf. Fig. 2; Tables 2, 3).

or rather capacity to (a) *identify*, (b) *commit to*, and (c) *pursue new goals* when unattainable goals are encountered. All items were rated with respect to the introductory phrase "If I have to stop pursuing an important goal in my life..." and answered on a 5-point Likert scale from *almost never true* (1) to *almost always true* (5) ($\alpha = 0.87$; item examples: "… I think about other new goals to pursue." [identify new goals], "…I convince myself that I have a number of other new goals to draw on." [commit to new goals], and "… I put effort toward other meaningful goals." [pursue new goals]).

Goal-relevant resources

The availability of goal-relevant resources was assessed at T_2 (as a statistical control) and T_3 (but not at T_1) with an instrument adapted from Diener and Fujita (1995) and developed by Schnelle et al. (2010). In contrast to Diener and Fujita (1995), Schnelle et al. (2010) entirely focused on social and internal resources (fairly) variable in time and, consequently, sensitive to change. This seven-item scale comprised the resources time, self-confidence, self-discipline, physical energy, stress resistance, social support, and power of concentration. Material (e.g., money) and temporally more stable social and internal resources (e.g., social skills, intelligence, or physical attractiveness), which were originally listed by Diener and Fujita (1995, p. 930), were not included. Due to its sensitivity to change, this adapted scale by Schnelle et al. (2010) is suitable as a dependent/mediator variable.

Participants were asked to indicate the extent to which they personally believed they had the above listed resources, which are relevant to the successful pursuit of their studies, compared to the typical (i.e., average) student. This *relative* availability of each resource, in comparison to the typical student, was assessed on a 7-point Likert scale from *much below average* (1) to *much above average* (7). In view of the fact that different resources are usually only moderately correlated (e.g., Diener and Fujita 1995), internal consistency was appropriate ($\alpha_{T2} = 0.64/\alpha_{T3} = 0.62$). The precise instructions preceding the Likert scale are provided in Footnote[2].

Life satisfaction

Life satisfaction (i.e., cognitive well-being; Diener et al. 1999), at T_2 (as a statistical control) and T_3, was measured with the five-item *Satisfaction with Life Scale* (Diener et al. 1985). Each statement (e.g., "In most ways my life is close to my ideal.") was rated on a 7-point Likert scale ranging from *no agreement* (1) to very *much agreement* (7) ($\alpha_{T2} = 0.88/\alpha_{T3} = 0.89$).

Affect

At T2 and T3, a 12-item scale consisting of four adjectives representing positive (i.e., "happy", "joyful", "pleased", and "confident") and negative (i.e., "frustrated", "sad", "anxious", and "depressed") affect (Brunstein 1993), respectively, and four adjectives (i.e., "tense", "calm", "nervous", and "equable") representing the bipolar dimension ease-restlessness (Steyer et al. 1997) was used to assess (positive) affect (i.e., affective well-being; Diener et al. 1999). All items, with reference to the last two weeks, were rated on a 7-point frequency Likert scale ranging from *never* (1) to *frequently* (7). An overall measure of affect was computed after recoding negative items ($\alpha_{T2} = 0.91/\alpha_{T3} = 0.92$). Higher scores on this scale represent more positive affective experiences.

Health

Health was assessed (at T_2 und T_3) with a scale of six items (Brandstätter et al. 2013), each item consisting of several associated symptoms of illness. On a 4-point Likert scale ranging from *more than once a week* (1) to *never* (4), participants indicated the frequency with which they had suffered from the respective symptoms (e.g., "unpleasant feeling of fullness, stomachache, nausea, or constipation", "rheumatic pain, shoulder pain, lower back pain, or neck pain") during the last two weeks ($\alpha_{T2} = 0.70/\alpha_{T3} = 0.66$).

Control variables

Based on the literature on age and self-regulation (e.g., Hennecke and Freund 2016; Wrosch et al. 2000) and because females were more willing (than males) to participate in Study 1 and Study 2, all analyses were controlled for age and sex. Furthermore, three variables relevant to self-regulation that, in previous research, have been demonstrated to be associated with the successful pursuit of and/or disengagement from personal goals and/or the extent of experienced action crises (e.g., Herrmann et al. 2014; Herrmann and Brandstätter 2013) were controlled for. A*ction (vs. state) orientation* (T_3; Kuhl 1994) and *neuroticism* (T_2; Brandstätter 1988) have been reported to prevent respectively facilitate the development of action crises over time (Herrmann and Brandstätter 2013; Holding et al. 2017). Finally, we controlled all analyses for individuals' *goal disengagement capacities* (T_2; Wrosch et al. 2003) that are often associated with and may interact with goal reengagement capacities

[2] In order pursue your studies successfully you need resources. For all of the resources listed below, please indicate the extent to which you personally believe you currently have these resources compared to the typical student.

(Wrosch et al. 2007). Results without control variables are provided in Footnote[3].

Data analyses

The two hypotheses were tested by first performing a moderation analysis (step 1) and second a moderated mediation analysis (step 2). From step 1 to step 2, the analysis was therefore supplemented by health and well-being as additional dependent variables (cf. Fig. 1).

Change in resources, well-being, and health from T_2 to T_3 was either operationalized by including (and thereby controlling for) the respective variables at T_2 as control variables in the analysis (*step 1—moderation analyses*) or by using residuals of the respective variables at T_3 controlled for values at T_2 (*step 2—moderated mediation analyses*).

Statistical analyses

Statistical calculations were performed with SPSS® (version 20; IBM® SPSS® Statistics Inc., Armonk, NY), whereby the computational tool PROCESS (version 2.13; Hayes 2013) was used for moderation and moderated mediation analyses. Tests for sample selectivity and the comparison of correlations across different dependent samples (i.e., model comparisons) were run with the AMOS software package using maximum likelihood estimation (version 22; IBM® SPSS® Statistics Inc., Armonk, NY).(See Footnote 1, 4)[4] Comparisons of correlations across different independent samples were performed with the exploratory software for confidence intervals (ESCI) provided by Cumming (2012). Bootstrap analyses were based on 5000 bootstrap samples.

Results

Descriptive statistics for and correlations between major study variables are reported in Table 1.

Consistent with Diener and Fujita (1995) and Taylor and Brown (1988), a general positivity bias could be observed. On average, the self-ratings of goal-relevant resources exceeded the arithmetic mean of the scale (of 4) representing the average student ($M_{T2} = 4.24$, $p < 0.001$, $d = 0.57$; $M_{T3} = 4.33$, $p < 0.001$, $d = 0.83$). The fact that participants overestimated their goal-relevant resources, therefore, lends validity to the results.

Step 1—testing the moderation hypothesis

The multiple regression analysis predicting resources at T_3, controlled for resources at T_2, from action crisis at T_1 and goal reengagement capacities as well as the respective interaction term is summarized in Table 2 and illustrated in Fig. 2.

Unconditional (partial or main) effects

None of the control variables, apart from resources T_2 ([unstandardized] $B = 0.535$, $p < 0.001$, CI [0.400/0.669]), significantly predicted resources at T_3 (all $ps > 0.134$).

Conditional effects

Due to the interaction term, the coefficients for action crisis at T_1 and goal reengagement capacities are conditional effects—conditioned on the other variable being zero (Hayes 2013). As action crisis at T_1 and goal reengagement capacities were standardized prior to analysis, their (conditional) effects on goal-relevant resources at T_3 are to be interpreted as follows: The conditional effect of action crisis at T_1 is the amount by which two participants who (a) differ by one standard deviation in action crisis T1 and (b) have average goal reengagement capacities are estimated to differ on resources at T_3. Thus, for participants who were average in goal reengagement capacities, action crisis at T_1 did not significantly affect resources at T_3 (cf. Table 2).

Interaction effect

As reported in Table 2, the effect of action crisis at T_1 on resources at T_3, controlled for resources at T_2, was statistically significantly moderated by goal reengagement capacities ([standardized] $\beta = 0.131$, $SE = 0.046$, $t = 2.277$, $p = 0.024$). Therefore, the *Johnson-Neyman technique* (Hayes 2013; Johnson and Neyman 1936) was applied to identify the values of goal reengagement capacities for which the simple slope of resources (T_3) regressed on

[3] *Results of Study 1 without control variables* The effect of action crisis at T_1 on resources at T_3, controlled for resources at T_2, was statistically significantly moderated by goal reengagement capacities ([standardized] $\beta = 0.137$, SE = 0.045, $t = 2.456$, $p = 0.015$). The region of significance included values (for goal reengagement capacities) of at least −0.44 standard deviations below the mean ($p = 0.050$) and 30.53% (i.e., $n = 58$ participants) of the sample.

Results of Study 2 without control variables The effect of action crisis at T_1 on resources at T_3, controlled for resources at T_2, was statistically significantly moderated by goal reengagement capacities ([standardized] $\beta = 0.195$, SE = 0.044, $t = 3.416$, $p < 0.001$). The region of significance included values (for goal reengagement capacities) below 0.22 standard deviations above the mean ($p = 0.050$) and 51.08% (i.e., $n = 95$ participants) of the sample.

[4] For Study 2, the same procedure was applied in order to test for sample selectivity as for Study 1 (cf. footnote 1). The non-significant Chi square difference ($\Delta X^2_{(3)} = 0.010$, $p = 0.999$) between model 3 and the saturated (i.e., just-identified) model 2, in which parameters were freely estimated, indicated no statistical difference (with respect to parameter estimates) between the total sample ($n = 199$)—except for students who had dropped out of university before T_3 ($n = 8$)—and the subsample with complete data ($n = 186$).

Table 1 Descriptive statistics for and correlations between the major study variables (study 1)

	Variable	*M* (SD)	1	2	3	4	5	6	7	8	9	10	11	12
1	Action crisis (T1)	2.50 (0.88)	–											
2	Resources (T2)	4.24 (0.84)	−0.44***	–										
3	Resources (T3)	4.33 (0.81)	−0.35***	0.63***	–									
4	Life satisfaction (T2)	5.10 (1.14)	−0.49***	0.47***	0.35***	–								
5	Life satisfaction (T3)	5.13 (1.13)	−0.50***	0.37***	0.44***	0.84***	–							
6	Affect (T2)	4.51 (1.12)	−0.34***	0.51***	0.23**	0.53***	0.43***	–						
7	Affect (T3)	4.94 (1.05)	−0.25***	0.23**	0.27***	0.40***	0.54***	0.45***	–					
8	Health (T2)	2.78 (0.70)	−0.19**	0.38***	0.24**	0.25**	0.17*	0.55***	0.18*	–				
9	Health (T3)	3.01 (0.62)	−0.26***	0.39***	0.34***	0.27***	0.28***	0.39***	0.41***	0.59***	–			
10	Goal reengagement (T2)	3.65 (0.65)	−0.24**	0.25**	0.21**	0.28***	0.31***	0.25***	0.29***	0.17*	0.22**	–		
11	Goal disengagement (T2)	2.65 (0.76)	−0.09	0.04	0.01	0.01	0.04	0.12	0.21**	0.05	0.05	0.56***	–	
12	Neuroticism (T2)	50.9 (12.9)	0.29***	−0.45***	−0.33***	−0.51***	−0.44***	−0.61***	−0.39***	−0.45***	−0.49***	−0.38***	−0.27***	–
13	Action orientation (T3)	10.6 (4.39)	−0.30***	0.42***	0.36***	0.35***	0.40***	0.35***	0.33***	0.25**	0.31***	0.36***	0.21**	−0.45***

$n = 190$. T in T1–T3 = time

**$p < 0.01$, ***$p < 0.001$

Table 2 Hierarchical multiple regression analysis predicting resources (T_3) from action crisis (T_1) and goal reengagement capacities (study 1)

Predictors	Resources T3			
	ΔR^2	*B* (SE)	95% CI	
			LL	*UL*
Step 1	0.415***			
Control variables[a]				
Step 2	0.004			
Action crisis (T1)		−0.045 (0.052)	−0.15	0.06
Goal reengagement		0.041 (0.059)	−0.08	0.16
Step 3	0.016*			
Action crisis (T1) × goal reengagement		0.105*(.046)	0.01	0.20
Total R^2	0.435***			
n	190			

B unstandardized regression coefficient, *SE* standard error, *CI* confidence interval, *LL* lower limit, *UL* upper limit. Action crisis T1, goal reengagement, and the interaction term were standardized prior to analysis

*$p < 0.05$, ***$p < 0.001$

[a]Control variables included age, sex, resources T2, goal disengagement, neuroticism, and action orientation

Table 3 Conditional effects of action crisis (T_1) on resources (T_3) at values of goal reengagement capacities corresponding to the 10th, 25th, 50th, 75th, and 90th percentiles in the sample distribution (study 1)

Percentile	Resources T3			
	Value of the moderator	Effect	95% CI	
			LL	*UL*
10th	−1.52	−0.21*	−0.38	−0.03
25th	−0.75	−0.12†	−0.25	0.00
50th	0.28	−0.02	−0.12	0.09
75th	0.54	0.01	−0.10	0.13
90th	1.05	0.07	−0.07	0.21

Unstandardized regression coefficients are provided. Action crisis T_1, goal reengagement, and the interaction term were standardized prior to analysis. Control variables included age, sex, resources T_2, goal disengagement, neuroticism, and action orientation

$n = 190$, *CI* confidence interval, *LL* lower limit, *UL* upper limit

†$p < 0.10$, *$p < 0.05$

action crisis (T_1) were significant. The resulting region of significance included values (for goal reengagement capacities) of at least −0.77 standard deviations below the mean ($p = 0.050$) and 18.42% (i.e., $n = 35$ participants) of the sample. The conditional effect of action crisis (T_1) on resources (T_3) at values of goal reengagement capacities

corresponding to the 10th, 25th, 50th, 75th, and 90th percentiles in the sample distribution are provided in Table 3.

Testing the moderated mediation hypothesis

In order to evaluate whether the buffering effect of goal reengagement capacities on the association between action crisis (T_1) on resources (ΔT_2T_3) may mediate negative effects of action crisis on well-being and health (Brandstätter et al. 2013), three moderated mediation analyses were performed with (a) life satisfaction (ΔT_2T_3), (b) affect (ΔT_2T_3), and (c) health (ΔT_2T_3) as dependent variables (cf. Fig. 1). Results are summarized in Table 4. Only for participants with limited goal reengagement capacities (i.e., the 10th [life satisfaction] or rather 25th [affect] percentile), an indirect effect of action crisis (T_1) on (a) life satisfaction (ΔT_2T_3) and (b) affect (ΔT_2T_3)—but not (c) on health (ΔT_2T_3)—through resources (ΔT_2T_3) could be observed. Thus, for participants moderate or high in goal reengagement capacities, that is, participants above the 10th (life satisfaction) or rather 25th (affect) percentile, no indirect effect of action crisis on well-being through resources could be observed.

Discussion

The results of Study 1 provide support for the idea that an action crisis can result in a downgrading of goal-relevant resources among participants with limited goal reengagement capacities (*moderation hypothesis*). More specifically, statistical analyses indicate that one-fifth of participants, which possess the lowest goal reengagement capacities, devalue goal-relevant resources when experiencing an action crisis. In slightly more than 80 percent of the participants, (moderate to high) goal reengagement capacities seem to prevent goal-relevant resources from being devalued in action crises (e.g., by rebuilding goal-related confidence).

In addition, Study 1 offers first evidence for the hypothesis that previously reported adverse effects of action crises on well-being (i.e., life satisfaction and affect) are partly mediated by a more negative evaluation goal-relevant resources. However, the results suggest that this mechanism (a) is merely relevant to students with limited goal reengagement capacities (*moderated mediation hypothesis*) and (b) particularly applies to life satisfaction and affect and less so to health. For health, only a non-significant tendency could be observed.

A limitation of Study 1 is that resources were not assessed at T_1. This limitation is addressed in Study 2, in which resources were assessed at T_1. To ensure the facility and comparability of Study 1 and (the replication) Study 2, analyses in Study 1 and Study 2 are identical. However, for Study 2, additional analyses performed with resources and well-being measures assessed at T_1 (instead of T_2) as control variables are reported in Footnote[5]. There were no significant changes in the results.

Study 2

Study 2 was conducted to validate the results of Study 1 in an additional (independent) sample.

Method

Participants and procedure

In Study 2, data from the first three assessments – at the beginning (T_1), in the middle (T_2), and at the end (T_3) of the fall term—of a larger longitudinal research project with university entrants of the *University of Zurich* were analyzed. As in Study 1, the first measurement took place 2 weeks after the start of the fall term and data were collected via online questionnaires.

In Study 2, all participants were at the beginning of the goal-striving process. However, because enrollment took place about 4 months before the start of the semester, participants were able to prepare for their studies, take part in various courses, and compare themselves with fellow students. Accordingly, it seems reasonable to measure action crisis already at this stage in the goal-striving process. However, it may be expected that the participants of Study 2, compared to the participants of Study 1 who had been pursuing their studies for a longer time, will on average experience a less severe action crisis at the first measurement point.

The sample relevant to the present report consisted of $n = 186$ freshman students ($M_{age} = 20.94$ years, $SD_{age} = 3.34$, age range 18–39 years, $n = 127$ females, 65 psychology students) who completed all of the first three online questionnaires of the study. From the original sample at T_1, $n = 21$ participants ($M_{age} = 21.48$ years, $SD_{age} = 5.50$), who either had dropped out of university before T_3 ($n = 8$) and/or did

[5] For participants who were average in goal reengagement capacities, action crisis at T_1 ([unstandardized] $B = -0.175$, $p = 0.004$, CI [−0.293/−0.058]) significantly predicted resources at T_3. No (conditional) effect was found for goal reengagement capacities ([unstandardized] $B = 0.000$, $p = 0.999$, CI [−0.122/0.122). The effect of action crisis at T_1 on resources at T_3, controlled for resources at T_1, was statistically significantly moderated by goal reengagement capacities ([unstandardized] $B = 0.114$, SE = 0.045, $t = 2.532$, $p = 0.012$, CI [0.025/0.203]). Furthermore, for participants with goal reengagement capacities values corresponding to the (10th and) 25th percentile, an indirect effect of action crisis on (a) life satisfaction ([unstandardized] indirect effect [25th percentile]: −0.070, CI [−0.168/−0.004]), (b) affect ([unstandardized] indirect effect [25th percentile]: −0.085, CI [−0.178/−0.014]), and (c) health ([unstandardized] indirect effect [25th percentile]: −0.046, CI [−0.118/−0.005]) through resources could be observed.

Table 4 Conditional indirect effects of action crisis (T_1) on (a) life satisfaction (T_3), (b) affect (T_3), and (c) health (T_3) mediated by resources (T_3) at different values of goal reengagement capacities corresponding to the 10th, 25th, 50th, 75th, and 90th percentiles in the sample distribution (study 1)

Percentile	Value of the moderator	(a) Life satisfaction			(b) Affect			(c) Health		
		Indirect effect (SE)	95% CI		Indirect effect (SE)	95% CI		Indirect effect (SE)	95% CI	
			LL	*UL*		*LL*	*UL*		*LL*	*UL*
10th	− 1.52	− 0.101 (0.050)	− 0.224	− 0.021	− 0.061 (0.038)	− 0.163	− 0.007	− 0.035 (0.029)	− 0.117	0.001
25th	− 0.75	− 0.057 (0.034)	− 0.137	0.001	− 0.034 (0.025)	− 0.103	− 0.000[a]	− 0.020 (0.018)	− 0.072	0.002
50th	0.28	− 0.002 (0.027)	− 0.048	0.060	− 0.001 (0.017)	− 0.031	0.040	− 0.001 (0.011)	− 0.019	0.027
75th	0.54	− 0.017 (0.029)	− 0.034	0.081	− 0.010 (0.019)	− 0.019	0.060	− 0.006 (0.012)	− 0.010	0.045
90th	1.05	− 0.046 (0.037)	− 0.018	0.132	− 0.028 (0.025)	− 0.007	0.100	− 0.016 (0.018)	− 0.004	0.072

Index of moderated mediation	(a) Life satisfaction			(b) Affect			(c) Health		
	Effect (SE)	95% CI		Effect (SE)	95% CI		Effect (SE)	95% CI	
		LL	*UL*		*LL*	*UL*		*LL*	*UL*
	0.057 (0.027)	0.015	0.122	0.034 (0.021)	0.005	0.090	0.020 (0.016)	− 0.000[b]	0.065

Bootstrap estimates of unstandardized effects are provided, based on 5000 bootstrap samples. Action crisis T_1, goal reengagement, and the interaction term (of action crisis T_1 and goal reengagement) were standardized prior to analysis. Control variables included age, sex, goal disengagement, neuroticism and action orientation. Resources T_3, life satisfaction affect T_3 (b), and health T_3 (c) were controlled for resources T_2, life satisfaction T_2, affect T_2, and health T_2, respectively, by residualization

$n = 190$, *SE* standard error, *CI* bias-corrected bootstrap confidence interval, *LL* lower limit, *UL* upper limit

[a] $UL = -0.0003$

[b] $LL = -0.0004$

Table 5 Descriptive statistics for and correlations between the major study variables (study 2)

Variable	*M* (SD)	1	2	3	4	5	6	7	8	9	10	11	12
1. Action crisis (T1)	2.26 (0.75)	–											
2. Resources (T2)	4.36 (0.86)	−0.52***	–										
3. Resources (T3)	4.40 (0.87)	−0.45***	0.60***	–									
4. Life satisfaction (T2)	5.30 (1.11)	−0.44***	0.54***	0.46***	–								
5. Life satisfaction (T3)	5.28 (1.08)	−0.45***	0.52***	0.54***	0.82***	–							
6. Affect (T2)	4.63 (1.07)	−0.37***	0.57***	0.38***	0.51***	0.49***	–						
7. Affect (T3)	4.86 (1.14)	−0.36***	0.43***	0.52***	0.43***	0.56***	0.53***	–					
8. Health (T2)	2.80 (0.69)	−0.26***	0.35***	0.31***	0.13	0.13	0.45***	0.30***	–				
9. Health (T3)	2.96 (0.69)	−0.23**	0.32***	0.41***	0.17*	0.23**	0.38***	0.48***	0.66***	–			
10. Goal reengagement (T1)	3.68 (0.65)	−0.26***	0.25**	0.22**	0.33***	0.31***	0.21**	0.33***	0.10	0.19*	–		
11. Goal disengagement (T1)	2.61 (0.76)	−0.12	0.10	0.13	0.24**	0.20**	0.19*	0.26***	0.13	0.15*	0.44***	–	
12. Neuroticism (T1)	54.7 (14.2)	0.35***	−0.34***	−0.47***	−0.37***	−0.39***	−0.42***	−0.38***	−0.24**	−0.34***	−0.32***	−0.26***	–
13. Action orientation (T1)	10.3 (5.11)	−0.42***	0.44***	0.43***	0.26***	0.23**	0.27***	0.25**	0.27***	0.31***	0.35***	0.17*	−0.47***

$n = 186$. T in T1–T3 = time

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$

Table 6 Hierarchical multiple regression analysis predicting resources (T_3) from action crisis (T_1) and goal reengagement capacities (study 2)

Predictors	Resources T3			
	ΔR^2	*B* (SE)	95% CI	
			LL	*UL*
Step 1	0.467***			
Control variables[a]				
Step 2	0.012			
Action crisis (T1)		−0.107† (0.057)	−0.21	0.01
Goal reengagement		0.002 (0.058)	−0.11	0.12
Step 3	0.023**			
Action crisis (T1) × goal reengagement		0.120**(.042)	0.04	0.20
Total R^2	0.502***			
n	186			

Action crisis T_1, goal reengagement, and the interaction term were standardized prior to analysis

B unstandardized regression coefficient, *SE* standard error, *CI* confidence interval, *LL* lower limit, *UL* upper limit

†$p < 0.10$. **$p < 0.01$. ***$p < 0.001$

[a]Control variables included age, sex, resources T2, goal disengagement, neuroticism, and action orientation

not complete all three measurement points ($n = 13$), were excluded from the analyses (see Footnote 4). Study 1 and 2 do not overlap.

As Study 1, Study 2 was advertised via an email approved of and delivered by the legal department of the *University of Zurich* and, furthermore, via announcements on billboards, presentations in lectures, and flyers. Study participation was remunerated with a coupon (of the value of € 30 for the first and € 10 for the two subsequent measurement points) of a popular mail-order company or, alternatively, course credits. The completion of the questionnaire took approximately 90 min at T_1 and 30 min at T_2 and T_3.

Measures

In Study 2, the same variables (with the same scales) as in Study 1 were measured, that is, action crisis ($\alpha_{T1} = 0.82$), goal reengagement capacities ($\alpha_{T1} = 0.86$), goal-relevant resources ($\alpha_{T2} = 0.71/\alpha_{T3} = 0.74$), life satisfaction ($\alpha_{T2} = 0.89/\alpha_{T3} = 0.89$), (positive) affect ($\alpha_{T2} = 0.90/\alpha_{T3} = 0.92$), and health ($\alpha_{T2} = 0.73/\alpha_{T3} = 0.76$). All analyses, as in Study 1, were controlled for age and sex as well as action versus state orientation (T_1), goal disengagement capacities (T_1), and neuroticism (T_1). Results without control variables are provided in Footnote 3.

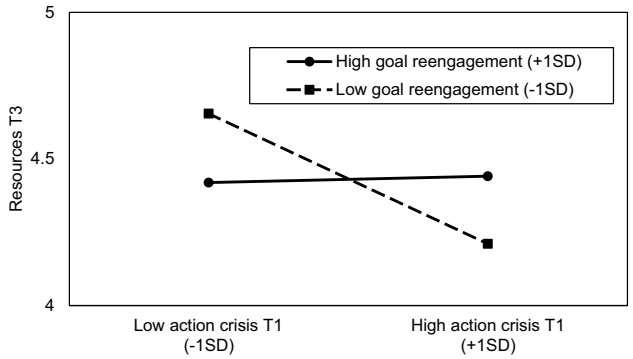

Fig. 3 Resources at T_3 (controlled for resources at T_2) as a function of the extent of experienced action crisis at T_1 and goal reengagement capacities (Study 2). For statistical details, see Tables 6 and 7

Results

Descriptive statistics for and correlations between major study variables are reported in Table 5. Freshman students of Study 2, as expected, were (on average) younger than the bachelor and master students of Study 1 ($p < 0.001$). Presumably due to the earlier assessment in the goal-striving process, freshman students of Study 2 ($M = 2.26$, $SD = 0.75$, $N = 186$) on average experienced less severe action crises ($t(366) = -2.86$, $p = 0.005$, CI [−0.41, −0.07], two-tailed, Cohen's $d = 0.29$) than the non-freshman students of Study 1 ($M = 2.50$, SD = 0.88, $N = 190$). No differences between the two samples were observed with respect to goal reengagement capacities ($p = 0.644$). The correlations between action crisis and goal reengagement capacities did not differ between the two studies ($p = 0.805$; cf. Tables 1, 5).

Analogous to Study 1, self-ratings of the participants regarding the availability of goal-relevant resources exceeded the arithmetic mean of the scale (of 4; $M_{T2} = 4.36$, $p < 0.001$, $d = 0.84$; $M_{T3} = 4.40$, $p < 0.001$, $d = 0.92$) indicating a general positivity bias (Taylor and Brown 1988).

Testing the moderation hypothesis

The multiple regression analysis predicting resources at T_3, controlled for resources at T_2, from action crisis at T_1 and goal reengagement capacities as well as the respective interaction term is summarized in Table 6 and illustrated in Fig. 3.

Unconditional (partial or main) effects

Discordant with the results of Study 1, apart from resources T_2 ([unstandardized] $B = 0.535$, $p < 0.001$, CI [0.400/0.669]), two additional control variables did significantly predict resources at T_3 in Study 2, age ([unstandardized] $B = 0.221$, $p = 0.009$, CI [0.010/0.431]) and neuroticism ([unstandardized] $B = -0.011$, $p < 0.001$, CI [−0.019/−0.003]).

Table 7 Conditional effects of action crisis (T_1) on resources (T_3) at values of goal reengagement capacities corresponding to the 10th, 25th, 50th, 75th, and 90th percentiles in the sample distribution (Study 2)

Percentile	Resources T3			
	Value of the moderator	Effect	95% CI	
			LL	*UL*
10th	−1.27	−0.26***	−0.41	−0.11
25th	−0.77	−0.20**	−0.32	−0.07
50th	−0.02	−0.11†	−0.22	0.00
75th	0.47	−0.05	−0.17	0.07
90th	1.22	0.04	−0.12	0.20

Unstandardized regression coefficients are provided. Action crisis T1, goal reengagement, and the interaction term were standardized prior to analysis. Control variables included age, sex, resources T2, goal disengagement, neuroticism, and action orientation

$n = 186$; *CI* confidence interval; *LL* lower limit; *UL* upper limit

$^{\dagger}p < 0.10$, $^{**}p < 0.01$

Conditional effects

For participants who were average in goal reengagement capacities, there was a non-significant tendency of action crisis at T_1 ([unstandardized] $B = -0.107$, $p = 0.063$, CI [−0.221/0.006]) to lead to a downgrading of resources at T_3. Vice versa, no (conditional) effect was found for goal reengagement capacities (cf. Table 6).

Interaction effect

Replicating the results of Study 1, the effect of action crisis at T_1 on resources at T_3, controlled for resources at T_2, was statistically significantly moderated by goal reengagement capacities ([standardized] beta $\beta = 0.157$, SE = 0.042, $t = 2.863$, $p = 0.005$; cf. Table 6). As in Study 1, the *Johnson-Neyman technique* (Hayes 2013; Johnson and Neyman 1936) was applied to identify the values of goal reengagement capacities for which the simple slope of resources (T_3) regressed on action crisis (T_1) were significant. The resulting region of significance included values (for goal reengagement capacities) of at least −0.06 standard deviations below the mean ($p = 0.050$) and 39.25% (i.e., $n = 73$ participants) of the sample. The conditional effect of action crisis (T_1) on resources (T_3) at values of goal reengagement capacities corresponding to the 10th, 25th, 50th, 75th, and 90th percentiles in the sample distribution are provided in Table 7.

Table 8 Conditional indirect effects of action crisis (T_1) on (a) life satisfaction (T_3), (b) affect (T_3), and (c) health (T_3) mediated by resources (T_3) at different values of goal reengagement capacities corresponding to the 10th, 25th, 50th, 75th, and 90th percentiles in the sample distribution (Study 2)

Percentile	Value of the moderator	(a) Life satisfaction			(b) Affect			(c) Health		
		Indirect effect (SE)	95% CI		Indirect effect (SE)	95% CI		Indirect effect (SE)	95% CI	
			LL	UL		LL	UL		LL	UL
10th	− 1.27	− 0.052 (0.043)	− 0.159	− 0.000[a]	− 0.074 (0.042)	− 0.182	− 0.009	− 0.047 (0.034)	− 0.139	− 0.002
25th	− 0.77	− 0.035 (0.033)	− 0.119	0.002	− 0.050 (0.034)	− 0.135	0.003	− 0.032 (0.025)	− 0.102	0.001
50th	− 0.02	− 0.010 (0.022)	− 0.068	0.019	− 0.015 (0.027)	− 0.076	0.032	− 0.009 (0.018)	− 0.055	0.019
75th	0.47	0.006 (0.021)	− 0.034	0.055	0.009 (0.028)	− 0.047	0.063	0.006 (0.019)	− 0.026	0.054
90th	1.22	0.031 (0.032)	− 0.012	0.119	0.044 (0.038)	− 0.025	0.124	0.028 (0.029)	− 0.009	0.109

Index of moderated mediation	(a) Life satisfaction			(b) Affect			(c) Health		
	Effect (*SE*)	95% CI		Effect (*SE*)	95% CI		Effect (*SE*)	95% CI	
		LL	*UL*		*LL*	*UL*		*LL*	*UL*
	0.034 (0.025)	0.001	0.098	0.048 (0.024)	0.009	0.105	0.030 (0.021)	0.002	0.087

Bootstrap estimates of unstandardized indirect effects are provided, based on 5000 bootstrap samples. Action crisis T1, goal reengagement, and the interaction term (of action crisis T1 and goal reengagement) were standardized prior to analysis. Control variables included age, sex, goal disengagement, neuroticism and action orientation. Resources T3, life satisfaction T3 (a), affect T3 (b), and health T3 (c) were controlled for resources T2, life satisfaction T2, affect T2, and health T2, respectively, by residualization

$n = 186$, *SE* standard error, *CI* bias-corrected bootstrap confidence interval, *LL* lower limit, *UL* upper limit

[a]UL = − 0.0001

Testing the moderated mediation hypothesis

The previously reported moderation analysis, as in Study 1, was expanded by (a) life satisfaction (T_3), (b) affect (T_3), and (c) health (T_3) as dependent variables (cf. Fig. 1). Results of the three resulting moderated mediation analyses are provided in Table 8. For participants with limited goal reengagement capacities (i.e., the 10th percentile), an indirect effect of action crisis (T_1) on (a) life satisfaction (T_3), (b) affect (T_3), and—in contrast to Study 1—(c) health (T_3) through resources (T_3) was observed. As in Study 1, for participants moderate or high in goal reengagement capacities (i.e., participants above the 10th percentile), no indirect effect of action crisis on well-being through resources could be observed.

Discussion

The results of Study 2, whose design is almost identical to Study 1, confirmed and replicated the results of Study 1. Thus, Study 2 offers further evidence in support of the *moderation hypothesis* (step 1) and the *moderated mediation hypothesis* (step 2).

In contrast to Study 1, statistical analyses indicated that not one but two-fifths of participants, which had reported the lowest goal reengagement capacities, devalued goal-relevant resources when experiencing an action crisis (*moderation hypothesis*). This finding could imply that goal reengagement capacities may have to be higher at the beginning of the studies (i.e., for freshman students) in order to prevent goal-relevant resources from being devalued in action crises.

In Study 1, the *moderated mediation hypothesis* was supported regarding life satisfaction and affect, whereas only a non-significant tendency could be observed with respect to health. In Study 2, however, all health and well-being outcomes were significantly affected. The consistency across all three parameters provides additional support for the idea that previously reported adverse effects of action crises on well-being are partly mediated by a more negative evaluation of goal-relevant resources (if goal reengagement capacities are limited).

General Discussion

An action crisis often demands a reevaluation of goal-related circumstances and sometimes even the abandonment of desired goals. Correspondingly, experiencing an action crisis has not only been demonstrated (a) to lead to a shift from an optimistic towards an unbiased evaluation of goal-related costs and benefits in action crises. In addition, an action crisis has also been found to foster goal disengagement. In an action crisis, the "rose-colored" glasses are taken off and the current course of action is called into question. Consequently, attention is refocused on information relevant to (impartially) *re*-evaluating the feasibility and desirability of a goal, and alternative paths are *re*considered (Brandstätter and Herrmann 2017).

The present research indicates that the re-evaluation of the feasibility of a goal in an action crisis also includes the critical reassessment of (available) goal-relevant resources. At least for students with limited goal reengagement capacities (*moderation hypothesis*; Wrosch et al. 2003), experiencing a study-related action crisis resulted in a downgrading of goal-relevant resources. Moreover, and in line with previous findings (Diener and Fujita 1995), the devaluation of goal-relevant resources, in turn, predicted impairments of health and well-being among students with limited goal reengagement capacities (*moderated mediation hypothesis*). Thus, for students who are not able to reengage in new goals, this study provides first evidence that the downgrading of goal-relevant resources represents a mechanism partly explaining previously reported effects of action crises on health and well-being (Brandstätter et al. 2013; Herrmann and Brandstätter 2013).

The present results indicate that the availability of study-related resources is not merely predictive of an individual's *long-term* professional perspectives but likewise indicative of *everyday* hassles encountered on the way to a desired end state (e.g., becoming a marine biologist). The more resources individuals have and perceive at their disposal, the greater the probability that goal-related challenges are successfully overcome without requiring excessive effort and sacrifices. Therefore, a perceived lack of goal-relevant resources may influence *global judgments* of life satisfaction as well as *on-line* evaluations of affect and health (Diener et al. 1999).

Despite its consequences for well-being, downgrading goal-relevant resources in the context of goal difficulties (i.e., in an action crisis) may be *adaptive* under some circumstances. Because "goals turn into sources of dissatisfaction and depression when they ... exceed individual resources" (Brandtstädter and Rothermund 2002, p. 118), the critical reassessment of resources represents a necessary prerequisite to maintain a balance between aspirations and possibilities. Following this line of reasoning, downgrading goal-relevant resources can be a first step in either (a) slightly adapting a goal to the present circumstances (e.g., small disengagement; Wrosch et al. 2003) or (b) disengaging from an overly ambitious course of action altogether.

An action crisis, which is typically preceded by obstacles and setbacks (Bettschart et al. 2018), however, may not necessarily lead to a devaluation of goal-relevant resources. As supported by the study's results, for individuals with moderate to high goal reengagement capacities, an action crisis was *not* associated with a devaluation of goal-relevant

resources and associated consequences on health and well-being. Thus, individuals who experience an action crisis and have relatively high goal reengagement capacities may *not* attribute experienced obstacles and setbacks to personal but to external factors (Bradley 1978). Failure to downgrade goal-relevant resources may be *maladaptive* if this stability is achieved at the expense of "an experienced-based sensitivity as to which goals ... should be given up for the sake of other, more valuable ones" (Brandtstädter and Rothermund 2002, pp. 118–119). However, not downgrading resources is most probably an *adaptive* reaction as long as self-evaluations do not considerably exceed a general positivity bias. In the latter circumstances, "positive illusions may be especially useful when an individual receives negative feedback or is otherwise threatened and may be especially adaptive under these circumstances" (Taylor and Brown 1988, p. 193). If a goal cannot be easily adapted or abandoned, a devaluation of resources would undermine the ability to engage in productive behavior aimed at overcoming goal-related difficulty. Being convinced of one's goal-relevant resources, on the contrary, are likely to result in intensified efforts and increased persistence (Pajares 1996). Thus, if the emergence of an action crisis is *not* ascribed to a lack of goal-relevant resources, additional time and effort may be invested to modify the actual situation (cf. assimilate efforts; Brandtstädter and Rothermund 2002).

Overall, the present research offers first evidence for a buffering effect of goal reengagement capacities on (a) the devaluation of goal-relevant resources (*moderation hypothesis*) and associated (b) impairments in health and well-being (*moderated mediation hypothesis*) in action crises. In line with previous studies, "goal reengagement [capacities] ... compensate[d] for the negative consequences associated with the inability to make progress toward a desired goal" (p. 252) in an action crisis (Wrosch et al. 2007). This buffering effect of goal reengagement capacities has previously been explained by an individual's ability to identify and commit to meaningful *alternatives* when a (focal) goal can no longer be pursued. Complementing this explanatory model, the present research proposes an additional and different mechanism. To this end, the protection of resources relevant to an already or still *pursued* (focal) goal was found responsible for the buffering effect of goal reengagement capacities. Thus, goal reengagement capacities are not merely relevant to goal setting (i.e., identifying new alternatives) but likewise to continued goal striving (i.e., reevaluating goal-relevant resources).

Though only as control variables in Table 1 (Study 1) and 5 (Study 2), the present article is one of the first to document the positive association between goal reengagement capacities and action orientation (cf. Holding et al. 2017). The shared variance is most probably due to the relevance of affect regulation for the implementation of new goals. Action orientation is defined as an individual's ability to regulate basic affect, that is, to down-regulate negative and up-regulate positive affect and thereby adapt the affective state to situational requirements (Kuhl 1992, 2000). Because affect regulation is relevant for overcoming goal failure (down-regulating negative affect) as well as for implementing new goals (up-regulating positive affect), action-oriented individuals are likely to possess high goal reengagement capacities.

Regarding the distinction between self-regulation (self-maintenance) and self-control (goal maintenance; Baumeister et al. 2007; Kuhl and Fuhrmann 1998), we assume that reengaging in new goals requires the simultaneous or parallel activation of both modes of volition. The "concurrent operation of both maintenance systems ... is of particular relevance in the early phase of establishing a goal" (Kuhl and Fuhrmann 1998, p. 16). Self-regulation, for example, seems especially relevant to ensure that new goals are selected in accordance with needs, inner values, and autobiographical experiences, whereas self-control is critical to pursue a new goal even when it conflicts with competing motivations (Kuhl and Koole 2004).

Future directions and limitations

The present research involves limitations that need to be addressed in future research. The observed effects are compatible with previous research on goal reengagement capacities. However, the statistical relation between goal reengagement capacities and goal-relevant resources may not be limited to the reported moderating effect. For example, an increased availability of goal-relevant resources (cf. Tables 1, 5) could also explain why individuals with high goal reengagement capacities easily identify new potential goals. The higher goal-relevant resources and therefore goal-related self-efficacy beliefs, the more diverse "the slate of options given serious considerations" (Bandura 2012, p. 26). Vice versa, as goal reengagement capacities may develop over time (Mens et al. 2015), it seems plausible that marked changes in the availability of goal-related resources enhance or reduce goal reengagement capacities. Furthermore, a positive interaction effect of goal reengagement capacities and goal-relevant resources on the actual setting of and engagement in new personal goals is also theoretically possible. Thus, future research needs to examine in more detail how goal reengagement capacities and goal-relevant resources are (causally) related. Therefore, experimental and/or more fine-grained longitudinal data is needed.

The focus of the present research was on goal reengagement and only included *goal disengagement capacities* as a control variable. However, these capacities can interact in predicting behavior and outcomes. For example, previous research has shown "that among individuals who tend

to *disengage* [emphasis added] from unattainable goals, reengagement capacities become particularly important" (Wrosch et al. 2013, p. 855) for health and well-being (Wrosch and Sabiston 2013). Consequently, it might be possible that the herein reported moderating effect of goal reengagement capacities on the devaluation of goal-relevant resources exists even if a goal has been replaced by an alternative. This would imply that a reduced devaluation of goal-relevant resources does not mean that individuals with high goal reengagement capacities stick to a goal in a maladaptive way. On the contrary, the availability of goal-relevant resources in the event of goal disengagement may provide individuals with high goal reengagement capacities with the confidence to break new ground. How goal reengagement capacities, potentially mediated by goal-relevant resources, affect the characteristics of newly formed goals (e.g., goal difficulty) may therefore be a promising avenue for future research.

Our research focused on a dispositional measure of goal reengagement and did not examine how specific new goals are set, planned, or implemented. Only little is known about the relationship between (*dispositional*) goal reengagement capacities and *goal-specific* processes on the level of concrete goals. Hence, it would be interesting to investigate whether goal reengagement capacities affect actual planning processes regarding alternative goals in an action crisis and/or performance. In this respect, goal reengagement capacities may moderate the reported effects of action crises on performance by buffering the adverse effect of an action crisis on goal-relevant resources (Brandstätter et al. 2013; Herrmann and Brandstätter 2015). When it is inevitable that a goal is replaced, newly formed goals "optimally ... express the core aspect of the self that the previous unattainable goal served" (Mens et al. 2015, p. 573). This proximity of the new to the previous goal enables to maintain a goal-related identity and self-worth (Crocker and Wolfe 2001). There is no evidence as to whether goal reengagement capacities influence the proximity of newly formed to relinquished goals. However, in light of the present results, goal reengagement capacities may maintain an individual's goal-related confidence even in the event of goal disengagement. This may facilitate establishing goals that are proximal to the previous goal.

Whereas the importance of goal reengagement capacities for effective self-regulation has been demonstrated in a number of studies, little is known about (a) how goal reengagement capacities develop over time and (b) measures that are suitable to train these abilities. Previous studies have merely indicated that goal reengagement capacities increase with age and successful experiences (Wrosch et al. 2003). Furthermore, as discussed above, successful affect regulation seems to be a good prerequisite for the development of high goal reengagement capacities (Hill et al. 2014). Further approaches for the training of these capacities must, however, be identified in future studies.

The present research considered a *change process* within a time interval of only one and a half months (between T_2 and T_3). Thus, it cannot be excluded that even for students with moderate to high goal reengagement capacities, an action crisis could result, in the long run, in a devaluation of goal-relevant resources. Alternatively, the negative association between action crisis and the availability of goal-relevant resources may be partly attributable to a predictive role of goal-relevant resources in the emergence of an action crisis (in the form of a reciprocal process), a research question that may be addressed in future research.

Whereas physiological and behavioral data may be collected in future studies, it is less clear whether the complex experience associated with an action crisis (in an idiographic long-term goal) can be authentically reproduced (within a couple of minutes) in an experimental laboratory setting. Even if an action crisis in the pursuit of an idiographic goal *could* be experimentally induced, the respective paradigm would probably neither comply with ethical standards nor allow for the measurement of processes that unfold over longer periods of time. However, limitations regarding causality (internal validity), in the present research, may be partly compensated for by ecological (i.e., external) validity (Cartwright 2007).

This article is the first attempt to integrate the goal-related theories on action crisis (*situational/goal-specific*) and goal reengagement capacities (*dispositional/general tendency*). Both theories are part of the literature on goal disengagement but have never been put into context. Thereby, the present research is in line with Gigerenzer's (2010) appeal to academic psychologists "to integrate the various extant patchworks of theories into overarching theories" (p. 733).

Conclusion

In the present research, an action crisis resulted in a downgrading of goal-relevant resources only if an individual's goal reengagement capacities were limited (Wrosch et al. 2003). Downgrading goal-relevant resources in action crises might be facilitated by a shift towards a more unbiased mindset and interpreted as a re-evaluation of a goal's feasibility. However, an action crisis did *not* result in a devaluation of goal-relevant resources if unfeasible goals, in the past, could generally be replaced with equally attractive alternatives (i.e., high dispositional goal reengagement capacities). Furthermore, a devaluation of goal-relevant resources—at least for individuals with limited goal reengagement capacities—was identified as a mediating mechanism partly explaining previously reported effects of action

crises on health and well-being (Brandstätter et al. 2013; Herrmann and Brandstätter 2013).

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Compliance with ethical standards

Conflict of interest All authors declare no conflict of interest.

Ethical approval Both studies were conducted according to the ethical principles of the *American Psychological Association (APA)* and the guidelines of the *Ethics Committee* of the *Faculty of Arts and Social Sciences* at the *University of Zurich*. With reference to the publication bias (Dickersin 1990), the authors assure that the present research questions were only tested in the two studies presented in this article.

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