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Moderating Effect of the Imposter Phenomenon on Action Crisis  
and Cardiovascular Reactivity

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### **Abstract**

Persistence in goal pursuit is essential for long-term success, yet not all goals remain feasible or desirable over time. Action crisis occurs when obstacles accumulate, forcing individuals to decide between pursuing or disengaging from their goals. This study is the first to explore the consequences of action crisis in a laboratory setting, emphasizing their potential depletion of resources and subsequent effects on effort exertion in unrelated tasks. Additionally, the imposter phenomenon, characterized by feelings of intellectual fraudulence and a high prevalence across the population, is examined as a potential moderator of action crisis effects, as it has been shown to negatively impact areas such as mental health and performance. For this study, we hypothesize that individuals can be successfully manipulated into an action crisis state. Furthermore, we propose that individuals invest more effort in writing about an action crisis goal compared to those without obstacles. Additionally, we predict that individuals in an action crisis condition exert more effort during subsequent low-difficulty tasks. Finally, we explore whether individuals experiencing both imposter phenomenon and action crisis simultaneously exert more effort and examine the possibility that they may disengage from tasks and exert less effort. To test the hypothesis a sample of 150 participants was randomly assigned to an action crisis or non-action crisis condition, and effort was continuously assessed using pre-ejection period measurements. No support for the hypotheses were found. Multiple possibilities for these findings were discussed and limitations such as the reduced samples size addressed.

*Keywords:* action crisis, imposter phenomenon, motivational intensity theory, effort

### **Zusammenfassung**

Das Verfolgen von Zielen ist eine wesentliche Voraussetzung für langfristigen Erfolg, doch nicht alle Ziele bleiben im Laufe der Zeit realisierbar oder erstrebenswert. Handlungskrisen treten auf, wenn sich die Schwierigkeiten häufen und Individuen gezwungen sind, sich zwischen der Zielverfolgung oder -aufgabe zu entscheiden. Diese Studie ist die erste, die die Folgen von Handlungskrisen in einer Laborumgebung untersucht, wobei die potenzielle Erschöpfung von Ressourcen und die nachfolgenden Auswirkungen auf die Anstrengung bei nicht verwandten Aufgaben im Vordergrund stehen. Darüber hinaus wird das Hochstaplersyndrom, das durch das Gefühl des intellektuellen Betrugs und einer hohen Prävalenz in der Bevölkerung gekennzeichnet ist, als potenzieller Moderator der Auswirkungen von Handlungskrisen untersucht, da es sich negativ auf Bereiche wie psychische Gesundheit und Leistung auswirken kann. Für diese Studie stellen wir die Hypothese auf, dass Individuen erfolgreich in eine Handlungskrise manipuliert werden können. Darüber hinaus gehen wir davon aus, dass Personen mehr Anstrengung aufwenden müssen, um über Ziele mit Hindernissen zu schreiben als über Ziele ohne Schwierigkeiten. Des Weiteren erwarten wir, dass Personen in einer Handlungskrise bei nachfolgenden Aufgaben mit geringem Schwierigkeitsgrad mehr Anstrengung aufwenden. Schließlich untersuchen wir, ob Personen, die sowohl das Hochstaplersyndrom als auch eine Handlungskrise erleben, mehr Anstrengung aufwenden müssen. Zudem prüfen wir die Möglichkeit, ob sich Individuen von Aufgaben abwenden und weniger Anstrengung aufwenden. Zur Überprüfung der Hypothese wurde eine Stichprobe von 150 Proband\*innen zufällig einer Action-Crisis- oder Non-Action-Crisis-Bedingung zugeteilt, und die Anstrengung wurde kontinuierlich anhand von Präejektionszeit-Messungen erfasst. Es wurden keine signifikanten Ergebnisse gefunden. Mögliche Erklärungen für diese Befunde wurden eingehend diskutiert, und Limitationen wie die geringe Stichprobengröße wurden adressiert.

*Keywords:* Handlungskrise, Hochstaplersyndrom, Theorie der Motivationsintensität, Anstrengung

## Introduction

*Imagine Anna. She is working in a consulting company and aims for the team lead position.*

*To get the new job, she has to attend further training courses, work long hours and finish demanding projects. Even though she already completed some challenging projects, she is struggling with the workload and responsibilities. At the same time, Anna doubts her abilities and does not know whether she is even capable of taking on all the tasks despite the praise and recommendation of her supervisor. Sometimes, Anna thinks that she got her current job only by luck and not because of her skills and is afraid that her colleagues will eventually expose her subjective lack of skills. Now, Anna has to decide if she wants to continue to apply for the team lead position and continue with the challenge or if she stays in her position and reduces her workload and responsibilities.*

Persistence in goal pursuit is crucial to reach long term goals, otherwise one would drop the goal after the first obstacles (Brandstätter & Schüler, 2013). However, not every goal is reachable or favorable to reach. Other goals can lose their purpose over time, for example to keep studying even though one has lost interest in the topic or to stay in a relationship where the partners have drifted apart (Brandstätter & Schüler, 2013). Therefore, it is important to be able to disengage from goals in order to look for alternatives or other more desirable objectives. When obstacles accumulate and the goal pursuit becomes more and more effortful and stressful, action crisis can occur. This describes that the individual is now in a state where they have to decide whether to pursue the goal despite obstacles or to disengage and look for alternatives (Brandstätter & Schüler, 2013). Applied to the example of Anna, she is currently in an action crisis as she is experiencing challenges and obstacles on her way to become team lead. Now, she needs to decide whether to pursue her goal by continuing the application process. Brandstätter et al. (2013) found that action crisis can have negative effects on the individual's well-being and performance. On the other hand, action crisis can lead to critical rethinking of one's goals and can avoid the occurrence of an action crisis event in the pursuit of subsequent goals (Brandstätter & Herrmann, 2016). Action crisis, however, is thus far not thoroughly investigated. Our study is the first to actively manipulate participants into an action crisis state and investigate the effects thereof on subsequent tasks in a laboratory setting. We assume that experiencing an action crisis depletes resources, forcing a person to exert more effort to overcome it. Due to the increased consumption of resources, simple tasks are perceived as more difficult, thus, it is likely that

the action crisis affects other aspects of everyday life. In this study, we examine the effects of action crisis on effort as it is experienced and how it affects subsequent tasks. Additionally, as current research on action crisis is scarce, we want to examine possible moderation effects. Therefore, we investigate whether the imposter phenomenon has a moderating effect on action crisis. Imposter phenomenon describes the fear of being an intellectual fraud as all success is attributed not to one's internal skills but to external factors such as luck (Clance & Imes, 1978). In the example, Anna attributes part of her success not to her own internal skills but to external factors such as luck, even though she receives lots of praise for her work. This discrepancy between her subjective impression and the objective evaluation of her skills leads to her being afraid to be exposed as a fraud. The impostor phenomenon shows a high prevalence across the general population, affecting both men and women from adolescence onward. It is associated with a range of negative outcomes, including poorer job performance, higher levels of anxiety and self-doubts (Bravata et al., 2020). We are interested if the imposter phenomenon moderates how people with an action crisis invest their resources, e.g., exerting more effort or disengaging earlier.

### **Arising difficulties in goal pursuit and the emergence of action crisis**

To gain a comprehensive understanding of action crisis, it is important to first consider its theoretical foundations. The mindset theory of action phases (Gollwitzer, 2012; Heckhausen & Gollwitzer, 1987) describes the different phases of goal pursuit. In the predecisional phase, one focuses on the reason of goal pursuit with the steps of weighing up the advantages and disadvantages of alternatives. Conversely, the following postdecisional phase is focused on the principle of how to pursue a goal and the implementation of it (Gollwitzer, 2012; Heckhausen & Gollwitzer, 1987). To ensure that the goal is pursued, the information processing towards the goal is biased towards positive aspects, desirability, and reachability (Armor & Taylor, 2003; Brandstätter & Frank, 2002; Gagné & Lydon, 2001; Gollwitzer & Kinney, 1989; Harmon-Jones & Harmon-Jones, 2002; Taylor & Gollwitzer, 1995). However, this theory does not describe what happens when difficulties arise in goal pursuit. Research shows that disengagement can be seen as a process which starts even before one decides to give up on a certain goal (Klinger, 1975). Brandstätter and Schüler (2013) argue that through continuous setbacks and accumulated obstacles in goal pursuit, action crisis can occur. In this phase, the individual has already invested a lot of resources into the goal and is now confronted with an inner conflict between further pursuit of a goal and disengagement. It is important to note that action crisis does not always lead to goal

disengagement. The researchers further found that individuals in an action crisis express more cost-and-benefit-thinking towards the goal than individuals without an action crisis (Brandstätter & Schüler, 2013). Additionally, the action crisis can dampen the positively biased cognitive evaluation of desirability and reachability of the goal (Brandstätter et al., 2013). Applied to the mindset theory of action phases, these findings suggest that individuals who are already in the postdecisional phase and within the implementation of the goal are set back to the predecisional phase. Goal related costs and benefits become more salient and enable the individual to re-evaluate the goal. As a result, possible alternatives to the current goal or new goals could be considered. Alternatively, the existing goal could also be strengthened, or an adapted implemental mindset could be formed (Brandstätter & Schüler, 2013; Herrmann et al., 2014). The re-evaluation of the goal can prevent future action crises from occurring (Brandstätter & Herrmann, 2016). An action crisis can also affect the physiological and psychological well-being through a lower life satisfaction as well as increased health symptoms. There are also indicators that action crisis can negatively influence performance (Brandstätter et al., 2013).

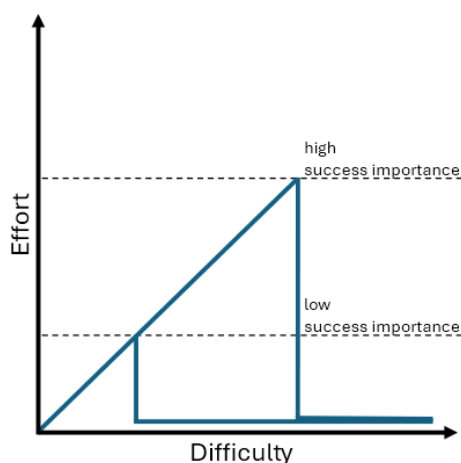
It appears that while action crisis is an important part of the goal disengagement process, action crisis does not automatically lead to goal disengagement (Brandstätter & Schüler, 2013). Although action crisis can serve as an impulse to re-evaluate current goals and consider alternatives or adapt new implementations (Brandstätter & Schüler, 2013; Herrmann et al., 2014), it can also have negative effects on the mental and physical well-being as well as on performance (Brandstätter et al., 2013). Therefore, it can be assumed that being in an action crisis raises the subjective difficulty of a task, forcing a person to exert more effort to overcome it and as a consequence, possibly affecting non-related tasks.

### **Effort in the context of the motivational intensity theory**

The motivational intensity theory (MIT) offers a valuable framework to better understand how effort investment is regulated in such demanding situations (Brehm & Self, 1989). According to the MIT, people only use as much effort as necessary to achieve a specific goal. If the difficulty of the goal is achievable and the success importance is high, the individual is likely to exert effort proportional to the difficulty. In contrast, if the difficulty is not manageable or the success importance is low, no effort will be exerted. In the case that the difficulty is not known, effort is proportional to the success importance (Figure 1).

**Figure 1**

*Graphical representation of the MIT (based on Brehm & Self, 1989)*



To validate the predicted amount of effort employed based on the MIT, the actual exerted effort can be reliably measured using the pre-ejection period (PEP; Richter et al., 2016). PEP is defined as “the time interval between the onset of ventricular depolarization and the opening of the aortic valve” (Richter et al., 2016, p.156) and mostly depends on the sympathetic nervous system. According to Mlynski et al. (2021), investing more effort leads to a higher influence of the sympathetic nervous system on the vascular system, heart rate and force of cardiac muscle contraction. An increase in myocardial sympathetic activity leads to an increased heart contraction force, resulting in lower PEP (Mlynski et al., 2021; Richter et al., 2016). Therefore, PEP represents a reliable physiological measure for assessing variations in exertion of effort.

### **Impostor phenomenon and its potential moderating role on action crisis**

As action crisis is an emerging field of research, not much information exists about which factors influence action crisis. A possible moderator of action crises effects could be the impostor phenomenon. This phenomenon was first described by Clance and Imes (1978). They discovered that some objectively successful women in high professional positions see themselves as a fraud and they believe that their success is due to luck or other external causes, but not their abilities. Furthermore, they also had the unjustified fear of being exposed as an impostor (Clance & O’Toole, 1988). Newer studies suggest that the impostor phenomenon is present in all genders and across all age groups from adolescence onward (Bravata et al., 2020; Rohrmann et al., 2016). The impostor phenomenon is correlated with self-doubts, anxiety, emotional instability, low conscientiousness and frequently comorbid with depression and anxiety disorder (Bernard et al., 2002; Bravata et al., 2020; Clance &

Imes, 1978; Rohrmann et al., 2016). As the fear of being exposed as an imposter is a core aspect of the phenomenon, individuals with high scores also experience the fear of failing since it can be seen as a clear signal to others to be a fraud (Clance & O'Toole, 1988; Whitman & Shanine, 2012). Therefore, it is likely that they tend to overcompensate and invest an extensive amount of effort into tasks to avoid failures, leading to resource depletion. This can lead to emotional exhaustion, especially in the work environment, where lower job satisfaction and job performance are possible consequences (Bravata et al., 2020; Hudson & González-Gómez, 2021; Whitman & Shanine, 2012).

In an action crisis, an individual has to decide whether to pursue the goal or to disengage. In this phase, the costs and benefits of the goal become more present and can contain a certain uncertainty about the future situation. It is possible that individuals with high imposter phenomenon scores experience an action crisis stronger due to their fear of failure and exposure as well as their lower self-esteem differently than individuals with low scores in this phenomenon.

### **Current study**

The overall goal of our study is to investigate the effort exertion of individuals who are experiencing an action crisis and its consequences on non-related tasks. Additionally, we investigate the moderating effect of the imposter phenomenon on action crisis. Here, we describe the first experiment where participants were actively manipulated into an action crisis state in a laboratory setting. Hypothesis 1 serves as a manipulation check.

*Hypothesis 1: Individuals can be manipulated into an action crisis state.*

We assume that, according to the MIT, participants with an action crisis need to invest more effort while they write about a goal in which they currently experience an action crisis in contrast to participants who are writing about a goal without occurring obstacles (Figure 2).

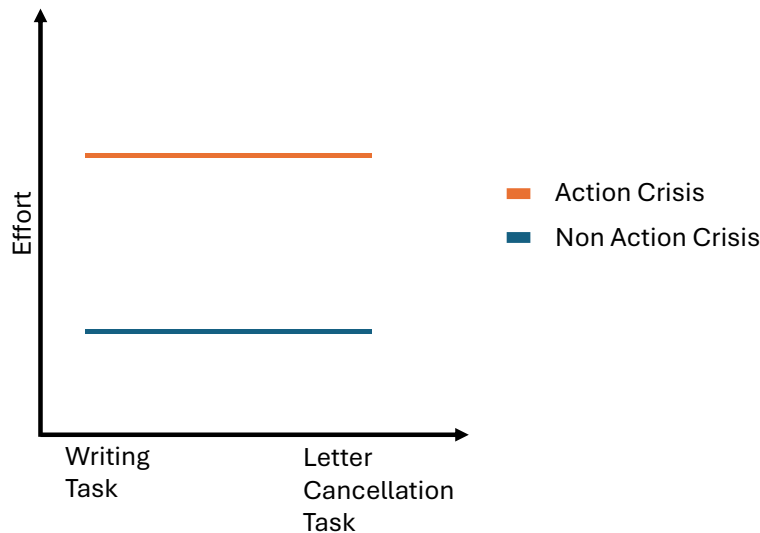
*Hypothesis 2: Individuals writing about an action crisis goal exert more effort completing this task than individuals who are writing about a goal without action crisis.*

While participants in the action crisis condition need to exert more effort, they experience a subsequent low-difficulty task as more difficult as in the non-action crisis condition and therefore need to invest more effort (Figure 2).

*Hypothesis 3: Individuals subjected to an action crisis condition exert more effort to complete a low-difficulty task than individuals who do not experience an action crisis.*

**Figure 2**

*Graphical representation of hypotheses 2 and 3*

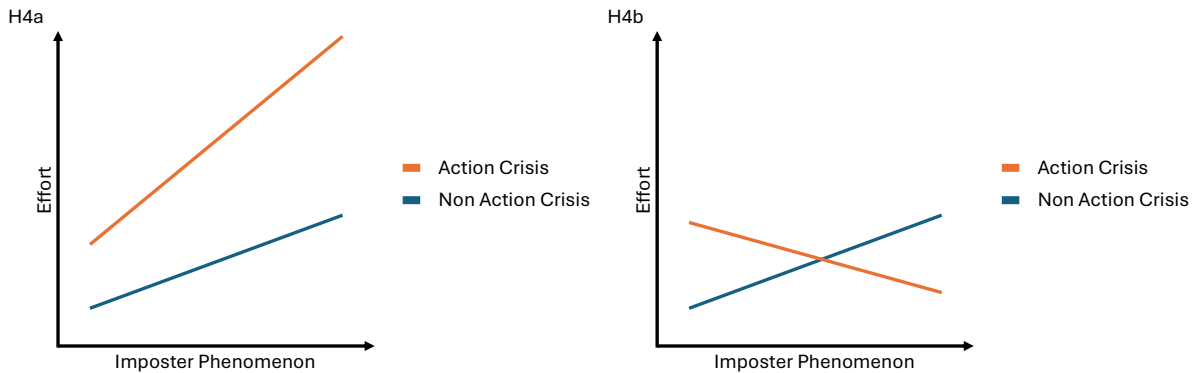


We assume that participants who score high in the imposter phenomenon and are simultaneously experiencing an action crisis exert more effort in a task than participants with low scores in the imposter phenomenon and action crisis. This is due to the tendency of imposters to overcompensate in tasks to avoid any failure and to hide their perceived lack of abilities (Figure 3).

*Hypothesis 4a: Individuals experiencing higher imposter phenomenon and action crisis simultaneously exert more effort in a task than individuals experiencing the imposter phenomenon without action crisis.*

It could also be possible that action-crisis reinforced cost-and-benefits-thoughts are amplified by the low self-esteem of imposters and thus have a low success importance, leading to early task disengagement (Figure 3).

*Hypothesis 4b: Individuals experiencing higher imposter phenomenon and action crisis simultaneously disengage from their task and exert less effort than individuals experiencing the imposter phenomenon without action crisis.*

**Figure 3***Graphical representation of hypotheses 4a and 4b*

## Method

### Sample

Data was collected during the winter and summer semester 2023/24 at the motivational lab of the University of Vienna. Sample size was calculated using a power analysis with G\*Power (Faul et al., 2009). To reach a Cohen's  $d \geq .35$ , alpha level = .05 and power = .80, the sample should consist of at least 204 participants. However, only 150 participants could be recruited at the time of data analysis. People with high blood pressure or any heart problems were not able to participate in this study. As one data set was incomplete, this participant had to be excluded from parts of this study. The participants were mostly psychology students at the University of Vienna and were recruited via the website of the Laboratory for Administration of Behavioral Sciences at the University of Vienna (LABS) and received study credits for their participation. The final sample included 70% ( $n = 105/150$ ) female, 28% ( $n = 42/150$ ) male and 0.2% ( $n = 3/150$ ) other individuals with a mean age of 21.21 ( $SD 3.18$ ) and an age range from 18 to 36 years.

### Procedure

First, the participants had to fill out an online questionnaire at home. Participation was only possible when no high blood pressure or any heart problems existed. Afterwards, they had to fill out a variety of questionnaires including willpower, self-control, and imposter phenomenon. In the end, participants had to describe a personal goal with which they are currently struggling.

The second part of the study took place in the motivational lab at the University. The participants were connected to electrodes on their neck and torso which were connected to an electrocardiogram (ECG) and received a blood pressure cuff. The heart rate (HR) and the pre-

ejection period (PEP) were recorded. To measure the baseline of each participant, they were asked to listen to relaxing music. To capture the true baseline values, measurements commenced eight minutes after the music started and lasted two minutes. Afterwards, the participants filled out a questionnaire about their current state of feelings. The participants were randomly assigned to either the experimental condition where they had to describe a current goal in which they are experiencing obstacles or the control condition where they had to describe a current goal with no such difficulties. Afterwards, they were subjected to the writing task, where the HR and PEP were measured. After finishing the writing task, the participants were introduced to the D2 letter cancelation task with a low difficulty level and were asked to predict their performance and to estimate their correctly filled out rows within five minutes with their peers. Afterwards, they had five minutes to solve as many rows as possible. During the tasks, the HR and PEP values were measured. At the end of the experiment, the participants again filled out a questionnaire about their current mood whereas a debriefing about the goals of this study followed. The laboratory part of the study took approximately 45 minutes.

## **Measures**

### ***Action crisis***

To measure the experienced action crisis, the Action Crisis Scale (ACRISS; Brandstätter & Schüler, 2013) with six items was used. Various aspects essential of an action crisis in personal goals are delineated by these six items (e.g., “I have been seriously conflicted lately about whether to pursue my goal or drop out”; “I keep ruminating about my goal”). The participants rated each item with their respective goal from 1 (no agreement) to 5 (strong agreement). The ACRIS is reported to have a high reliability ( $\alpha \geq .73$ ; Brandstätter & Schüler, 2013).

### ***Imposter phenomenon***

The imposter phenomenon is measured by the Clance Imposter Phenomenon Scale (CIPS; Clance, 1985). The CIPS contains 20 items for the imposter phenomenon correlated factors luck, discount and fake (e.g., “I can give the impression that I’m more competent than I really am”; “I tend to remember the incidents in which I have not done my best more than those times I have done my best”; “At times, I feel my success has been due to some kind of luck”). The participants can rate the items from 1 (not at all true) to 5 (very true). The total score ranges from 20 to 100, with lower scores ( $\leq 40$ ) indicating few impostor characteristics, moderate experiences (41–60), frequent feelings (61–80), and higher scores ( $> 80$ ) reflecting

intense impostor phenomenon experiences, where higher scores suggest greater interference in daily life. German version of the CIPS shows a high reliability ( $\alpha \geq .87$ ; Brauer & Wolf, 2016).

### ***Effort***

To measure the effort participants exerted during the experiment, all participants were connected to an ECG and the cardiovascular reactivity via the PEP and HR were collected. Due to high differences in the HR and PEP values between individuals, the baseline measure was essential to calculate the difference between effort during the tasks and in the resting state.

### **Data analysis**

For data cleaning and analysis, R v.4.3.1 (R Core Team, 2023) and RStudio v.2023.06.2 were used. Reversed items were decoded and descriptive statistics were analyzed. To create a comparable value for effort, the mean baseline PEP was subtracted from every PEP value of the writing task and the D2 letter cancellation task. Therefore, a comparable value for each individual was calculated.

To test if the manipulation was successful a two-sample one tailed t-test was conducted between experimental groups. For hypothesis 2, the PEP values during the writing tasks were compared, using two-sample one-tailed t-test. For hypothesis 3, a two sample one tailed t-test was used to compare the PEP values during the subsequent D2 letter cancellation task between the conditions. For testing, a two-sample one tailed t-test was conducted to compare the electro cardiovascular reactivity between the action crisis condition and the non-action crisis group. To test the moderating influence of the impostor phenomenon on action crisis, a multiple regression analysis was used for hypothesis 4a and 4b. For the first explorative analyses of the demographic influences, the sample was divided into the action crisis and non-action crisis conditions. Within each condition, the obtained ACRISS results were examined to detect possible differences due to gender using a two-sample two tailed t-test, and a linear regression to assess age differences. Additionally, two-sample two tailed t-tests were calculated for each ACRISS item to examine potential group differences.

## **Results**

The participants were randomly assigned to the action crisis or non-action crisis condition. Descriptive statistics on the variables action crisis and impostor phenomenon can be found in Tables 1 and A1.

**Table 1***Descriptive statistics of action crisis and imposter phenomenon*

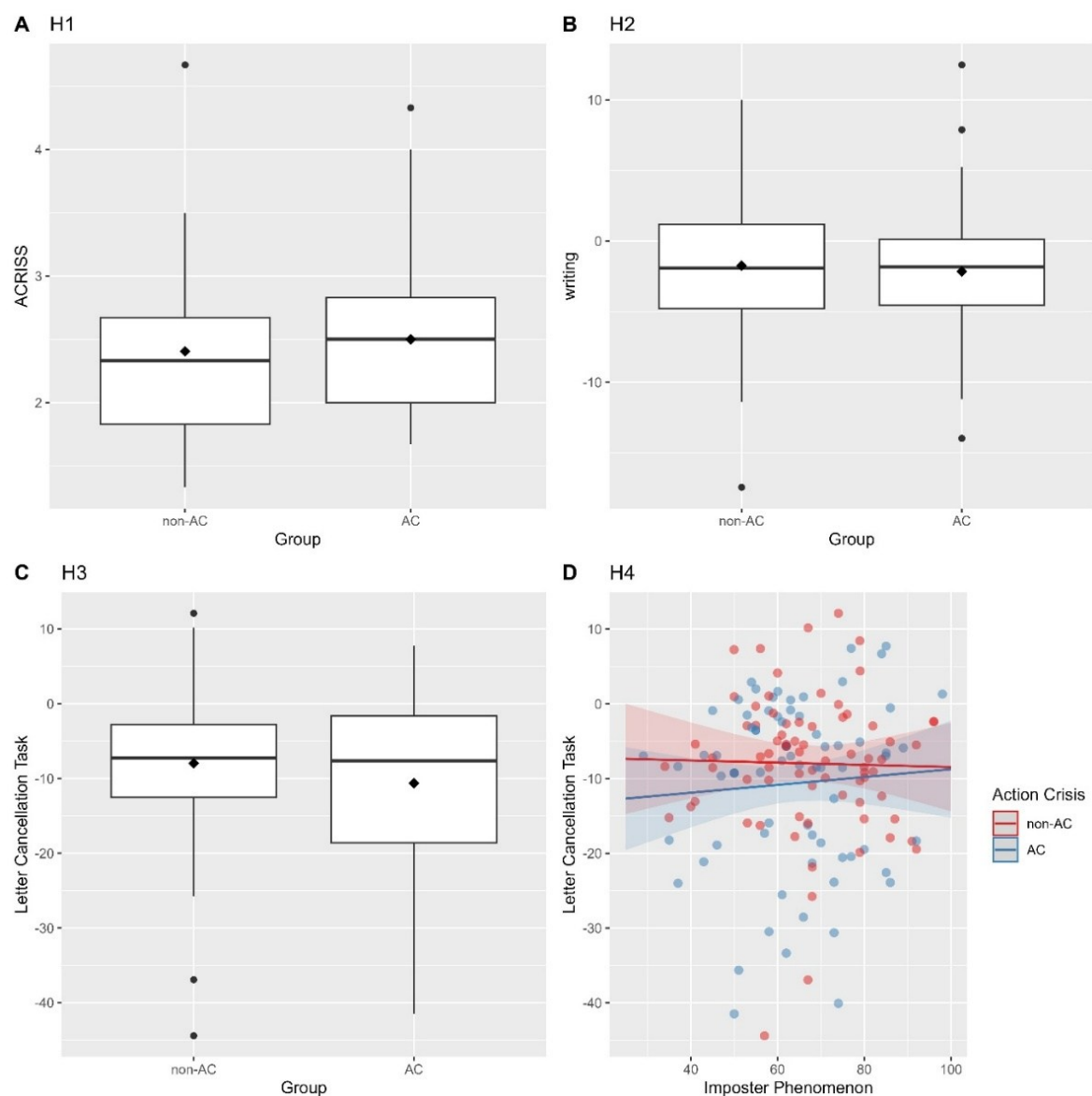
|                        | <b>N</b> | <b>Mean</b> | <b>SD</b> | <b>Median</b> | <b>Min</b> | <b>Max</b> |
|------------------------|----------|-------------|-----------|---------------|------------|------------|
| Non-action<br>Crisis   | 77       | 2.40        | 0.59      | 2.33          | 1.33       | 4.67       |
| Action Crisis          | 73       | 2.50        | 0.59      | 2.50          | 1.67       | 4.33       |
| Total Sample           | 150      | 2.45        | 0.59      | 2.33          | 1.33       | 4.67       |
| Imposter<br>Phenomenon | 150      | 65.55       | 14.46     | 65            | 29         | 98         |

The results indicated that participants in the action crisis condition did not score significantly higher on the ACRISS compared to those in the non-action crisis condition ( $t(147.59) = -0.98, p = .836, d = -0.16, 95\% \text{ CI } [-0.43, \text{Inf}]$ ). Consequently, H1 was rejected, and the manipulation check was not successful (Figure 4A). The second hypothesis proposed that participants who are writing about an action crisis goal would exert greater effort during the writing task than those in the non-action crisis condition. However, we found no statistically significant difference between the two groups ( $t(145.32) = 0.56, p = .287, d = 0.09, 95\% \text{ CI } [-0.18, \text{Inf}]$ ), leading to the rejection of H2 (Table 4B). Furthermore, the third hypothesis stated that the experimental group would exert greater effort in a subsequent low-difficulty task. This assumption was also not supported as no significant differences were observed between the groups ( $t(138.54) = 1.57, p = .059, d = 0.27, 95\% \text{ CI } [-0.01, \text{Inf}]$ ; Table 4C). For a clearer overview, a table summarizing the results of all three t-tests is provided in Appendix B1. Hypotheses 4a and 4b proposed that participants experiencing both an action crisis and the imposter phenomenon would exert either more effort (4a) or less effort (4b) in the subsequential task. The regression model did not reach statistical significance ( $F(3, 145) = 0.96, p = .414$ ), indicating that the interaction between action crisis and the imposter phenomenon did not predict effort exertion (Table 4D). The  $R^2$  was .019, with an adjusted  $R^2$  of -.001, suggesting that the model explained only a negligible proportion of the variance in effort exertion. Further analysis of the regression coefficients confirmed the absence of significant effects. Neither the action crisis condition ( $b = -7.01, p = .380$ ), nor the imposter

phenomenon ( $b = -0.02, p = .861$ ), nor their interaction ( $b = 0.07, p = .572$ ) significantly contributed to the prediction of effort. The residual standard error was 10.4, based on a final sample size of 149 observations after the exclusion of one observation due to missing data in the letter cancellation task. The results provide no evidence for a moderating effect of the impostor phenomenon on the relationship between action crisis and effort exertion. Thus, both hypotheses H4a and H4b were rejected (Table C1).

**Figure 4**

*Group differences and moderation effects*



*Note.* The black diamond represents the mean while the horizontal line within the box represents the median.

In light of the non-significant findings regarding the main hypotheses, exploratory analyses were conducted to identify potential factors that may have influenced the results. First, potential demographic factors were examined. Separate t-tests were conducted within the action crisis and non-action crisis conditions to examine potential differences in ACRISS scores between male and female participants. In both conditions, no significant gender differences were found (action crisis condition:  $t(37.30) = -0.84, p = .404, d = -0.28$ , 95% CI [-0.92, 0.37]; non-action crisis condition:  $t(35.86) = 1.16, p = .255, d = 0.39$ , 95% CI [-0.28, 1.04]). Participants who indicated a diverse gender identity ( $n = 3$ ) were excluded due to the small group size. Similarly, no significant variation in age was observed across conditions (action crisis condition:  $b = 0.04, p = .102$ ; non-action crisis condition:  $b = -0.03, p = .199$ ).

To further explore possible reasons for the non-significant manipulation check, the ACRISS items were analyzed individually. For five items, no statistically significant difference between the action crisis and the non-action crisis group could be found (Table 2). However, item 2 showed a significant result. Participants in the action crisis condition reported greater difficulties in smooth goal pursuit compared to those in the non-action crisis condition.

**Table 2***Explorative analysis of six ACRISS items*

|                                | <b>Action crisis</b> |             |                 |                 |                |
|--------------------------------|----------------------|-------------|-----------------|-----------------|----------------|
|                                | <b>low</b>           | <b>high</b> | <b><i>p</i></b> | <b><i>d</i></b> | <b>95% CI</b>  |
| 1 – Goal pursuit conflict      | 1.58                 | 1.75        | .255            | -0.20           | [-0.53, 0.12]  |
| 2 – Unsmooth goal pursuit      | 2.78                 | 3.11        | .024            | -0.38           | [-0.70, -0.05] |
| 3 – Uncertainty during pursuit | 2.64                 | 2.63        | .972            | 0.01            | [-0.32, 0.33]  |
| 4 - Rumination                 | 3.03                 | 3.01        | .949            | 0.01            | [-0.31, 0.33]  |
| 5 – Urge to abandon goal       | 1.42                 | 1.48        | .588            | -0.09           | [-0.41, 0.23]  |
| 6 – Inaction despite intention | 2.99                 | 3.01        | .865            | -0.03           | [-0.36, 0.30]  |

## Discussion

### Summary

This study aimed to be one of the first to manipulate participants in a laboratory setting into an action crisis by asking participants to write about either an action crisis or a non-action crisis goal. We hypothesized that writing about an action crisis goal would require more effort and that this increased effort would also be evident in a subsequent, unrelated task. However, our findings did not support these hypotheses. The manipulation was unsuccessful, and no differences in effort exertion between the groups were observed. Additionally, we tested for a possible moderating effect of the impostor phenomenon but found no significant interaction.

### Possible reasons for the unsuccessful induction of an action crisis

The manipulation intended to induce an action crisis in the laboratory was not successful. The responses of the assigned groups did not differ on the ACRISS, therefore, the manipulation was not successful and H1 was rejected. Explorative analyses did not reveal any

differences according to gender or age. It can be assumed that the manipulation was not successful for all participants. A closer investigation of the individual ACRISS items showed that the groups differ in only one item. The participants in the action crisis condition experienced their goal pursuit as less smooth than in the non-action crisis condition (item 2). The results indicate that the participants adhered to the demanded task. In the other items, no differences between the conditions were found. Therefore, the participants in both groups have little to no conflict and impulse to give up their goal pursuit (item 1, item 3). Subjects in both conditions show moderate rumination about the goal (item 4) and moderate tendencies to delay goal-related activities even though there was a personal intention to work towards their goals (item 6). As a result, it can be said that the participants in the action crisis condition wrote about a current goal with obstacles but they did not experience a conflict or impulse to give up the goal and therefore, did not experience an action crisis. In the following, different possibilities as to why the manipulation check did not work are discussed.

The first possible explanation for the unsuccessful manipulation is that the chosen methodology was not effective enough to induce an action crisis in participants. Although research shows that presenting participants with predefined texts clearly depicting an action crisis can induce an action crisis (Marion-Jetten et al., 2021), it is conceivable that only writing about a goal with arising difficulties does not necessarily lead to an inner conflict regarding whether to persist in goal pursuit or disengage from it. Participants may have reflected on goals that involved obstacles but did not perceive these difficulties as severe enough for a disengagement, potentially because they had already accounted for such challenges during the predecisional phase (Gollwitzer, 2012; Heckhausen & Gollwitzer, 1987). Consequently, simply instructing participants to think and write about a current goal in which they experience difficulties may not have been sufficient to induce an action crisis, where a genuine inner conflict arises, which is in accordance with the results of the explorative analysis. Furthermore, according to the discussed theory, an action crisis occurs when someone already invests resources into a goal and then experiences difficulties and obstacles. This leads to a fallback into the predecisional phase where cost-and-benefit-thinking becomes more salient again (Brandstätter & Schüler, 2013). All this leads to the assumption that the goals must already exist before the experiment. In the presented study, it was assumed that every participant has goals where they are experiencing an action crisis and only by reminding the person about it leads to the perception of an action crisis. However, it

is possible that not everyone is experiencing an action crisis. People can perceive obstacles in goal pursuit very differently depending on their type of goal motivation and their level of self-control. Individuals pursuing self-chosen goals and possessing high self-control tend to perceive fewer obstacles compared to goals which they have to pursue. Moreover, the obstacles they encounter are seen as less problematic (Leduc-Cummings et al., 2022). Furthermore, it appears that not the objective nature of the obstacle but rather the subjectively perceived intensity and frequency determine its impact (Čopková & Hricová, 2021). Consequently, goals accompanied by obstacles can be perceived very differently across individuals, which in turn influences whether an action crisis occurs or not. Another critical factor in the success of manipulating a person into showing an action crisis could also be the subjective importance of the goals where obstacles were encountered. It is likely that manipulation efficiency is directly dependent on the perceived importance of personal goals.

The second possible explanation for the unsuccessful manipulation could be the utilization of an inadequate measurement instrument. Even though the reliability of the ACRISS is high, it is a novel measurement scale which is not widely used in studies or over different action crisis settings (Brandstätter & Schüler, 2013). It is worth discussing whether the six-item scale discriminates sufficiently between people with non-action crisis goals and action crisis goals.

Future research should consider these points and adequately address them in their experiments. A possible method to induce action crisis in a laboratory setting could be by subjecting participants not only to a writing task but also to a practical task with introduced importance, which in some cases is impossible to solve and hence provides major obstacles.

### **Similar effort in action crisis and non-action crisis groups**

Before discussing the next hypotheses, it is essential to acknowledge that due to the unsuccessful manipulation check, the following hypotheses cannot be interpreted in terms of action crisis. However, to explore the potential implications of the remaining hypotheses, it has to be assumed that the manipulation check was successful for the purpose of this discussion.

To test whether the groups differ on how much effort they exert while writing about a (non) action crisis goal, PEP values were measured. However, no significant difference among the groups were found, hence, H2 was rejected. A possible explanation of this result lies in the assumption that the task of writing about a goal always requires a similar amount of effort, without considering whether this goal can be achieved without significant

difficulties or whether there are severe obstacles. According to the MIT, it can be assumed that both tasks were perceived as equally difficult, resulting in comparable levels of effort mobilization (Brehm & Self, 1989). Consistent with this, PEP has been described as a useful indicator for assessing cardiac sympathetic control in relation to effort mobilization and task difficulty (Albinet et al., 2024). It could be assumed that all goals are blocked to some degree by obstacles, thus all participants need to exert effort because they all use the same resource to obtain their thoughts about their goal. As a result, the resources required to write about an action crisis goal or a goal without difficulties do not differ significantly because in both cases, the effort to write about a goal in general was already high. Future research should consider employing a qualitative research method and analyze the respective goals of the groups based on their differences. With this approach, the investigators would see if the participants responded to the task assignment as anticipated.

### **Indications of a trend toward increased effort in subsequent task**

H3 predicted a difference between the action crisis group and the non-action crisis group according to how much effort they exert during a low-difficulty sequential task. This should examine whether an action crisis depletes resources and therefore makes unrelated tasks more exhausting. H3 was rejected as the obtained differences were not significant. However, a tendency towards a significant result is recognizable. Since the target sample size could not be achieved, a different result could be expected by utilizing a higher sample number. Considering that the manipulation check was not successful, it is unclear why both groups differ in the low-difficulty task, however, all explanations remain highly speculative.

The groups only differ in their task assignment whether to write about an action crisis or a non-action crisis goal. It is possible that the different task assignments led the participants to highlight different aspects of their goal pursuit, which continued to influence them even after completing the writing task. Reflecting on a current goal without experiencing difficulties may have positively affected the participants' mood, whereas thinking about a goal associated with obstacles could have had a negative impact. Existing research is inconclusive regarding the effects of mood on effort and performance. Some findings suggest that a positive mood can enhance effort, while other studies challenge these results (Isen et al., 1978; Martin & Kerns, 2011). It is not possible to make clear assumptions about this result.

Hypothetically, it is possible that the manipulation did work but the ACRISS was an inadequate instrument to record differences between the groups. This possibility would still

be consistent considering that H2 was not significant. It is possible that writing about an action crisis and a non-action crisis goal does not differ in how much the participants must exert effort for writing about it. It is possible that thinking and writing about a goal with obstacles bind resources even after the end of the task and therefore, participants in the action crisis tend to exert more effort on the subsequent task than the non-action crisis condition. This hypothesis is supported by the MIT (Brehm & Self, 1989). The participants with an action crisis do not have all resources available and thus perceive the difficulty of the subsequent task (even though it is a low-difficulty task) as more difficult than the non-action crisis group (which can employ all resources). Therefore, a tendency occurs for the action crisis to group to exert more effort. This is consistent with a study which found that motivational conflicts occurring before and during studying led to affective impairments, subsequently resulting in decreased performance (Grund et al., 2015). Another study examined the impact of conflicted versus clear personal goals on performance in a subsequent task and found that participants with conflicted goals performed worse (Alquist et al., 2018). Although these studies did not directly investigate the effects of action crisis on effort, they both involve the presence of an inner conflict. While an action crisis encompasses additional aspects, certain parallels can nonetheless be identified. However, this hypothesis hitherto remains untested and is as such speculative.

### **No moderation effect of the impostor phenomenon**

According to the MIT, it was assumed that participants in an action crisis and with high scores in the imposter phenomenon either exert more effort during the subsequent task due to a tendency to overcompensate to avoid failure or exert less effort due to impaired self-esteem (Bernard et al., 2002; Bravata et al., 2020; Brehm & Self, 1989; Rohrmann et al., 2016). Both hypotheses H4a and H4b were rejected, as no significant result was found. In fact, the result of the multiple regression shows that the model itself is not significant. Furthermore, it shows that neither action crisis nor the imposter phenomenon nor their interaction can explain the variance of effort in the letter cancellation task. Therefore, there is no main effect and no moderating effect. According to the CIPS manual, values between 61 and 80 indicate that the individual frequently experiences feelings of imposter phenomenon (Clance, 1985). The mean value of the sample with 65.55 is high (Table 1). The boxplot analysis reveals that the lower quartile extends up to 56, indicating that 75% of the participants achieved a score above this threshold (Table A1). Therefore, most of the sample investigated have moderate experiences with imposter phenomenon whereas more than half

of the sample experiences the imposter phenomenon frequently. Only a small proportion of the sample scored low in the imposter phenomenon which leads to a biased distribution. As high scores for imposter phenomenon are represented broadly in the examined sample, it is not possible to make a definitive assumption about its moderating effect on action crisis due to a lack of participants with a low score of imposter phenomenon.

### **Limitations**

This study was influenced by multiple limitations. The calculated sample size consisted of at least 204 participants, yet the actual sample size was 150 participants. This leads to a decline in the statistical power of the study and an increase in a type II error. Therefore, it is possible that existing effects were not detected by the employed methods. Furthermore, the estimates provided are less precise due to higher standard errors. Finally, the results may be influenced by random fluctuations, introducing potential bias.

Another limitation concerns the use of the measurement instrument ACRISS. The groups were divided by the task to write about an action-crisis and non-action crisis goal. It was expected to see a difference in the ACRISS conducted afterwards. However, it is unclear how individuals are ranked on this scale as no baseline measurement was conducted. Future studies must take this into account and include a baseline ACRISS measurement in the study design.

An additional constraint concerns the study design. The moderating hypothesis H4a assumes that participants in an action crisis and high scores in the imposter phenomenon exert more effort in a task than participants in the non-action crisis condition. In contrast, hypothesis H4b assumes that participants who are experiencing an action crisis and imposter phenomenon simultaneously exert less effort than the non-action crisis group. According to the MIT, the amount of exerted effort it is depending on the difficulty and success importance of a task (Brehm & Self, 1989). In this study, only a low-difficulty task to test the hypothesis was used and therefore, based on the study design it would only be possible to find supporting results for only one hypothesis whereas in a study design with tasks in different difficulties it would be possible to find results supporting both hypotheses.

Given the unsuccessful manipulation check, it remains unclear whether no differences exist between the two groups or if the applied manipulation method was ineffective. Future research should explore alternative approaches to inducing and measuring an action crisis. Implementing various measurement instruments would help determine whether results are consistent with the ACRISS or if modifications to the measurement approach are necessary.

Additionally, alternative manipulation techniques should be considered to more effectively induce an action crisis and ensure the validity of experimental conditions.

### **Conclusion**

The study aimed to induce an action crisis in a laboratory setting and investigate its impact on effort. Although the manipulation was unsuccessful and no significant differences in effort or moderation effects of the impostor phenomenon were found, the results emphasize the difficulty of reliably inducing an inner conflict experimentally. Several possible reasons for the results were discussed. The limited sample size and the use of a potentially insufficiently sensitive measurement instrument may have contributed to the non-significant findings. Future research should apply different manipulations and valid measurements to ensure a better understanding of the effects of action crises on effort, particularly regarding how unresolved goal conflicts may impair persistence and performance in unrelated tasks.

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## Appendix A

### Imposter phenomenon

**Table A1**

*Statistics of the imposter phenomenon*

|                        | <b>N</b> | <b>Median</b> | <b>Lower<br/>IQR</b> | <b>Upper<br/>IQR</b> | <b>Min</b> | <b>Max</b> |
|------------------------|----------|---------------|----------------------|----------------------|------------|------------|
| Imposter<br>Phenomenon | 150      | 65            | 56                   | 75.75                | 29         | 98         |

## Appendix B

### t-tests

**Table B1**

*t-tests results of hypotheses 1-3*

|    | <b>Mean<br/>non-action<br/>crisis</b> | <b>Mean<br/>action<br/>crisis</b> | <b><i>p</i></b> | <b><i>d</i></b> | <b>95% CI</b> |
|----|---------------------------------------|-----------------------------------|-----------------|-----------------|---------------|
| H1 | 2.40                                  | 2.50                              | .836            | -0.16           | [-0.43, Inf]  |
| H2 | -1.74                                 | -2.16                             | .287            | 0.09            | [-0.18, Inf]  |
| H3 | -7.97                                 | -10.64                            | .059            | 0.27            | [-0.01, Inf]  |

*Note.* Dependent variable in H1: ACRISS; dependent variable in H2: Writing Task; dependent variable in H3: Letter Cancellation Taks

## Appendix C

### Regression analysis

**Table C1**

*Regression analysis results of hypothesis 4*

| <b>Predictors</b>                        | <b>Estimates</b>              | <b>std. Error</b> | <b>t-value</b> | <b><i>p</i></b> |
|------------------------------------------|-------------------------------|-------------------|----------------|-----------------|
| Intercept                                | -6.981                        | 5.752             | -1.214         | .227            |
| Action Crisis                            | -7.007                        | 7.963             | -0.880         | .380            |
| Imposter Phenomenon                      | -0.015                        | 0.084             | -0.176         | .861            |
| Imposter Phenomenon<br>- Action Crisis   | 0.067                         | 0.119             | 0.566          | .572            |
| Observations                             | 149                           |                   |                |                 |
| R <sup>2</sup> / R <sup>2</sup> adjusted | .019 / -.001                  |                   |                |                 |
| Residual Std. Error                      | 10.4 (df = 145)               |                   |                |                 |
| F Statistic                              | 0.9581 (df =3; 145), p = .414 |                   |                |                 |

*Note.* Dependent variable in H4: Letter Cancellation Task