Unlocking Personal Power:
Exploring Individual Differences in Self-Regulation through Action versus State Orientation

Karla Waldenmeier

Doctoral Thesis

Submitted to the

University of Trier

Department of Psychology

Supervisors

Prof. Dr. Nicola Baumann

University of Trier, Chair of Differential Psychology

Prof. Dr. Veronika Brandstätter-Morawietz

University of Zürich, Chair of General Psychology (Motivation)

Dissertationsort: Trier

Acknowledgements

This dissertation would not have been possible without the support of the incredible people around me. I am deeply grateful to each and every one of them.

First and foremost, I would like to thank my supervisor, Prof. Dr. Nicola Baumann. Your patience, wisdom, and enduring belief in me have been guiding lights throughout this journey. Thank you for challenging me at just the right moments, for encouraging me, and for always having an open ear. You have not only shaped my academic work, but also deeply influenced my personal development. It is an honor to call you my Doktormutter. Thank you for the countless hours we spent together (online and in person), proofreading articles, analyzing data, responding to reviews, navigating setbacks, and exchanging ideas. Thank you for introducing me to your network, lifting me up when I felt discouraged, and offering life advice when I needed it. I am certain that everything you have taught me - both professionally and personally - will stay with me for life.

I also thank my second supervisor, Prof. Dr. Veronika Brandstätter-Morawietz, for taking the time to support this thesis and for the inspiring conversations we shared during conferences.

My sincere thanks to all my co-authors – Katja Friederichs, Susanne Pöller, Julius Kuhl, Regan Mandryk, Martin Dechant, and again, Nicola Baumann. Your input, perspectives, and motivation made the process both rewarding and fun.

A big thank you as well to the students who supported me in data collection and in discussing the results, namely William Standard.

I also want to thank my colleagues – especially Katja Friederichs, with whom I spent many online hours writing articles (each on our own, yet together). Thank you for your feedback, thoughtful discussions, and for navigating life alongside me. A big thanks to Susanne Pöller as well, who introduced me to the Differential Psychology group and supported me throughout my time there. Your kind-heartedness and support made a big difference. Thank you also for inviting me to join your research in Canada – a time I will never forget. To Niyati Thakur: thank you for the joyful and meaningful times we shared in our office, for working together, celebrating our first publication, exploring ice caves, and for being a wonderful source of support and encouragement.

Finally, I am grateful for my family and friends. Mama, Hans, Leonie, Stella, and Odile: thank you for being the best family I could ask for. Your love, support, and unwavering faith in me

kept me going, and your strength continues to inspire me every day. Life truly is better with sisters. To my amazing friends – Julz², Janina, Janna, Benne, Adrik, Thea, Niro, and all the other people I am lucky to see (more or less) regularly – thank you for lifting me up when I needed it, making me laugh, pushing through CrossFit WODs with me, sharing delicious meals, riding horses, and always believing in me.

Table of Contents

Chapter 1

Introduction

„Just do it“– Nike’s famous slogan embodies a seemingly straightforward approach to life: Just go to the gym. Just write the essay. Just found the company. This famous ad slogan makes life sound very easy. Just. Do. It. But is it really that simple? While from the outside it may appear as a seamless transition from intention to behavior, bridging this gap can often feel like facing an impossible obstacle. The gap between intentions and behavior is a widespread challenge that individuals encounter regularly (Sheeran & Web, 2016). Successfully overcoming this gap can lead to greater well-being, whereas procrastination of implementation can lead to significant psychological stress (Ferrari et al., 1995, Sheldon & Elliot, 1999). Moreover, failing to implement intentions can even contribute to the development and maintenance of mental health issues (Kuhl, 2001; Baumann et al., 2005; Buchmann et al., 2021; Kuhl & Kaschel, 2004).

Contrary to popular belief, the intention-behavior gap is not simply about lacking motivation or time; rather, difficulties in overcoming internal psychological barriers play a key role (Sheeran & Webb, 2016; Kuhl et al., 2021). According to the Rubicon model, a psychological barrier exists between the planning and implementation of intentions, requiring self-motivation to overcome (Heckhausen & Heckhausen, 2006; Achtziger, & Gollwitzer, 2018). However, self-motivation is not simply a 'just-do-it' moment; rather, it can be understood as a self-regulatory ability – an aspect of volitional functioning. Within this ability, individual differences can be observed (Kuhl, 2000, 2001; Kuhl et al., 2021).

In this thesis the ability to self-regulate is conceptualized through the well-known construct of action versus state orientation (Kuhl, 1994; Kuhl & Beckmann, 1994). Action-oriented individuals have a high ability to regulate their affective states, enabling them to effectively bridge the intention-behavior gap even when faced with demands. They show initiative, implement difficult intentions, and can resist temptations better (Kuhl & Beckmann, 1994, Jostmann & Gieselmann, 2014; Birk et al., 2020). State-oriented individuals, on the other hand,

encounter difficulties regulating their affective states themselves, experiencing difficulties in their ability to enact intentions, especially in demanding situations. They are hesitant, ruminate on their intentions instead of implementing them, and are easily distracted by temptations (Kuhl & Beckmann, 1994, Stiensmeier-Pelster & Schürmann, 1994; Stiensmeier-Pelster et al., 1991).

Action versus state orientation is operationalized and measured using the Action Control scale (Kuhl, 1994; Kuhl & Beckmann, 1994, Kuhl, 2001). This scale differentiates between two dimensions of action versus state orientation, each capturing distinct self-regulatory abilities. The first dimension, demand-related action versus state orientation, addresses the ability to self-motivate. Given its central importance to the thesis, this dimension is referred to simply as action versus state orientation throughout the thesis. The second dimension, threat-related action versus state orientation, describes the ability to self-sooth and thereby to manage threats effectively. This dimension is the focus of Chapter 5 and is henceforth referred to as threat-related action versus state orientation whenever it is discussed in isolation. In the General Discussion (Chapter 6), the term action versus state orientation is used to refer to the concept more broadly, including both the demand-related and threat-related dimensions unless otherwise specified. Although these two dimensions differ in their focus, both reflect the ability to self-regulate affective states. Thus, studying one dimension offers insights applicable to the other, as both contribute to understanding individuals' ability to regulate their affective states.

Extensive research has demonstrated the advantages of action orientation across various life domains - including education (Dahling et al., 2015, MacIntyre & Blackie, 2012), work (Diefendorff et al., 2006; Landman et al., 2016), and health (Palfai et al., 2002; Kroese et al., 2014). While these findings provide valuable insights into action versus state orientation, most of the research is primarily focused on highlighting the advantages of action orientation (for overviews see Koole et al., 2023; Kuhl, 2018). As a result, action orientation has come to be seen as the more desirable trait, whereas state orientation is often framed negatively.

This thesis aims to challenge the often one-sided view that favors action orientation over state orientation, by taking a more dynamic perspective. Grounded in Personality Systems Interactions (PSI) theory (Kuhl, 2000, 2001; Kuhl et al., 2021), this work emphasizes the impact of situational factors on the ability to self-regulate. By investigating how action versus state orientation interact with different conditions, it becomes clear that each personality disposition has its own advantages – they simply require different kinds of situations for their potential to become apparent.

By examining individual differences in self-regulation across diverse contexts (i.e., gaming, goal achievement, leadership), populations (i.e., students, leaders), and methods (i.e., experiments, surveys), this thesis provides a more differentiated understanding of action versus state orientation. Ultimately, this thesis seeks to contribute to one of the most fundamental questions in life: What conditions allow individuals to access and harness their inner resources to bridge the gap between intention and behavior? Or, put differently: what is the key to unlocking one's personal power?

The thesis consists of 6 chapters. For an overview see Figure 1.1. As every chapter can be read independently, the thesis possessed a degree of theoretical overlap.

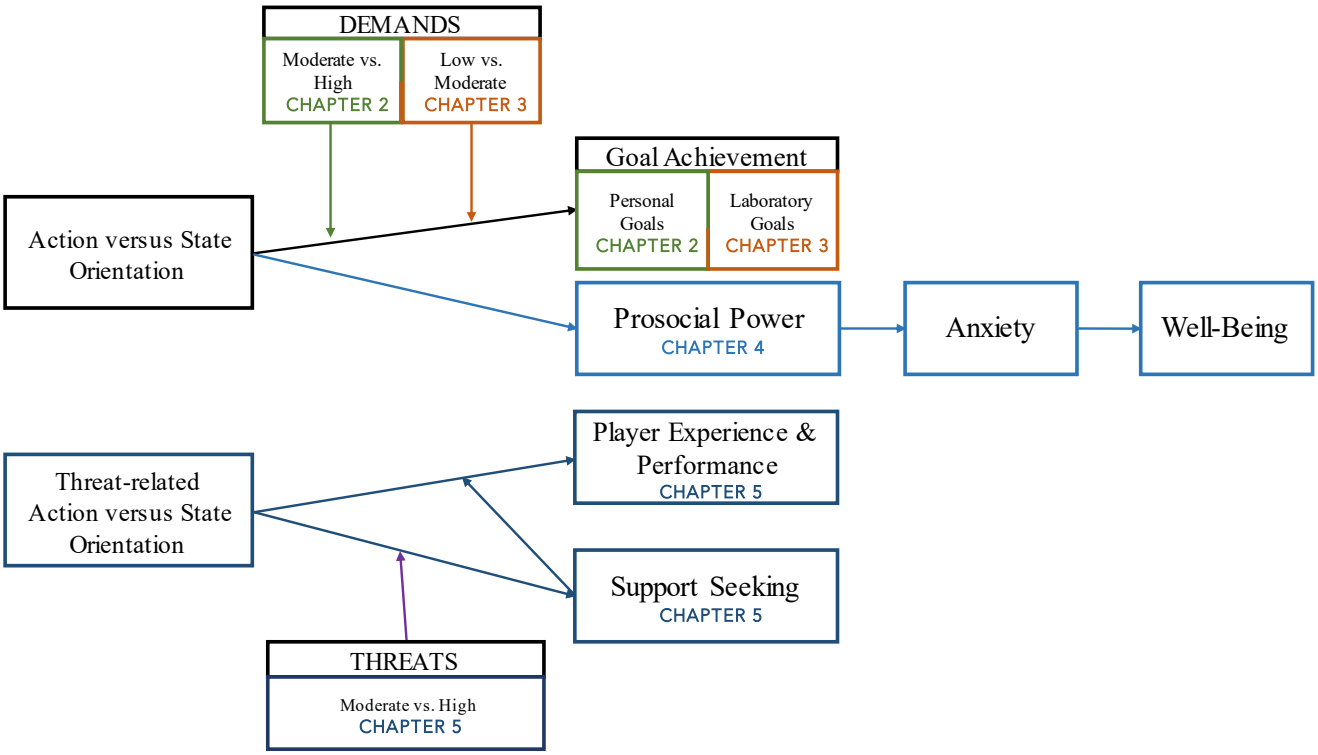

Figure 1.1 Overview of the Present Dissertation

In Chapter 2 one of the most fundamental assumptions of PSI theory is explored: Are action-oriented individuals better able to achieve difficult goals than state-oriented individuals? To address this question, we conducted a longitudinal study, in which participants set six personal goals for the upcoming four weeks. We assessed action versus state orientation and goal difficulty at the beginning of the study, and measured goal achievement after four weeks.

Chapter 3 presents three empirical studies investigating how action- and state-oriented individuals perform under low versus moderate demands. Using two self-regulatory tasks (i.e., Stroop task, Grid task) and two operationalizations of demand (i.e., subjective listlessness, uncompleted intention), we examined how increasing demands affect self-regulatory performance in action versus state orientation. Building on and slightly adapting the design and procedure of previous research (i.e., Jostmann & Koole, 2007; Kazén et al., 2008), we test the idea of an 'unlocking effect' - the hypothesis that action-oriented individuals may need a certain level of demand to activate their self-regulatory potential. We thus expected a reversal in the pattern of action versus state orientation, with action-oriented individuals benefiting from increasing demands.

Chapter 4 takes an integrative approach of self-regulation. Drawing on PSI theory, the advantage of action orientation is due to their engagement of internal resources, termed 'the self' (Koole & Jostmann, 2004; Kuhl et al., 2021). Therefore, action-oriented individuals should enact their power motive in a prosocial way - representing an intrinsic enactment reliant on the self - rather than in a dominant way. This hypothesis was tested in a leadership sample, with additional investigation of the effect of the enactment motive on well-being and anxiety.

Chapter 5 introduces a broader picture of self-regulation by focusing on the threat-related action versus state orientation. While previous research indicates that state-oriented individuals benefit from external support (Kadzikowska-Wrzosek, 2013; Baumann & Kuhl, 2005; Kazén et al., 2008; Koole et al., 2012), it remains unclear whether they actively seek external help when it's available. To examine this, participants played a computer game presenting a threatening scenario, with support offered to overcome this situation. We expected state-oriented individuals to actively take more external support than their action-oriented counterparts, given their reduced ability to regulate affect by themselves.

Chapter 6 provides a comprehensive discussion of the main findings of this thesis and gives a brief outlook on future research.

Chapter 2

Who Climbs Mount Everest? Individual Differences in Achieving Difficult Goals

Waldenmeier, K., & Baumann, N., 2025

Published in *Motivation and Emotion*, *49*, 138–149

https://doi.org/10.1007/s11031-024-10106-w

Abstract

Who are the people that manage to achieve even their most difficult goals? According to Personality Systems Interactions (PSI) theory (Kuhl, 2000, 2001; Kuhl et. al., 2021), they are action-oriented individuals, who – contrary to state-oriented individuals – excel in self-regulation, effectively translating intentions into action. To investigate differences in goal achievement of action-state orientation, our study considered a theoretically important combination of constraints that has not been examined so far. In a longitudinal study ($N = 199$), we assessed participants' self-generated goals for the upcoming weeks as well as the difficulty of these goals. After four weeks, we measured the achievement of these goals. We analyzed data using multi-level methods. Consistent with expectations, action versus state orientation moderated the relationship between goal difficulty and achievement, with action-oriented individuals achieving more difficult goals than state-oriented individuals. Our findings provide empirical support for a central theoretical assumption regarding goal achievement in action-state orientation.

Keywords: action versus state orientation; goal achievement; goal difficulty; goal pursuit; individual differences in self-motivation

Introduction

Not everybody wants to climb Mount Everest, but all of us want to achieve some kind of difficult goal. Which goal is difficult varies greatly from person to person: for some it is difficult to eat healthier or be more social, for others it may be difficult to get out of bed in the morning. What difficult goals have in common, however, is the fact that many individuals struggle with the actual implementation of these goals despite their best intentions. The lively research on this topic, notably the intention behavior gap (Sheeran & Webb, 2016), shows the interest in identifying the critical factors that really matter when one is trying to achieve a goal. Whereas everyone has experienced obstacles such as lack of motivation, time or commitment that hinder goal achievement, there are also differences in the success rates between individuals: Even when motivation, time, and commitment are high, some individuals seem to effortlessly and consistently achieve their goals, whereas others seem to be caught in an endless cycle of procrastination.

According to Personality Systems Interactions (PSI) theory (Kuhl, 2000, 2001; Kuhl et al., 2021), the decisive factor determining one's struggle in achieving difficult goals is the personality disposition of action-state orientation. Those with higher ability to self-regulate their own affective states – defined as action-oriented individuals – can initiate and implement actions effectively under demands and therefore achieve difficult goals. State-oriented individuals, on the other hand, struggle to initiate and implement intended actions under demands due to their lower ability to self-regulate their affective states, leading to difficulties in achieving challenging goals.

The advantage of action- over state-oriented individuals in goal achievement is a central assumption of PSI theory. This assumption is investigated through three important aspects: (a) self-generated goals, (b) goal difficulty, and (c) achievement of goal implementation as a measure for effective goal pursuit. However, the combination of these theoretically important constraints has not been sufficiently accounted for in previous studies, as only specific elements of these constraints have been examined, but not the combination. To address this gap, we created a longitudinal study, which investigates differences between action- and state-oriented individuals in goal achievement, where participants self-generated their goals and rated the difficulty of these goals. We expected action-oriented individuals to achieve more self-generated difficult goals than state-oriented individuals.

What Does It Take to Achieve Difficult Goals?

Whether a goal is difficult for someone or not, depends on the amount of self-regulation that is needed to implement it. While most of us would consider calling a sibling an easy goal, it can be a difficult goal for someone who just had a huge fight with them. Conversely, running a marathon is generally seen as a difficult goal, but for someone who runs marathons regularly it might not be. Easy goals can often be accomplished without extensive planning and scheduling. However, as goals become more difficult, they require careful planning of the best way to achieve them. According to PSI-theory (Kuhl, 2000, 2001; Kuhl et. al., 2021), two cognitive systems are involved in this process: intention memory and intuitive behavior control. *Intention memory* is activated when individuals face difficulties. It aids in the formulation and maintenance of goals, as well as planning concrete action steps (Goschke & Kuhl, 1993; Kazén & Kuhl, 2005; Kuhl & Kazén, 1999; Kuhl & Quirin, 2011). However, successful goal achievement also involves the actual implementation of plans. This is where *intuitive behavior control* becomes relevant. Intuitive behavior control executes the implementation of the goal, relying on pre-programmed action routines as well as spontaneous, flexible patterns. Thus, intention memory and intuitive behavior control need to collaborate to smoothly translate goals into action (Baumann & Scheffer, 2010; Friederichs et al., 2022).

Yet, according to PSI-theory (Kuhl, 2000, 2001; Kuhl et. al., 2021), the two systems are antagonistically related, with intention memory inhibiting intuitive behavior control. Low positive affect (e.g., frustration due to difficulty) activates intention memory and inhibits intuitive behavior control. This inhibition allows individuals to thoroughly plan and reconsider their actions before implementation. However, for successful goal achievement the transition from intention memory to intuitive behavior control is necessary. This transition is facilitated through positive affect, which signals that difficulty has been solved and the right moment has come to enact the action steps (Kazén & Kuhl, 2005; Kuhl, 2000). Positive affect can either be generated by others (external regulation) or by oneself (self-regulation). Self-regulation therefore describes to ability to flexibly switch between systems through the up-regulation of positive affect. Essentially, effective goal achievement involves the ability to self-regulate, that is, to up-regulate positive affect in order to switch from thinking and planning to action. The construct of action versus state orientation describes dispositional differences in this self-regulatory ability.

Action versus State Orientation

The difference between action and state orientation lies in their ability to self-regulate, that is, to self-generate positive affect. Action-oriented individuals possess good self-regulatory abilities, effectively translating their intentions into action. In contrast, state-oriented individuals struggle with self-generating positive affect, often experiencing hesitation and procrastination (Blunt & Pychyl, 1998, 2005). These differences mainly appear under demands that activate intention memory, such as task difficulty (Jostmann & Koole, 2007, Study 2), prospective memory load (Kaschel et al., 2017; Kazén et al., 2008, Study 2), or visualization of a demanding person (Koole & Jostmann, 2004, Study 3). Under demands, positive affect becomes crucial in overcoming the inhibition of intuitive behavior control (Friederichs et al., 2022; Jostmann & Koole, 2007; Koole & Jostmann, 2004), enabling the translation of difficult goals into action. Hence, action-oriented individuals are expected to be more successful in goal achievement.

Numerous empirical studies have explored the relationship between action-state orientation and goal achievement. Many of these investigations have been conducted within controlled laboratory settings, where participants are assigned specific goals, such as “respond to the color instead of the word” (Friederichs et al., 2020, 2022) or “always choose the closer target” (Dibbelt, 1997; Kazén et al., 2008; Waldenmeier et al., 2023). Notable findings include Dibbelt’s (1997) investigation, revealing that under demanding conditions action- compared to state-oriented individuals excel in self-initiating task switching. Similarly, Friederichs et al. (2020) reported that action- compared to state-oriented individuals exhibit lower Stroop interference after being primed with high difficulty goals.

While these laboratory studies provide valuable insights, it is essential to extend research to real-life settings, particularly in the context of goal achievement. Real-life studies highlight the association between action orientation and low levels of procrastination (Blunt & Pychyl, 1998, 2005; Bossong, 1994, Chowdhury & Pychyl, 2018), improved academic performance (Dahling et al., 2015; Khany & Amiri, 2018), and successful outcomes in the enactment of goals in various domains such as job search behavior (Song et al., 2006; van Dijke et al., 2015), walking behavior (Friederichs et al., 2013), and eating behavior (Fuhrmann & Kuhl, 1998; Hennecke & Freund, 2016; Schifter & Ajzen, 1985). Taken together, many empirical studies investigated the relationship between action-state orientation and goal achievement (for a comprehensive overview, see Koole, Jostmann & Baumann, 2023).

Unlocking the Key Factors of Action-State Orientation in Goal Achievement

Despite the abundance of empirical studies investigating the relationship between action-state orientation and goal achievement (see Koole et al., 2023), our review of previous research revealed three critical factors which have not been sufficiently and conjointly accounted for. First, state-oriented individuals profit from external regulation such as anticipating a supportive person (Koole & Jostmann, 2004), being externally prompted to take action (Dibbelt, 1997; Kazén et al., 2008), or receiving externally controlling instructions (Baumann & Kuhl, 2005). According to PSI-theory, the enactment advantage of action-oriented individuals should be most pronounced for actions that are self-chosen, motivationally congruent, and self-initiated (Koole et al., 2023, p. 330-331) Therefore, when investigating differences in action-state orientation in goal achievement, participants should independently generate personal goals without intermittent check-ups. This is vital to avoid differences in motivation and external regulation. In previous studies, goal setting was often realized through participants having to choose goals from a provided list (Fuhrmann & Kuhl, 1998), or ranking the importance of predefined goals (Schifter & Ajzen, 1985; Volet, 1997). Other studies have featured participants receiving a predefined plan for goal achievement or frequent assessments of goal progress (Hennecke & Freud, 2016). These approaches might inadvertently function as external regulation benefiting state-oriented individuals, as some of these authors have noted themselves in their discussion.

Second, demanding conditions are an important moderator when investigating differences in action-state orientation as self-regulation (up-regulation of positive affect) is necessary specifically when intention memory is activated. Under less demanding conditions, individual differences disappear and state-oriented individuals reach equivalent or even higher performance levels compared to action-oriented individuals (Koole et al., 2012; Waldenmeier et al., 2023). Therefore, the assessment of demanding conditions such as the difficulty of the goal is essential. Previous studies often don’t assess any kind of demands (e.g., Song et al., 2006; Friederichs et al., 2013; Schifter & Ajzen, 1985).

Third, the focus should be on the achievement (i.e., the implementation) of goals rather than other dependent variables. Some studies emphasized effort, performance (e.g., grades) (Jaramillo & Spector, 2004; Khany & Amiri, 2018; MacIntyre & Blackie, 2012), or strategies employed to achieve the goal (Hryniewicz & Borchet, 2019). While all of these are interesting dependent variables, according to PSI theory, action-state orientation should manifest in the

implementation of set goals, which hinge on self-regulation rather than intelligence or motivation.

The Present Study

When empirically investigating the central assumption of PSI theory, that action- versus state-oriented individuals differ in the achievement of difficult goals, three constraints must be considered conjointly: (a) goals have to be self-generated, (b) some kind of demand has to be assessed, and (c) the achievement of goal implementation has to be used as a measure for effective goal pursuit. Previous studies have examined only specific elements of these constraints, but not the combination, potentially explaining why some did not find the theoretically expected relationship between action orientation and goal achievement (e.g., Hennecke & Freund, 2016; Norman et al., 2003; Zhang et al., 2013). To our knowledge, there is no longitudinal study addressing the joint influence of action-state orientation, demands, and achievement of personal goals in real-life settings. Therefore, we designed a study incorporating just that. For this, participants independently generated six personal goals for the upcoming four weeks, while also indicating the difficulty of these goals. After this period, we measured goal achievement. We hypothesized that action-oriented individuals compared to state-oriented individuals are more likely to achieve goals, but only when goals are difficult. Within easy goals, we did not expect individual differences.

Method

Sample and Procedure

A total of 222 participants voluntarily engaged in two successive online surveys conducted four weeks apart. While 285 individuals participated in the first wave, 63 were excluded as they did not partake in the second wave. On the first wave, participants completed surveys that included, among other questionnaires, dispositional action-state orientation. Then, participants set a goal for the upcoming weeks (“What goal do you want to achieve in the upcoming days or weeks?”) and answered questions about the difficulty of this goal. This procedure was repeated for a total of six goals. After four weeks, participants were emailed an invitation to complete the second part of the study within a two-week window. The second wave gathered information about goal achievement, along with certain characteristics associated with the goal achievement process. Upon completion of both measurement points, students received course credits.

A total of 23 participants were excluded from all statistical analyses. One participant (2 data points) was excluded due to duplicate participation and six participants for reporting duplicate goals. Additionally, we excluded outliers on the item "The implementation of my goal was difficult" (averaged across all 6 goals) at T2. Specifically, we excluded 13 participants with floor effects (scores ≤ 1.5 on the scale from 1 to 4) and three participants with ceiling effects (scores ≥ 3.5) as we need within-person variance in goal difficulty during actual goal pursuit to test the interaction hypotheses.

The final sample of N = 199 participants included 170 females (85.43%), 29 males (14.57%) and 0 individuals identifying as diverse, with an average age of 22.41 (SD = 4.97; range 18 to 62 years). The sample consisted of 186 students and 13 participants in employment.

Measures

Action versus State Orientation at T1. To measure action versus state orientation, we used the Action Control Scale (ACS, Kuhl, 1994). It distinguishes between failure- and demand-related action versus state orientation. The focus of our study was on the demand-related scale (12 items, Cronbach's α=.79). The questionnaire presents participants with 12 different demanding situations and participants must chose an either action- or state-oriented response, selecting the one that applies best to them. An example item is: "When I am ready to tackle a difficult problem:" with the action-oriented answer being "I look for a way that the problem can be approached in a suitable manner" and the state-oriented answer being "It feels like I am facing a big mountain that I don't think I can climb". The action-oriented responses are summed, resulting in a scale ranging from 0-12. Higher scores indicate a stronger action orientation, while lower scores indicate a greater state orientation. The ACS has demonstrated satisfactory reliability and adequate construct validity (Baumann et al., 2018; Dieffendorf et al., 2000; Kuhl & Beckmann, 1994). After the Action Control Scale, we assessed two additional questionnaires (see Appendix).

Goal Difficulty at T1. Goal difficulty was assessed with a set of 7 items separately for each goal (Cronbach's α ranged from .61-.71; M = .68). Participants were asked to rate the extent to which each statement applied to their goal on a Likert scale from 1 (*"not at all"*) to 4 *("= very much"*). An example item is: "I think that I will have difficulties implementing my goal". The remaining 6 items pertained to various categories, each with one item, covering the aspects lack of knowledge regarding the approach of goal achievement, ongoing parallel activities, unwillingness, worries, obstacles and one reverse-coded item: "I consider it very likely to

implement my goal" (see Appendix). Afterwards, we assessed two additional items (see Appendix).

Goal Achievement at T2. Goal achievement was assessed with the following item "I successfully implemented my goal" on a scale from 1 (*"not at all"*) to 4 (*"very much*). Afterwards, we assessed further characteristics of goal achievement with 16 items (see Appendix) as well as demographic variables.

Analytical Strategy

Data collection led to a two-level model with 1194 occasions at Level 1 (within-person) and 199 participants at Level 2 (between-person). Our hypothesis focused on exploring the interaction effect between goal difficulty on Level 1 and action state orientation on Level 2 on goal achievement. Given the nested structure of our data, we tested multilevel modeling using the statistical software R-Studio (version 4.1.2) primarily using the package "lme4" (Bates et. al., 2015). Prior to data analysis, the Level 1 variable (goal difficulty) was person-mean centered, and the Level 2 variable (action orientation) was grand-mean centered to facilitate the interpretation of main and conditional effects (Enders & Tofighi, 2007). To construct and refine the tested multilevel model, we followed the recommended steps outlined by Aguinis, Gottfredson and Culpepper (2013).

To establish a baseline, we first ran an intercept-only model (Model 0), that indicated the amount of variance in goal achievement that was explained by individual differences. To represent the proportion of variance that lies between individuals, we calculated the Intraclass Correlation Coefficient (ICC). We then continued to test a sequence of two-level models predicting goal achievement. In Model 1, we tested a random intercept and fixed slope model, aiming to understand the factors influencing goal achievement. Model 2 incorporated a random slope for goal difficulty. Finally, we conducted Model 3 to assess the interaction between goal difficulty and action-state orientation on goal achievement.

To examine model fit, nested model testing was performed by evaluating differences in deviances using the Likelihood-Ratio-Test. The marginal R-squared (R^2m) and conditional *R*-squared (R^2c) were calculated to assess the explanatory power of the models (Data and R-Script are available at https://osf.io/kwmh6/?view_only=2163962de04c4e09abade2f6f51a199d).

We used G*Power (Faul et al., 2007) to determine the sample size needed to detect a small action orientation x goal difficulty interaction effect (f = .14) with a power of 0.90 and $\alpha = 0.05$

(ANOVA: repeated measures within-between interaction). The findings indicated that a minimum of 180 participants were required for the study. The statistical software IBM SPSS statistics (version 26) was used to test descriptive analysis, Pearson correlations and Cronbach's alpha.

Results

Descriptive Statistics

Table 2.1 presents descriptive statistics as well as correlations between study variables. Gender and age correlated, with males tending to be older than females. Action-state orientation correlated negatively with goal difficulty and positively with goal achievement. Goal difficulty correlated negatively with goal achievement.

Table 2.1. *Means, Standard Deviations and Correlations among Study Variables (N = 199)*

Variables	M	SD	(2)	(3)	(4)	(5)
(1) Gender 0=female 1=male			.19**	-.03	-.05	-.04
(2) Age	22.41	4.97		-.02	-.10	-.11
(3) Action-State Orientation	5.86	3.26			-.23**	.29**
(4) Goal Difficulty	2.10	0.33				-.36**
(5) Goal Achievement	2.76	0.48				

Note. ** $p < 0.01$; goal difficulty and goal achievement were averaged across the 6 goals.

Multilevel Model Analyses

Table 2.2 displays the results of the multilevel model analyses. Model 0 revealed significant differences between individuals in goal achievement with an ICC of 0.032. Therefore, 3.27% of the total variance in goal achievement can be explained by differences between individuals.

Model 1: Random effects analyses revealed significant individual differences in baseline goal achievement (*Est* = .04, *SD* = 0.21), indicating that individuals varied in their starting points. The fixed effects show a significant negative effect of goal difficulty, with higher levels of goal difficulty predicting lower goal achievement (*Est* = -0.86, *SE* = 0.07, $p < .001$) and a significant positive effect of action-state orientation, with action-oriented individuals predicting higher goal achievement (*Est* = 0.04, *SE* = 0.01, $p < .001$). Approximately 12.82% of the variance in

goal achievement is explained by goal difficulty and action-state orientation (R^2m = 0.1282). When considering both fixed and random effects, 16.64% of the variance in goal achievement is captured by the model (R^2c = 0.1664).

Model 2: Model 2 didn't reveal significant improvements when including a random slope for goal difficulty compared to Model 1 (with only a random intercept). The model encountered singularity issues and as there was no improvement in model fit, we decided to proceed in Model 3 with only a random intercept.

Model 3: The inclusion of the interaction term resulted in a significant reduction in deviance, indicating better model fit (compared to Model 1). The main effect of action-state orientation was significant (*Est* = .04, *SD* = .01, $p < 0.001$), suggesting that the more action-oriented individuals are, the higher the achievement of goals. The main effect of goal difficulty was significant as well (*Est* = -.86, *SD* = .07, $p < 0.001$), indicating that as goal difficulty increases, goal achievement decreases. Finally, the interaction term was significant (*Est* = .04, *SD* = .02, $p = .038$), confirming that the relationship between action-state orientation and goal achievement depends on the level of goal difficulty. Action-state orientation and goal difficulty explained 13.12% of the variance in goal achievement (R^2m = 0.1312). When considering both fixed and random effects, 17% of the variance in goal achievement was captured by the model (R^2c = 0.17).

Figure 2.1 graphically represents the interaction term between action orientation and goal difficulty. Action orientation is represented by continuous scores from 0 (i.e., low action orientation = state orientation) to 12 (i.e., high action orientation). Goal difficulty is represented by two levels: low difficulty (*M* -1 *SD*) and high difficulty (*M* +1 *SD*). Consistent with our hypothesis, action orientation was a significantly stronger predictor of goal achievement for high difficulty goals compared to low difficulty goals. This indicates that action-oriented individuals are better able to achieve difficult goals compared to state-oriented individuals.

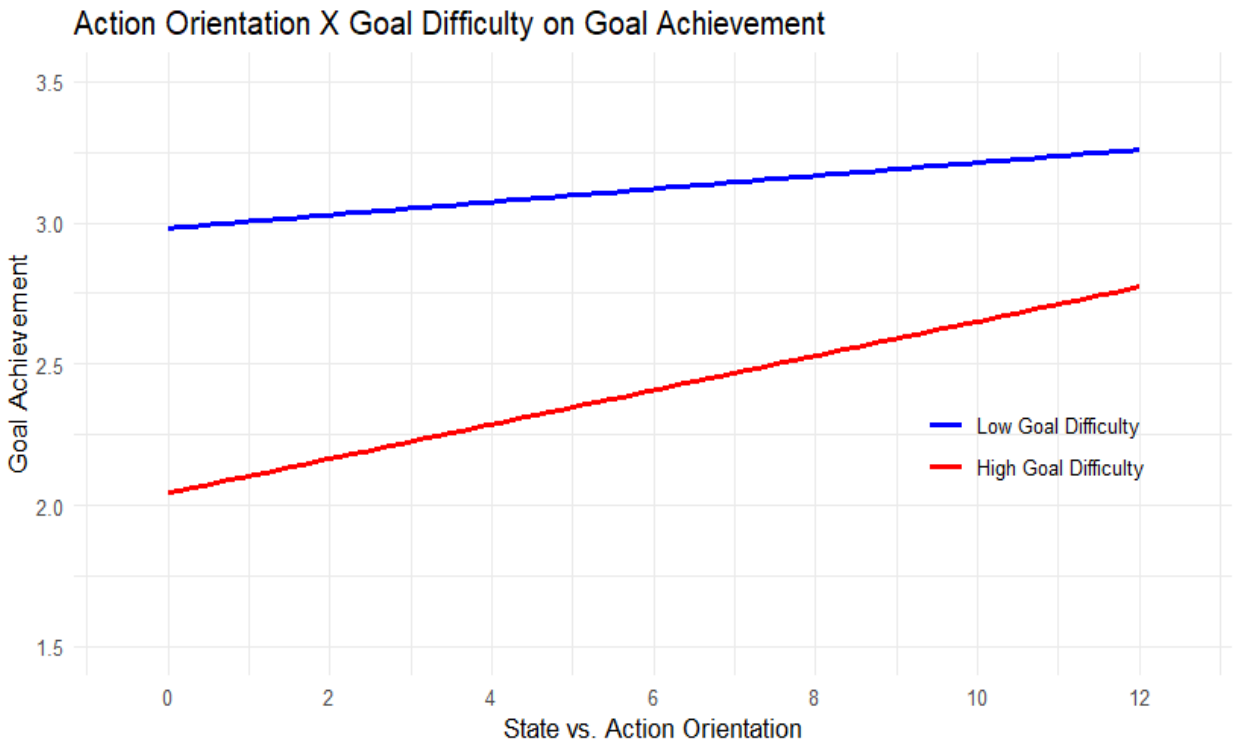

Figure 2.1. The interaction effect between action orientation (i.e., state vs. action orientation) and goal difficulty (i.e., low difficulty *M* -1 *SD* vs. high difficulty *M* + 1 *SD*) on goal achievement (*N* = 199).

Table 2.2. *Summary of Multilevel Modelling Predicting Goal Achievement*

Effects	Model 0			Model 1			Model 2[a]			Model 3[b]		
	Est	**SE**	**CI 95%**	**Est**	**SE**	**CI 95%**	**Est**	**SE**	**CI 95%**	**Est**	**SE**	**CI 95%**
Fixed effects												
Intercept	2.76	.034***	(2.69, 2.83)	2.76	.03***	(2.7, 2.82)	2.76	.03***	(2.7, 2.82)	2.76	.03***	(2.7, 2.82)
ActionOrientation				.04	.01***	(.02, .06)	.04	.01***	(.02, .06)	.04	.01***	(.02, .06)
Goal Difficulty				-.86	.07***	(-.1, -.73)	-.86	.07***	(-1,-.73)	-.86	.07***	(-1, -.72)
Act * Dif										.04	.02*	(.00, .09)
Random effects												
Level 2												
Intercept	.04	.20	(0, 0.30)	.04	.21	(.07, .3)	.04	.21	NA[a]	.05	.21	(.08, .31)
Goal difficulty slope							0	0	NA[a]			
Level 1												
(σ^2)	1.13	1.06	(1.02, 1.11)	.97	.99	(.94, 1.03)	.97	.99	NA[a]	.97	.99	(.94, 1.03)
Model fit												
-2*loglikelihood	3572.53			3401.5			3401.5			3397.2		
AIC				3411.5			3415.5			3409.2		
BIC				3436.9			3451.1			3439.7		
Diff-2*loglikelihood				171.04***			.002			4.29*		

Notes: *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$; CI = confidence interval; NA = not available

[a] singularity issues// [b] parameters stayed the same when including a random slope, but singularity issues remained

Discussion

A central assumption of PSI-theory (Kuhl, 2000, 2001; Kuhl et. al., 2021) is that action-oriented individuals (i.e., those with higher self-regulatory abilities) are more likely to achieve difficult goals than state-oriented individuals (i.e., those with lower self-regulatory abilities). Many studies have investigated the relationship between action-state orientation and goal achievement (for an overview, see Koole et al., 2023). However, previous research has not adequately addressed the combination of three theoretically important constraints and only examined specific elements of these constraints. Therefore, our present research addresses this gap by incorporating (a) self-generated goals, (b) goal difficulty, and (c) the achievement of goal implementation. The findings support our hypothesis, affirming that action-oriented individuals are more likely to achieve difficult goals than state-oriented individuals. Our empirical evidence therefore provides support for a core premise of PSI-theory (Kuhl, 2000, 2001; Kuhl et. al., 2021).

Action-Oriented Individuals Are Better at Achieving Difficult Goals

Our key finding is that action- compared to state-oriented individuals were more likely to achieve self-generated, difficult goals. According to PSI theory (Kuhl, 2000, 2001; Kuhl et. al., 2021), action-oriented individuals are better able to up-regulate positive affect, facilitating the transition from intention memory to intuitive behavior control – an important step for implementing intentions into action. Therefore action-oriented compared to state-oriented individuals are proposed to be more likely to achieve difficult goals. Previous research supports that by showing that action-oriented individuals exhibit lower procrastination (Chowdhury & Pychyl, 2018; Blunt & Pychyl, 1998, 2005; Bossong, 1994) and are more effective at implementing their goals both under laboratory conditions (Dibbelt, 1997; Friederichs et al., 2000; Kazen et al., 2008) and in real life (Friederichs et al., 2022; Fuhrmann & Kuhl, 1998; Son et al., 2006; van Dijke et al., 2015). Our present findings align with previous findings and contribute further insights, which will be discussed in the following.

An important moderator in the relationship between action-state orientation and goal achievement are demands, as differences between action- and state-oriented individuals mainly appear when intention memory is activated (Koole et al., 2023; Kuhl, 2001). Our study corroborates this, revealing effects only with difficult goals, not with easy goals. That means, the advantage of action-oriented individuals becomes apparent only under demands (e.g., goal difficulty). Even though many prior studies didn’t assess any kind of demands, they still

obtained effects of action-state orientation on goal achievement (e.g., Friederichs et al., 2013; Schifter & Ajzen, 1985; Song et al., 2006). These results may nevertheless have been found because real-life contexts inherently involve various demands to which individuals are exposed on a daily basis, that are challenging to control for. This ranges from headlines about war and financial problems to a fight with your partner. The complexity of real-life demands may have also impacted our study, contributing to the observed small interaction effect.

Another factor that may have contributed to our small interaction effect is the inherent variability in external regulation, which state-oriented individuals can profit from (Baumann & Kuhl, 2005; Kazén et al., 2008; Koole & Jostmann, 2004). In comparison to previous studies (Hennecke & Freud, 2016; Schifter & Ajzen, 1985; Volet, 1997), we tried to minimize the level of external regulation by allowing participants to self-generate their goals, additionally emphasizing motivational congruence. However, some participants focused on goals with external deadlines (“prepare for the exam”, “write essay”), introducing an element of external regulation. Despite this, our study revealed a significant effect of action-state orientation on goal achievement, which is contrary to some studies with pre-set goals (e.g., Hennecke & Freud, 2016). Thus, our results underscore the importance of self-generated goals when investigating the advantage of action-oriented individuals in goal achievement.

While previous studies occasionally failed to find an effect of action-state orientation on goal achievement (e.g., Hennecke & Freund, 2016; Norman et al., 2003; Zhang et al., 2013), differential effects were identified on related variables. For instance, Dahling et al. (2015) found that action orientation correlates with course grades and successful study behavior, while another study highlights the different strategies action- and state-oriented individuals use to achieve their goals (Hryniewicz & Borchet, 2019). Consideration of these various dependent variables enriches our understanding of action-state orientation. However, PSI-theory (Kuhl, 2000, 2001; Kuhl et. al., 2021) posits that the primary difference between action-state orientation lies in volitional abilities rather than cognitive or motivational abilities and manifests in the actual implementation of goal-directed actions. This is supported by the distinction of action-state orientation from other constructs like general cognitive ability (Diefendorff et al., 2000), goal orientation (Diefendorff, 2004), achievement motivation (Heckhausen & Strang, 1998), and self-efficacy (Wolf et al., 2018) (for an overview see Koole et al., 2023). Therefore, investigating goal achievement as a dependent variable, in combination with goal difficulty and self-generated goals, was necessary to provide empirical evidence for a central assumption of PSI-theory.

While our findings align with some of the literature, they contradict others. For example, studies by Locke and Latham (2002, 2019) show that higher difficulty results in better performance. This doesn't align with our findings, which show a negative main effect of goal difficulty on goal achievement. However, as Thorne et al. (2023) point out, this effect often doesn't transfer to studies on personal goals. This may be due to the fact that the positive difficulty-performance link has often been found in contexts in which the initiation of goals is externally controlled (e.g., list 8 vs. 16 uses for an object in three minutes; Lee & Bobko, 1992). A major difficulty of personal goals is that they require self-initiation, which reveals the self-regulatory deficits of state-oriented individuals and contributes to the negative difficulty-achievement link. Therefore, our research offers a possible explanation for this paradox by introducing action-state orientation.

So, who climbs Mount Everest? According to our research it depends on two factors. First, is climbing the Mount Everest an easy or a difficult goal for someone? If it is considered easy, there shouldn't be a huge difference between individuals. However, if it is considered difficult, action-oriented individuals are more likely to achieve the goal than state-oriented individuals. This is due to their higher self-regulatory abilities, which are crucial when attempting to achieve a difficult goal – whether that is climbing the Mount Everest or calling a sibling, you just had a huge fight with.

Limitations and Future Directions

There are some limitations to our study that should be considered when interpreting the findings. First, our study is strongly reliant on self-report as participants rated their level of action-state orientation, goal achievement, and goal difficulty. One could argue that action-oriented individuals might be better at achieving difficult goals because they perceive their goals as less difficult or set themselves less difficult goals. Indeed, action orientation correlated negatively with goal difficulty in our study. However, studies experimentally manipulating goal difficulty show the same advantage of action orientation in goal achievement (Dibbelt, 1997; Kazen et al., 2008; Waldenmeier et al., 2023). These findings show that the differences in mastering difficulty between action- and state-oriented individuals are robust and go beyond mere distortions of self-assessment. Furthermore, previous research indicates that action- and state-oriented individuals do not differ in affect sensitivity (ease of entering affective states) but rather in affect regulation (ease of leaving affective states) (Baumann et al., 2007). This shows that they are initially equally sensitive to affect, but differ in their ability to effectively regulate

these affective states. Taken together, given that action-oriented individuals are better able to implement difficult goals, it makes sense that they also perceive their goals as easier to achieve.

Another limitation is that we did not assess changes in motivation. While participants set six goals for the next four weeks, we only evaluated goal achievement after this period, not whether participants still *wanted* to achieve those goals. During goal pursuit, individuals may come to realize that a goal no longer aligns with their desires, leading them to discontinue its pursuit. Failing to achieve this goal, in such cases, would not reflect a lack of self-regulatory ability, but rather indicate a shift in motivation. However, we did not expect state-oriented individuals to lose more motivation in goal pursuit, as differences in action-state orientation stem from volitional and not motivational factors (Kuhl, 1983, 2000, 2001; Kuhl et al., 2021). Additionally, action-oriented individuals tend to navigate action crises ("intra-psychic decisional conflict between further goal pursuit and disengagement from the goal") more easily (Herrmann & Brandstätter, 2013), making it easier for them to disengage from a goal. In line with this limitation, we also did not capture the timeframe in which participants achieved their goals in this study. It would be interesting to investigate the influence of this factor in future studies.

Finally, we expected action- and state-oriented individuals to differ in goal achievement due to their differences in the ability to up-regulate positive affect (Kuhl, 2000, 2001; Kuhl et. al., 2021). However, we did not assess this mediator and therefore do not know *how* participants eventually achieved their goals. Nevertheless, there are many findings consistently showing that action-oriented individuals are better at up-regulating positive affect (Brunstein, 2001; Koole et al., 2012; Koole & Jostmann, 2004), while positive affect in turn facilitates the implementation of difficult intentions (Isen, 2001; Kuhl & Kazén, 1999; Kazén & Kuhl, 2005). However, future research employing experience sampling, momentary assessment, or diary studies to evaluate positive affect as a mediator could provide a more detailed understanding of how participants achieve their goal.

Conclusion

Our research provides empirical evidence for a central assumption of PSI-theory (Kuhl, 2000, 2001; Kuhl et. al., 2021), showing that action-oriented individuals are more likely to achieve difficult goals than state-oriented individuals. Our study is the first to consider the combination of three theoretically important key factors – self-generated goal setting, assessment of goal difficulty, and measurement of goal achievement – underscoring their combined importance

when investigating differences in action-state orientation on goal achievement. Overall, our study highlights, that dispositional differences in action-state orientation (i.e., the ability to up-regulate positive affect) play a significant role in the eventual achievement of goals, especially when goals are difficult, like doing something challenging you've never done before - as climbing Mount Everest would be for most of us.

References of Chapter 2

Aguinis, H., Gottfredson, R. K., & Culpepper, S. A. (2013). Best-practice recommendations for estimating cross-level interaction effects using multilevel modeling. *Journal of Management*, *39*(6), 1490-1528. https://doi.org/10.1177/0149206313478188

Baumann, N., Kaschel, R., & Kuhl, J. (2007). Affect sensitivity and affect regulation in dealing with positive and negative affect. *Journal of Research in Personality, 41*(1), 239–248. https://doi.org/10.1016/j.jrp.2006.05.002

Baumann, N., Kazén, M., Quirin, M., & Koole, S. L. (Eds.). (2018). *Why people do the things they do. Building on Julius Kuhl's contributions to the psychology of motivation and volition*. Göttingen, Germany: Hogrefe.

Baumann, N., & Kuhl, J. (2005). How to resist temptation: The effects of external control versus autonomy support on self-regulatory dynamics. *Journal of Personality, 73,* 443-470. https://doi.org/10.1111/j.1467-6494.2005.00315.x

Baumann, N., & Scheffer, D. (2010). Seeing and mastering difficulty: The role of affective change in achievement flow. *Cognition and Emotion, 24,* 1304-1328. https://doi.org/10.1080/02699930903319911

Bates, D., Mächler, M., Bolker, B., & Walker, S. (2015). Fitting Linear Mixed-Effects Models Using lme4. *Journal of Statistical Software*, *67*(1), 1–48. https://doi.org/10.18637/jss.v067.i01

Blunt, A., & Pychyl, T. A. (1998). Volitional action and inaction in the lives of undergraduate students: State orientation, boredom, and procrastination. *Personality and Individual Differences, 248,* 837–846. https://doi.org/10.1016/S0191-8869(98)00018-X

Blunt, A., & Pychyl, T.A. (2005). Project systems of procrastinators: A personal project-analytic and action control perspective. *Personality and Individual Differences, 38,* 1771-1780. https://doi.org/10.1016/j.paid.2004.11.019

Bossong, B. (1994). Scholastic stressors and achievement-related anxiety. In J. Kuhl & J. Beckmann (Eds.), *Volition and personality*, (pp. 397-406). Göttingen, Germany: Hogrefe & Huber.

Brunstein, J.C. (2001). Persönliche Ziele und Handlungs- versus Lageorientierung: Wer bindet sich an realistische und bedürfniskongruente Ziele? [Personal goals and action versus state orientation: Who builds a commitment to realistic and need-congruent goals?] *Zeitschrift für Differentielle und Diagnostische Psychologie, 22,* 1-12. https://doi.org/10.1024//0170-1789.22.1.1

Chowdhury, S.F., Pychyl, T.A. (2018). A critique of the construct validity of active procrastination. *Personality and Individual Differences, 120*, 7-12. https://doi.org/10.1016/j.paid.2017.08.016

Dahling, J.J., Kay, S.A., & Vargovic, N.F. (2015). Eyes on the prize: A longitudinal study of action-state orientation, affect, and academic self-regulation. In C.E.J. Hartel, W.J. Zerbe, & N.M. Ashkanasy (Eds.). *New ways of studying emotions in organizations* (pp. 423-441). Bingley, UK: Emerald Group Publishing. https://doi.org/10.1108/S1746-979120150000011016

Diefendorff, J.M. (2004). Examination of the roles of action-state orientation and goal orientation in the goal-setting and performance process. *Human Performance, 17,* 375-395. https://doi.org/10.1207/s15327043hup1704_2

Diefendorff, J. M., Lord, R. G., Hepburn, E. T., Quickle, J. S., Hall, R. J., & Sanders, R. E. (1998). Perceived self-regulation and individual differences in selective attention. *Journal of Experimental Psychology: Applied*, *4*(3), 228–247. https://doi.org/10.1037/1076-898X.4.3.228

Diefendorff, J.M., Hall, R.J., Lord, R.G., Strean, M.L. (2000). Action-state orientation: Construct validity of a revised measure and its relationship to work-related variables. *Journal of Applied Psychology, 85,* 250-263. https://doi.org/10.1037/0021-9010.85.2.250

Dibbelt, S. (1997). Wechseln und Beibehalten von Zielen als Subfunktionen der Handlungskontrolle [Change and maintenance of goals as functional components of action control]. *Unpublished doctoral dissertation, University of Osnabrück, Osnabrück, Germany*.

Enders, C. K., & Tofighi, D. (2007). Centering predictor variables in cross-sectional multilevel models: a new look at an old issue. *Psychological methods*, *12*(2), 121. doi:10.1037/1082-989X.12.2.121

Faul, F., Erdfelder, E., Lang, AG., & Buchner, A. (2007) G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. Behavior Research Methods 39, 175–191. https://doi.org/10.3758/BF03193146

Friederichs, K. M., Jostmann, N., Kuhl, J., & Baumann, N. (2022). The art of getting things done: Training affective shifting improves intention enactment. *Emotion, 23*(3), 651–663. https://doi.org/10.1037/emo0001128

Friederichs, K.M., Kees, M.-C., & Baumann, N. (2020). When tough gets you going: Action orientation unfolds with difficult intentions and can be fostered by mental contrasting.

Personality and Individuals Differences, 161. https://doi.org/10.1016/j.paid.2020.109970

Friederichs, S.A.H., Kremers, S.P.J., Lechner, L., & de Vries, N.K. (2013). Neighborhood walkability and walking behavior: The moderating role of action orientation. *Journal of Physical Activity & Health, 10*(4), 515-522. https://doi.org/10.1123/jpah.10.4.515

Fuhrmann, A., & Kuhl, J. (1998). Maintaining a healthy diet: Effects of personality and self-reward versus self-punishment on commitment to and enactment of self-chosen and assigned goals. *Psychology and Health, 13,* 651-686. https://doi.org/10.1080/08870449808407423

Goschke, T., & Kuhl, J. (1993). Representation of intentions: Persisting activation in memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *19*, 1211-1226. https://doi.org/10.1037/0278-7393.19.5.1211

Heckhausen, H., & Strang, H. (1988). Efficiency under record performance demands: Exertion control – an individual difference variable? *Journal of Personality and Social Psychology*, *55*, 489-498.

Hennecke, M., & Freund, A.M. (2016). Age, action orientation, and self-regulation during the pursuit of a dieting goal. *Applied Psychology: Health and Well-Being, 8,* 19-43. https://doi.org/10.1111/aphw.12060

Herrmann, M., & Brandstätter, V. (2013). Overcoming action crisis in personal goals – Longitudinal evidence on a mediating mechanism between action orientation and well-being. *Journal of Research in Personality, 47,* 881-893. https://doi.org/10.1016/j.jrp.2013.09.005

Hryniewicz, K.A., & Borchet, J. (2019). Reaching goals through different means: Will and cognition in the action of people with low and high action control. *Current Issues in Personality Psychology.* https://doi.org/10.5114/cipp.2019.88298

IBM Corp. (2019). IBM SPSS Statistics for Windows (Version 26.0). Armonk, NY: IBM Corp.

Isen, A. M. (2001). An influence of positive affect on decision making in complex situations: Theoretical issues with practical implications. *Journal of Consumer Psychology*, *11*, 75–85. https://doi.org/10.1207/S15327663JCP1102_01

Jaramillo, F., & Spector, P.E. (2004). The effect of action orientation on the academic performance of undergraduate marketing majors. *Journal of Marketing Education, 26,* 250-260. https://doi.org/10.1177/0273475304268780

Jostmann, N. B., & Koole, S. L. (2007). On the regulation of cognitive control: Action orientation moderates the impact of high demands in Stroop interference tasks. *Journal*

of Experimental Psychology: General, *136*(4), 593–609. https://doi.org/10.1037/0096-3445.136.4.593

Kaschel, R., Kazén, M., & Kuhl, J. (2017). State orientation and memory load impair prospective memory performance in older compared to younger persons. *Aging, Neuropsychology, and Cognition, 24*(4), 453-469. https://doi.org/10.1080/13825585.2016.1225664

Kazén, M., Kaschel, R., & Kuhl, J. (2008). Individual differences in intention initiation under demanding conditions: Interactive effects of state vs. action orientation and enactment difficulty. *Journal of Research in Personality*, *42*, 693-715. https://doi.org/10.1016/j.jrp.2007.09.005

Kazén, M., & Kuhl, J. (2005). Intention memory and achievement motivation: Volitional facilitation and inhibition as a function of affective contents of need-related stimuli. *Journal of Personality and Social Psychology*, *89*(3), 426–448. https://doi.org/10.1037/0022-3514.89.3.426

Khany, R., & Amiri, M. (2018). Action control, L2 motivational self system, and motivated learning behavior in a foreign language learning context. *European Journal of Psychology of Education, 33*, 337-353. https://doi.org/10.1007/s10212-016-0325-6

Koole, S. L., & Jostmann, N. B. (2004). Getting a grip on your feelings: Effects of action orientation and external demands on intuitive affect regulation. *Journal of Personality and Social Psychology*, *87*(6), 974–990. https://doi.org/ 10.1037/0022-3514.87.6.974

Koole, S.L., Jostmann, N.B., & Baumann, N. (2012). Do demanding conditions help or hurt self-regulation?. *Social and Personality Psychology Compass*, *6*, 328-346. https://doi.org/10.1111/j.1751-9004.2012.00425.x

Koole, S. L., Jostmann, N. B., & Baumann, N. (2023). From intentions to action: An integrative review of action control theory and research. *Advances in experimental social psychology*, 68, 291-375. https://doi.org/10.1016/bs.aesp.2023.07.001

Kuhl, J. (1994). Action versus state orientation: Psychometric properties of the action control scale (ACS-90). In J. Kuhl & J. Beckmann (Eds.), *Volition and personality: Action versus state orientation* (pp. 47–59). Göttingen, Germany: Hogrefe.

Kuhl, J. (2000). A functional-design approach to motivation and self- regulation: The dynamics of personality system interactions. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of self- regulation* (pp. 111–169). New York: Academic Press. https://doi.org/10.1016/B978-012109890-2/50034-2

Kuhl, J. (2001). *Motivation und Persönlichkeit: Interaktionen psychischer Systeme* [Motivation and personality: Interactions of psychological systems]. Göttingen, Germany: Hogrefe.

Kuhl, J., & Beckmann, J. (Eds.). (1994). *Volition and Personality: Action and state Orientation*. Göttingen, Germany: Hogrefe.

Kuhl, J., & Fuhrmann, A. (1998). Decomposing self-regulation and self-control: The Volitional Components Inventory. In J. Heckhausen & C. S. Dweck (Eds.), *Motivation and self-regulation across the life span* (pp. 15–49). Cambridge University Press. https://doi.org/10.1017/CBO9780511527869.003

Kuhl, J., & Kazén, M. (1999). Volitional facilitation of difficult intentions: Joint activation of intention memory and positive affect removes Stroop interference. *Journal of Experimental Psychology: General*, *128*(3), 382–399. https://doi.org/10.1037/0096-3445.128.3.382

Kuhl, J., & Quirin, M. (2011). Seven steps toward freedom and two ways to lose it: Overcoming limitations of intentionality through self-confrontational coping with stress. *Social Psychology, 42*(1), 74–84. https://doi.org/10.1027/1864-9335/a000045

Kuhl, J., Quirin, M., & Koole, S. L. (2021). The functional architecture of human motivation: Personality systems interactions theory. In *Advances in motivation science* (Vol. 8, pp. 1-62). Elsevier. https://doi.org/10.1016/BS.ADMS.2020.06.001

Lee, C., & Bobko, P. (1992). Exploring the meaning and usefulness of measures of subjective goal difficulty. *Journal of Applied Social Psychology*, *22*(18), 1417–1428. https://doi.org/10.1111/J.1559-1816.1992.TB00957.X

Locke, E. A., & Latham, G. P. (2002). Building a practically useful theory of goal setting and task motivation: A 35-year odyssey. *American Psychologist*, *57*(9), 705. https://doi.org/10.1037/0003-066X.57.9.705

Locke, E. A., & Latham, G. P. (2019). The development of goal setting theory: A half century retrospective. *Motivation Science*, *5*(2), 93. http://dx.doi.org/10.1037/mot0000127

MacIntyre, P. D., & Blackie, R. A. (2012). Action control, motivated strategies, and integrative motivation as predictors of language learning effects and the intention to continue learning French. *System*, *40*, 533-543. https://doi.org/10.1016/j.system.2012.10.014

Norman, P., Sheeran, P., & Orbell, S. (2003). Does state versus action orientation moderate the intention-behavior relationship? *Journal of Applied Social Psychology, 33,* 536-553. https://doi.org/10.1111/j.1559-1816.2003.tb01911.x

RStudio Team. (2021). RStudio: Integrated Development Environment for R (Version 4.1.2). Boston, MA: RStudio, PBC. https://www.rstudio.com/

Schifter, D. E., & Ajzen, I. (1985). Intention, perceived control, and weight loss: An application of the theory of planned behavior. *Journal of Personality and Social Psychology*, *49*, 843-851. https://doi.org/10.1037/0022-3514.49.3.843

Sheeran, P., & Webb, T. L. (2016). The intention–behavior gap. *Social and personality psychology compass*, *10*(9), 503-518. https://doi.org/10.1111/spc3.12265

Song, Z., Wanberg, C., Niu, X., & Xie, Y. (2006). Action-state orientation an.d the theory of planned behavior: A study of job search in China. *Journal of Vocational Behavior, 68,* 490-503. https://doi.org/10.1016/j.jvb.2005.11.001

Thorne, T. N., Milyavskaya, M., Werner, K., Leduc-Cummings, I., Saunders, B., & Inzlicht, M. (2023). The personal goal difficulty - progress paradox: Unraveling the role of self-efficacy on perceptions of goal difficulty. Available at SSRN: https://ssrn.com/abstract=4651737 or http://dx.doi.org/10.2139/ssrn.4651737

van Dijke, M., De Cremer, D., Brebels, L., & Van Quaquebeke, N. (2015). Willing and able: Action-state orientation and the relation between procedural justice and employee cooperation. *Journal of Management, 41*, 1982-2003. https://doi.org/10.1177/0149206313478187

Volet, S. E. (1997). Cognitive and affective variables in academic learning: The significance of direction and effort in students' goals. *Learning and Instruction*, *7*, 235-254. https://doi.org/10.1016/S0959-4752(96)00027-8

Waldenmeier, K., Friederichs, K. M., Kuhl, J., & Baumann, N. (2023). (Un) Locking self-motivation: Action versus state orientation moderates the effect of demanding conditions on self-regulatory performance. *Journal of Research in Personality*, *104*, 104361. https://doi.org/10.1016/j.jrp.2023.104361

Wolf, B.M., Herrmann, M., & Brandstätter, V. (2018). Self-efficacy vs. action orientation: Comparing and contrasting two determinants of goal setting and goal striving. *Journal of Research in Personality, 73,* 35-45. https://doi.org/10.1016/j.jrp.2017.11.001

Zhang, H., Chan, D.K.-S, & Guan, Y. (2013). Plans are more helpful when one perseveres: The moderating role of persistence in the relationship between implementation intentions and goal progress. *Basic and Applied Social Psychology, 35*, 231-240. https://doi.org/10.1080/01973533.2013.764298

Chapter 3

(Un)Locking Self-Motivation: Action versus State Orientation Moderates the Effect of Demanding Conditions on Self-Regulatory Performance

Waldenmeier, K., Friederichs, K. M., Kuhl, J., & Baumann, N., 2023

Published in *Journal of Research in Personality, 104,* 104361

https://doi.org/10.1016/j.jrp.2023.104361

(Erratum published 2025 for corrected figure:
https://doi.org/10.1016/j.jrp.2025.104581)

Abstract

The present research examined whether individual differences in self-regulatory ability (action-state orientation) moderate the effect of demands on self-regulatory performance. Whereas state-oriented individuals consistently show a locking effect (impaired self-regulatory performance under demands), it is empirically less clear whether action-oriented individuals need at least some demands to unlock their self-motivation potential. We examined the impact of demanding conditions (Study 1: low positive affect; Studies 2 and 3: uncompleted intention) on action-state orientation in established self-regulatory tasks. Across all studies, action-state orientation moderated the effect of demands on self-regulatory performance. Specifically, action-oriented participants showed better self-regulatory performance under moderate compared to low demands. This shows that action-oriented individuals do not unlock their self-motivation potential unless there is some kind of demand.

Keywords: action versus state orientation; self-regulatory performance; self-motivation; demanding conditions; Stroop interference; personality dynamics; Personality Systems Interactions (PSI) theory

1. Introduction

Imagine a child who -against better intentions- does not manage to get started with homework and looks for ways to motivate themselves. Their parents are both psychologists from different traditions arguing how to boost their child's self-motivation. One parent believes that demands must be lowered and refers to three lines of arguments: Demands can impair and *lock* self-motivation by (a) making people feel externally controlled (Self-Determination Theory, Deci & Ryan, 2000), (b) increasing the likelihood of choking under pressure (Baumeister & Showers, 1986; Beilock & Carr, 2001), and (c) depleting limited self-regulatory resources (Muraven & Baumeister, 2000). The other parent, in contrast, believes that demands must be increased and justifies this with three lines of arguments as well: Demands can activate and *unlock* self-motivation by (d) mobilizing effort (Gendolla & Richter, 2010), (e) facilitating conflict adaptation (Fischer et al., 2008), and (f) reversing depletion effects (DeWitte et al., 2010). Since both parental beliefs are based on well-established approaches, the question arises which procedure is most helpful for the child.

To resolve the question, we propose to use the framework of Personality Systems Interactions theory (PSI; Kuhl, 2000, 2001; Kuhl et al., 2021). PSI theory considers individual differences in the ability to self-regulate affect –as measured by action versus state orientation– as the key factor for choosing the appropriate demand level. If the child is state-oriented, they struggle to self-motivate under demands, as reflected in a reduced self-regulatory performance. On the other hand, if the child is action-oriented, they are well able to self-motivate and would excel under demands (Kuhl & Beckmann, 1994; Kuhl & Kazén, 1999). Accordingly, parents support self-motivation best if they match the demand level to the child's dispositional action or state orientation. However, research has not fully uncovered the fine gradation in demands required to either lock or unlock self-motivation. Therefore, in the present research, we conducted three studies to investigate how action versus state orientation moderates self-regulatory performance under different levels of demands.

Action and State Orientation

Action and state orientation are defined as individual differences in the ability to self-regulate affect (Kuhl, 1981, 1994; Kuhl, 2000, Kuhl et al., 2021). Action-oriented individuals are characterized by the high ability to restore positive affect (i.e., self-motivation) and to change the status quo, which supports successful intention enactment. State-oriented individuals, in contrast, are characterized by the low ability to self-regulate current affective states and

therefore are more likely to get stuck in hesitation and indecisiveness (Baumann et al., 2018; Kuhl & Beckmann, 1994; Koole et al., 2022).

Whereas personality dimensions like extraversion and neuroticism assess the sensitivity to positive and negative affect (Gray, 1987), that is, how easily individuals *enter* affective states, action and state orientation measures the ability to self-regulate and *leave* affective states once they are aroused (Baumann et al., 2007). Action and state orientation is also distinct from other constructs like self-efficacy (Sniehotta et al., 2005), goal orientation (Diefendorff, 2004), working memory capacity (Jostmann & Koole, 2006) and many other self-related, motivational and cognitive constructs.

Action-oriented individuals' high ability to self-regulate affect does not always translate into high self-regulatory performance, but only under demands. If the demands are too low, they do not activate their full potential. The pattern is different for state-oriented individuals. State-oriented individuals' low ability to self-regulate affect does not always translate into low self-regulatory performance, but only under high demands. If the demands are low, they perform well in self-regulatory tasks (Koole et al., 2012). Demands therefore can be described as a key, that either activates and unlocks self-motivation (among action-oriented individuals) or inhibits and locks self-motivation (among state-oriented individuals).

Demanding Conditions Lock Self-motivation: for State-oriented People!

The lock on self-motivation for state-oriented individuals is reflected in an impaired self-regulatory performance under demands. This effect is already established by multiple findings across different self-regulatory tasks and demands. One way to measure self-regulatory performance is to assess how fast individuals initiate goal-directed action such as dismissing disturbing notices to resume a fun game (Birk et al., 2020) and choosing which of two targets to pursue in a key-pressing task (Kazén et al., 2008). In both measures, state-oriented individuals showed higher response latencies when they had to self-initiate goal-directed action under high versus low demands, whereas action-oriented individuals showed efficient performance in both conditions. Similar results can be found for tasks measuring the enactment of intentions (Jostmann & Koole, 2007; Kaschel et al., 2017), resistance to temptation (Baumann & Kuhl, 2005), and other self-regulatory behavior (e.g., Diefendorff et al., 2006).

The lower self-regulatory performance of state-oriented individuals can be observed under demands, a term that refers to a broad range of conditions under which intention enactment

becomes difficult (Kuhl, 1985, 2000, 2001; see also Gruber & Goschke, 2004). This includes conditions like demanding life circumstances (Baumann et al., 2005), subjective listlessness (Kazén et al., 2008, Study 1), high memory load (Kaschel et al., 2017), an uncompleted intention (Kazén et al., 2008, Study 2), and the interruption during a game (Birk et al., 2020).

This well-studied locking effect for state-oriented individuals is often highlighted only one-sidedly, that is, spotlighting the poor performance under demands. This leads to a mostly bad image of state orientation. However, it is equally important to consider the dynamic fluctuation of state-oriented individuals' performance in response to changing situations. Instead of only concentrating on the performance under high demands, the focus should be more on the variance in performance with changing demand levels. When demands are low, state orientation is an asset because no self-motivational difficulties arise and thus the self-regulatory performance is not affected (e.g., Jostmann & Koole, 2006; Koole et al., 2005; Kuhl, 2000, 2001).

Demanding Conditions Unlock Self-motivation: for Action-oriented People?

The functional advantages of action orientation are reflected in a constant or even higher self-regulatory performance under demands (Gröpel et al., 2014; Kazén & Kuhl, 2020; Kazén et al., 2015). When Jostmann and Koole (2006) examined the self-regulatory performance of action- and state-oriented individuals, the participants first had to imagine an accepting or demanding person. The researchers were able to demonstrate that action-oriented individuals performed better if they imagined a demanding versus accepting person. Similar results were obtained by Friederichs et al. (2020) when they measured the enactment of intentions (i.e., responding to the color hue of sometimes incongruent color words in the Stroop task) among action- and state-oriented individuals. Meanwhile, the participants were presented with primes that caused either high demands ("aiming for ambitious goals") or low demands ("getting praised"). Again, action-oriented individuals were able to enact their intentions faster under high versus low demanding conditions.

This high self-regulatory performance under demands contributes to the social desirability of action orientation. However, this one-sided, mostly positive representation of action orientation comes into question when considering the findings that show higher rather than constant performance with increasing demands. Under low demands, the downside for action-oriented individuals is revealed in their poorer self-regulatory performance. Since this dynamic fluctuation in the effects of action orientation has rarely been the focus of empirical studies so

far, the exact conditions when action-oriented individuals start to unlock their self-motivation potential are still unclear.

The Present Studies

Although action versus state orientation is a relatively stable personality disposition (Bettschart et al., 2021; Frese et al., 1997; Wojdylo et al., 2016), its workings and behavioral effects fluctuate dynamically in response to changing situations. This is reflected in action- and state-oriented individuals' varying self-regulatory performance across different conditions. Thus, a disposition towards action or state orientation can have virtually opposite effects as a function of the demand level in a given situation.

According to PSI theory (Kuhl, 2000, 2001; Kuhl et al., 2021), we expected that with increasing demands, the self-regulatory performance of action-oriented individuals is higher, whereas it is lower for state-oriented individuals. While the locking effect for state-oriented individuals is empirically well documented, the differences between changing demand levels in the internal dynamics of action-oriented individuals are still more ambiguous. Whether action-oriented individuals show an unlocking effect (i.e., higher self-regulatory performance under demands) or a stability effect (i.e., constant self-regulatory performance under demands) seems to depend on differences across studies in demand inductions, self-regulatory tasks, and degrees of action versus state orientation (Koole et al., 2012).

Even though there is some literature discussing the hidden benefits of state orientation as well as the liability of action orientation (e.g. Gröpel et al., 2014; Kazén & Kuhl, 2020; Kazén et al., 2015; Koole et al., 2012), the conditions, that are needed to make the unlocking effect appear, are empirically still unclear. Therefore, the goal of our research was to provide clarity to the still existing ambiguities regarding the unlocking effect for action-oriented individuals. To determine the conditions of the unlocking effect, we conducted three studies that investigated the self-regulatory performance of action- and state-oriented individuals on the lower end of the demand continuum. Thus, to capture the unlocking effect, we explored minimal demand levels at which the benefits of action-oriented individuals may just begin to unfold. As already mentioned, there are several factors that influence the resulting self-regulatory performance. For that reason, we relied on established methods by following the design and procedure of previous research (i.e., Jostmann & Koole, 2007; Kazén et al., 2008) but slightly modified them to capture the unlocking effect.

Specifically, experimentally inducing a difficult or unpleasant intention is expected to increase the subjective level of demand and increase feelings of tension (Lewin, 1935; Koole & Jostmann, 2004; Kuhl, 2000) and listlessness – a state of reduced positive affect (Kazén et al., 2008), which in turn should impair self-regulatory performance (Kazén & Kuhl, 2005). In Study 1, we examined the impact of subjective listlessness on action- versus state-oriented participants' performance in the Stroop task (Stroop, 1935) – a well established self-regulatory task (Jostmann & Koole, 2007; for a review, see MacLeod, 1991). In Study 2, we experimentally manipulated the demand level by inducing a completed versus uncompleted intention and examined action- versus state-oriented participants' performance in the Stroop task, again. In Study 3, we used the same experimental demand induction and another self-regulatory task (i.e., the Grid task; Kazén et al., 2008). In all studies, we report determination of our sample sizes, our data exclusion criteria, all manipulations as well as all measurements.

2. Study 1

In Study 1, we assessed participants' subjective listlessness to operationalize the subjective feeling of low positive affect presumably associated with demands as done in previous research (e.g., Kazén et al., 2008, Study 1). We used the Stroop task to measure self-regulatory performance. An additional feature of this study was to investigate that action versus state orientation only functions as a moderator when there is a difficulty, for example, when goal-directed action is not cued by the task but has to be self-initiated by the person. For this purpose, we built on the approach of Jostmann and Koole (2007) and created an easy and a difficult version of the Stroop task with different proportions of congruent versus incongruent trials. The easy version (12.5% congruent trials) hardly requires self-regulation because incongruent stimuli are the default and externally cue the initiation of the goal-directed action of responding to the color hue. The difficult version (75% congruent trials), in contrast, clearly requires self-regulation because the frequent congruent trials prime the habitual response tendency of responding to the color word. On the rare occasion of an incongruent trial, participants have to self-initiate goal-directed action against this habit. To use an otherwise classical version of the Stroop task, we implemented four instead of two ink colors as recommended by Jostmann and Koole (2007).

Past research suggests that error rates as the main dependent variable are the most sensitive index when investigating difficulties in self-regulatory processes that concern rare occasions (for more information see Jostmann & Koole, 2007 and Kane & Engle, 2003). In the difficult task version, incongruent Stroop stimuli are so rare that participants will often respond

incorrectly. These instances of self-regulatory failure would be excluded from the analyses of response latencies. In line with this, we expected action- and state-oriented individuals to differ in error rates (rather than response latencies) under increasing subjective listlessness. Specifically, we expected the performance of action-oriented individuals to be higher and the performance of state-oriented individuals to be lower with increasing demands. Furthermore, we expected to find this interaction effect only in the difficult version of the Stroop task. In the easy version, in contrast, we expected no differences in error rates between action- and state-oriented individuals.

Participants

The number of participants was determined prior to data collection on the basis of previous studies showing a medium effect size of the Action Orientation x Listlessness interaction on performance in the Grid task (Kazén et al., 2008, Exp. 1: $f^2 = .19$) and a small effect size of the Action Orientation x Demand Condition x Congruency Proportion interaction on Stroop interference (Jostmann & Koole, 2007, Exp. 3: $f^2 = .04$). We used G*Power (Faul et al., 2009) to determine the sample size necessary to detect a small Action Orientation x Listlessness x Congruency Proportion interaction effect ($f^2 = .07$) with a power of .90 and α=.05 (multiple linear regression: ΔR^2). The results suggested a minimum sample size of 153 participants. We assessed additional 12 participants to allow for possible dropouts and outliers. One-hundred sixty-five university students voluntarily participated in the study and received course credit in return for their participation. One participant was excluded from all further analysis because her accuracy in incongruent Stroop trials was at chance level (i.e., 25% correct). In the final sample ($N = 164$, 132 women, 32 men, 0 nonbinary), participants' mean age was 21.89 years ($SD = 3.51$, range 18 to 48 years).

Materials

Listlessness. A 6-item self-report inventory (*"Right now, I feel ... "*), using a 4-point Likert scale from 1 (*not at all*) to 4 (*very strongly*), was administered to measure participants' current affect. The positive affect scale (Cronbach's α = .90) included the three items "happy" (*freudig*), "cheerful" (*gutgelaunt*) and "joyful" (*fröhlich*). The listlessness scale (Cronbach's α = .85) included the items ″sluggish″ (*träge*), ″without energy″ (*lahm*), and ″listless″ (*lustlos*) – the latter replaced the item ″inhibited″ (*gehemmt*) and increased internal consistency compared to Kazén et al. (2008, Study 1).

Action versus State Orientation. The Action Control Scale (*ACS*; Kuhl, 1994) was used to measure failure- and decision-related action versus state orientation. In the present study, the decision-related subscale was relevant which has also been labelled as demand-related (e.g., Koole & Jostmann, 2004) or prospective (e.g., Kaschel et al., 2017) action versus state orientation. It consists of 12 items (Cronbach's $\alpha = .78$). A sample item is: "When I know I must finish something soon: (a) I have to push myself to get started, or (b) I find it easy to get it done and over with," In this sample item, option "(*a*)" represents state-oriented and option "(*b*)" action-oriented response alternatives (the complete ACS can be found in Diefendorff et al., 2000). The number of action-oriented responses is counted, yielding a scale that ranges from 0-12 with lower scores indicating state-oriented hesitation and higher scores indicating action-oriented initiative. The ACS has sufficient reliability and adequate construct validity (Baumann et al., 2018; Diefendorff et al., 2000; Kuhl & Beckmann, 1994).

Stroop Task. The Stroop task is a color-word task in which neutral (XXXX) or color words (red, green, yellow, and blue) appear on a computer screen in a font color that is either congruent or incongruent with their meaning. During incongruent trials (i.e., the word yellow appearing in green color) participants must override an automatic response to give a correct answer. The task of the participants is to react as quickly and correctly as possible to the color hue by pressing one of four keys (C, V, N, M). Self-regulatory performance was measured in terms of Stroop interference in errors and latencies. Consistent with Jostmann and Koole (2007), we expected the effects to occur in errors rather than in response latencies.

The easy version of the Stroop task consisted of 12.5% and the difficult version of 75% congruent trials. In the easy version, 24 congruent, 24 neutral and 144 incongruent trials were presented. In the difficult version, 144 congruent, 24 neutral and 24 incongruent trials were presented. After a practice run consisting of 16 trials, two blocks of 96 randomized trials each followed. There was a 1-minute break between the two blocks. For the statistical analysis, we a priori randomly selected critical versus filler trials, with only the critical trials being included, so that in each version 24 congruent, 24 neutral and 24 incongruent trials were considered.

Procedure

The study was conducted at the University of Trier and participants were invited to take part via different recruitment portals. At the beginning of the survey, demographic variables, action versus state orientation, and subjective listlessness were assessed. Next, participants worked on the easy or difficult version of the Stroop task, depending on which version they were randomly

assigned to at the beginning. Upon completion, participants were debriefed, received credits, and were thanked. The study lasted 30 minutes on average.

Results

Descriptives and Correlations. In the Stroop task, participants committed more errors on incongruent (M = 6.91%, SD = 8.05) compared to congruent trials (M = 4.88%, SD = 8.12; F(1, 163) = 14.76, p < .001, η_p^2 = .08) but not compared to neutral trials (M = 6.30%, SD = 8.74; F(1, 163) = 1.06, p = .305, η_p^2 = .01). Before computing response latencies, we removed erroneous responses and outliers ($M_{individual}$ ±2.5 $SD_{individual}$). Overall, response latencies were longer on incongruent trials (M = 851.09, SD = 225.06) compared to congruent trials (M = 715.40, SD = 157.37; F(1, 163) = 169.98, p < .001, η_p^2 = .51) and neutral trials (M = 761.01, SD = 167.90; F(1, 163) = 74.45, p < .001, η_p^2 = .31). We computed two indices of Stroop interference by subtracting mean errors/latencies on neutral trials from mean errors/latencies on incongruent trials, respectively. Stroop interference in errors and latencies correlated positively (r = .30, p < .001), indicating that there was no speed-accuracy trade-off.

Action orientation (M = 5.99, SD = 3.16) and listlessness (M = 1.91, SD = .71) correlated negatively (r = -.23, p = .003). Action orientation and listlessness did not correlate significantly with Stroop interference in errors and latencies. Gender and age did not correlate significantly with action orientation, listlessness, and Stroop interference in errors and latencies.

Stroop Interference in Errors. We conducted a regression analysis with Stroop interference in errors as the dependent variable. In Step 1, we entered action orientation, listlessness, and congruency proportion (-1 = 12.5% congruent; 1 = 75% congruent), in Step 2 the two-way interactions, and in Step 3 the three-way interaction. Action orientation and listlessness were standardized before calculating interaction terms. As listed in Table 3.1, the main effect of congruency proportion was significant, β = .27, t(1, 160) = 3.52, p < .001, indicating that Stroop interference was higher in the 75% congruent condition than in the 12.5% congruent condition. Consistent with expectations, the Action Orientation x Listlessness x Congruency Proportion interaction was significant, β = -.21, t(1, 156) = -2.56, p = .011, and added significantly to the amount of explained variance, ΔR^2 = .04, F(1, 156) = 6.55, p = .011. Unstandardized regression weights using a range of ± 1 SD for listlessness and action orientation were used to graph this interaction (see Figure 3.1).

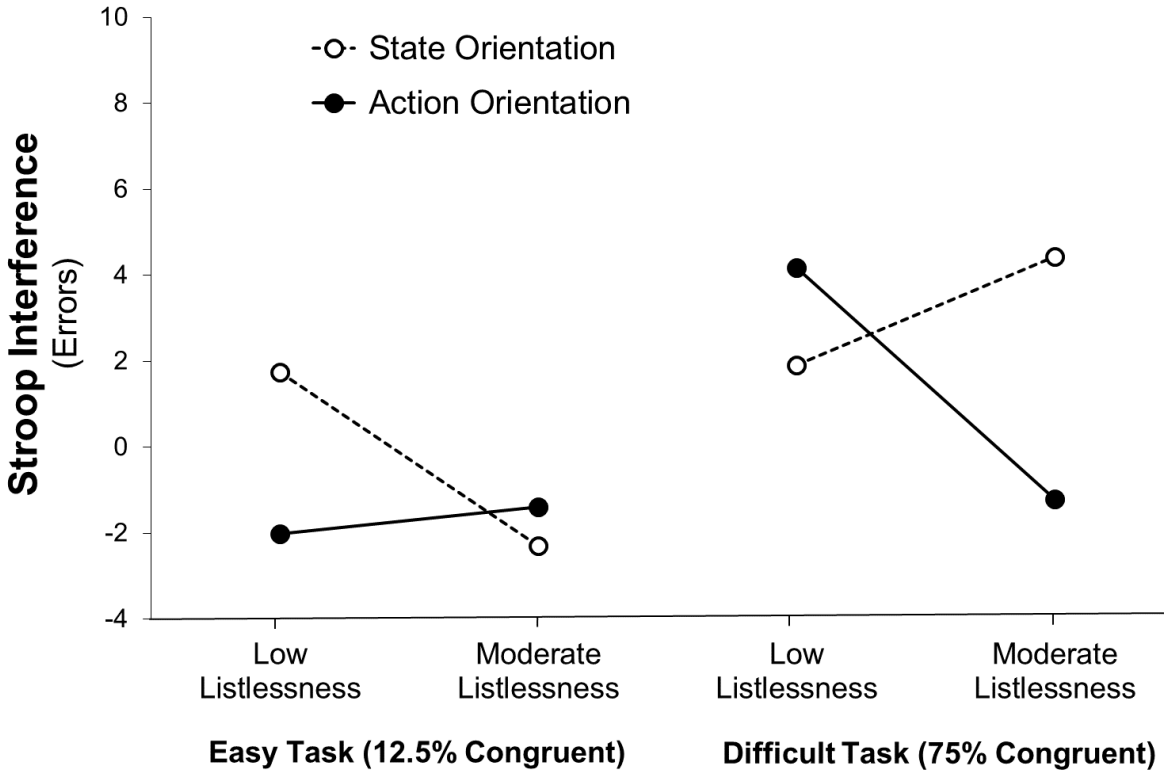

Figure 3.1 Stroop interference (i.e., error rates in % for incongruent minus neutral stimuli) as a function of action versus state orientation, subjective demands (i.e., listlessness), and congruency proportion (75.0% vs. 12.5% congruent stimuli) in Study 1 (N = 164).

In the difficult task condition (75% congruent), the slope for action-oriented participants differed significantly from the slope for state-oriented participants, B = -3.95, t(156) = -2.04, p = .043 [95% *CI*: -7.44, -0.15]. Among action-oriented participants, higher listlessness was associated with a descriptive trend towards lower Stroop interference, B = -2.69, t(156) = -1.80, p = .074. Among state-oriented participants, in contrast, Stroop interference remained the same across different levels of listlessness, B = 1.26, t(156) = 1.12, p = .264. At moderate levels of listlessness, action compared to state orientation was associated with a trend towards lower Stroop interference, B = -2.82, t(156) = -1.98, p = .05. At low levels of listlessness, in contrast, Stroop interference remained the same for action- and state-oriented partipants, B = 1.13, t(156) = 1.0 (=.999), p = .319.

In the easy task condition (12.5% congruent), in contrast, the slopes for action- and state-oriented participants did not significantly differ, B = 2.34, t(156) = 1.55, p = .124 [95% *CI*: -0.63, 5.29]. Neither the slope for action-oriented, B = 0.32, t(156) = 0.29, p = .772, nor the slope for state-oriented participants was significant, B = -2.02, t(156) = -1.81, p = .072. Action- and

state-oriented participants differed neither at moderate levels of listlessness, $B = 0.46$, $t(156) = 0.42$, $p = .672$, nor at low levels of listlessness, $B = -1.88$, $t(156) = -1.59$, $p = .113$.

Stroop Interference in Latencies. We conducted an additional hierarchical regression analysis with Stroop interference in latencies as the dependent variable. As listed in Table 3.1, the only significant effect was a main effect of congruency proportion, $\beta = .38$, $t(1, 160) = 5.25$, $p < .001$, indicating that Stroop interference was higher in the 75% congruent condition than in the 12.5% congruent condition. Consistent with Jostmann and Koole (2007, Exp. 3), the Action Orientation x Listlessness x Congruency Proportion interaction was not significant, $\beta = .03$, $t(1, 156) = 0.40$, $p = .690$.

Discussion

Study 1 provided initial evidence that self-regulatory performance under different demand levels depends on whether an individual is action- or state-oriented. Specifically, among action-oriented individuals, higher demands were associated with higher self-regulatory performance. The more listless action-oriented individuals felt, the fewer mistakes they made. Although this unlocking effect was only found a as a descriptive trend, Study 1 already suggests that action-oriented individuals indeed require some level of demand to activate their self-motivation potential. State-oriented individuals, in contrast, showed constant self-regulatory performance under higher demand levels. We therefore could not find the locking effect for state-oriented individuals, which indicates that demands on the lower continuum are not sufficient to have a negative impact on state-oriented individuals.

Moreover, in line with predictions, the moderating role of action versus state orientation emerged on the difficult, but not the easy version of the Stroop task. This is in line with previous research (Jostmann & Koole, 2007) and serves as further evidence that the effect of action versus state orientation is due to differences in self-regulation since we only find it when the task clearly requires self-regulation.

A posteriori analyses revealed that our data tended to be on the lower end of the continuum of the subjective listlessness scale. To fully reveal the unlocking effect for action-oriented individuals, we wanted to lower the overall demand level even more. Since the subjective measure used in Study 1 did not allow a priori control over the demand level, we experimentally induced demands in Study 2.

3. Study 2

In Study 2, we conceptually replicated Study 1 with the only modification being the experimental manipulation of the demands. To manipulate demands, we relied on the well-studied method of inducing an uncompleted versus completed intention (e.g., Goschke & Kuhl, 1993; Kazén et al., 2008). To fully uncover the unlocking effect for action-oriented individuals, we tried to keep the overall demand level on the lower end of the continuum by designing the demand induction task to be very easy.

Participants

The number of participants was determined prior to data collection on the basis of previous studies showing small to medium effects of Action Orientation x Demand x Task Difficulty interactions on Stroop interference (Study 1: $f^2 = .05$; Jostmann & Koole, 2007, Exp. 2: $f^2 = .12$; Exp. 3: $f^2 = .04$;). We used G*Power (Faul et al., 2009) to determine the sample size necessary to detect a small Action Orientation x Demand Condition x Congruency Proportion interaction effect ($f^2 = .07$) with a power of .80 and α=.05 (multiple linear regression: ΔR^2). The results suggested a minimum sample size of 115 participants. We assessed additional six participants to allow for possible dropouts and outliers. One-hundred twenty-one university students voluntarily participated in the study and received course credit in return for their participation. One participant was excluded from all further analysis because her action orientation score differed substantially from the assessment in a parallel study (1 vs. 9 on a 0-12 scale). In the final sample (N = 120, 104 women, 16 men, 0 nonbinary), participants' mean age was 21.48 years (SD = 3.32, range 18 to 38 years). In the 12.5% (75%) congruency proportion condition, n = 30 (n = 30) were in the completed intention and n = 29 (n = 31) in the uncompleted intention condition.

Materials

The scales assessing listlessness (Cronbach's α = .80) and action orientation (Cronbach's α = .79) as well as the Stroop task were the same as in Study 1.

Completed vs. Uncompleted Intention. All participants completed various arithmetic tasks consisting of adding and/or subtracting three numbers (e.g., 4+3-1=?). We used very simple tasks to keep the demand level low. After 10 tasks, participants in the completed intention group received the following instruction: *The arithmetic tasks are now finished. Continue with a new task.* For participants in the uncompleted intention group, the following instruction appeared: *Interruption of the arithmetic task! Please remember the result of the last task (Reminder: 3+4-*

1=?). You must remember the result at the end. Please press "Next" to start a new task before you finish the arithmetic tasks. Participants were asked to recall the result at the end of the experiment.

Procedure

Participants were randomly assigned to one of the two conditions (completed versus uncompleted intention), which was induced right before participants worked on the Stroop task. Apart from that, the procedure was the same as in Study 1.

Results

Descriptives and Correlations. In the Stroop task, participants committed more errors on incongruent (M = 8.58%, SD = 10.56) compared to congruent (M = 5.35%, SD = 9.23; $F(1, 119) = 25.16$, $p < .001$, $\eta_p^2 = .18$) and neutral trials (M = 6.28%, SD = 9.15; $F(1, 119) = 10.92$, $p < .002$, $\eta_p^2 = .08$). Before computing response latencies, we removed erroneous responses and outliers ($M_{individual}$ ±2.5 $SD_{individual}$). Overall, response latencies were longer on incongruent (M = 890.80, SD = 204.48) compared to congruent (M = 734.81, SD = 144.37; $F(1, 119) = 139.76$, $p < .001$, $\eta_p^2 = .54$) and neutral trials (M = 777.82, SD = 150.82; $F(1, 119) = 91.87$, $p < .001$, $\eta_p^2 = .44$). We computed Stroop interference in errors and latencies by subtracting neutral from incongruent trials, respectively. Stroop interference in errors and latencies correlated positively ($r = .31$, $p < .001$), indicating that there was no speed-accuracy trade-off.

Action orientation (M = 5.24, SD = 3.08) and listlessness (M = 1.76, SD = .62) correlated negatively (r = -.24, p < .01). Therefore, we controlled for listlessness in all subsequent analyses. Action orientation and listlessness did not correlate with Stroop interference in errors and latencies. Gender and age did not correlate with action orientation, listlessness, and Stroop interference in errors and latencies.

Stroop Interference in Errors. We conducted a regression analysis with Stroop interference in errors as the dependent variable. In Step 1, we controlled for listlessness and entered action orientation, demand condition, and congruency proportion. In Step 2, we entered the two-way interactions and, in Step 3, the three-way interaction. Action orientation was standardized before calculating interaction terms. As listed in Table 3.1, the main effect of congruency proportion was significant, $\beta = .34$, $t(1, 115) = 3.94$, $p < .001$, indicating that Stroop interference was higher in the 75% congruent condition than in the 12.5% congruent condition. Consistent with expectations, the Action Orientation x Demand Condition x Congruency Proportion

interaction was significant, β = -.21, t(1, 111) = -2.32, p = .022, and added significantly to the amount of explained variance, ΔR^2 = .04, F(1, 111) = 5.39, p = .022. Unstandardized regression weights using a range of ± 1 SD for action orientation were used to graph this interaction (see Figure 3.2).

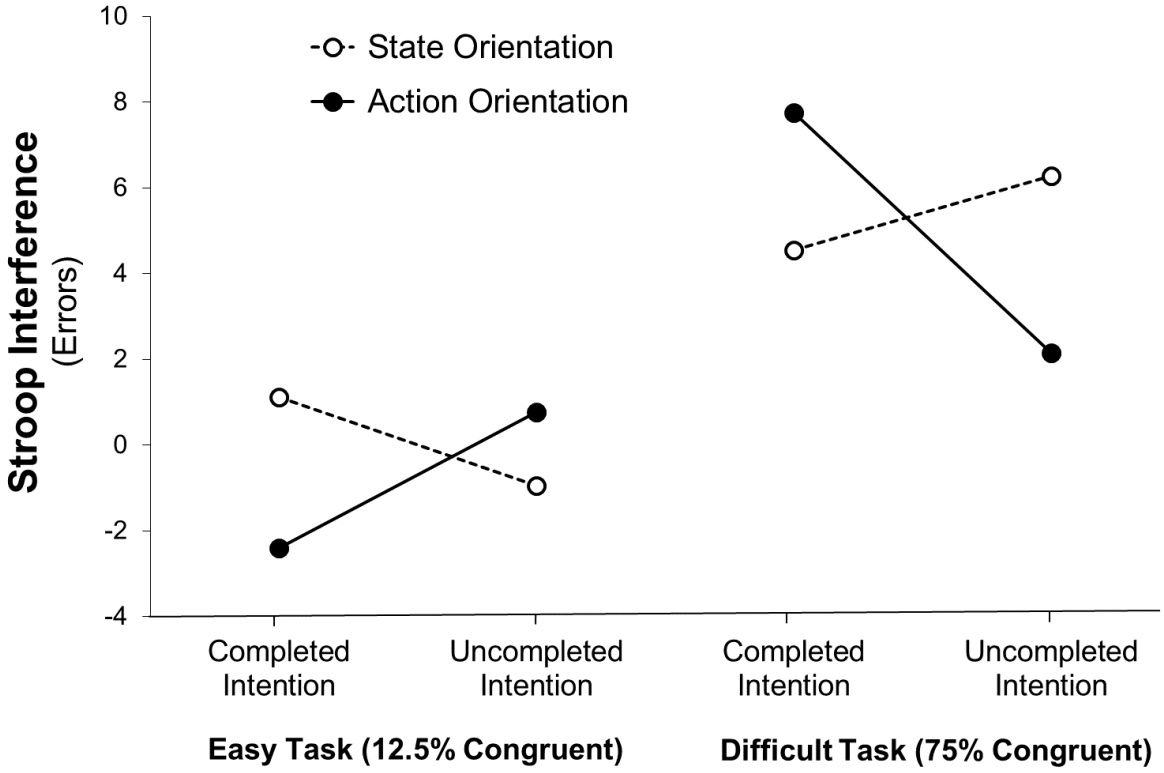

Figure 3.2 Stroop interference (i.e., error rates in % for incongruent minus neutral stimuli) as a function of action versus state orientation, induced demands (i.e., completed vs. uncompleted intention), and congruency proportion (75.0% vs. 12.5% congruent stimuli) in Study 2 (N = 120).

In the difficult task condition (75% congruent), the slope for action-oriented participants differed significantly from the slope for state-oriented participants, B = -3.67, t(111) = -2,05, p = .043 [95% *CI*: -7.19, -0.15]. Among action-oriented participants, Stroop interference was significantly lower when a demand was present (uncompleted intention) rather than absent (completed intention), B = -2.81, t(111) = -2.13, p = .036. Among state-oriented participants, in contrast, we found a nonsignificant reversal, such that Stroop interference was descriptively higher when a demand was present rather than absent, B = 0.86, t(111) = 0.69, p = .493. Action- and state-oriented participants differed neither in the uncompleted intention condition, B = -

2.07, $t(111) = -1.66$, $p = .101$, nor in the completed intention condition, $B = 1.55$, $t(111) = 1.18$, $p = .239$.

In the easy task condition (12.5% congruent), in contrast, the slopes for action- and state-oriented participants did not differ significantly, $B = 2.60$, $t(111) = 1.30$, $p = .20$ [95% *CI*: -1.32, 6.53]. Neither the slope for action-oriented, $B = 1.58$, $t(111) = 1.21$, $p = .231$, nor the slope for state-oriented participants was significant, $B = -1.03$, $t(111) = -0.73$, $p = .466$. Action- and state-oriented participants did not differ significantly in the uncompleted intention condition, $B = 0.9$, $t(111) = 0.59$, $p = .555$, and in the completed intention condition, $B = -1.76$, $t(111) = -1.37$, $p = .174$.

Stroop Interference in Latencies. We conducted an additional hierarchical regression analysis with Stroop interference in latencies as the dependent variable. As listed in Table 3.1, the only significant effect was a main effect of congruency proportion, $\beta = .53$, $t(1, 115) = 6.65$, $p < .001$, indicating that Stroop interference was higher in the 75% congruent condition than in the 12.5% congruent condition. Consistent with Study 1 as well as Jostmann and Koole (2007, Exp. 3), the Action Orientation x Demand Condition x Congruency Proportion interaction was not significant, $\beta = -.03$, $t(1, 111) = -0.40$, $p = .690$.

Discussion

Study 2 provided further evidence that action- versus state-oriented individuals respond with significantly different self-regulatory performance to varying demand levels. By experimentally inducing the demands, the results revealed a more compelling pattern, with action-oriented individuals making significantly less errors under an uncompleted versus completed intention. Thus, Study 2 further supports our assumption that self-regulatory performance of action-oriented individuals does not unfold unless a certain demand level is reached. State-oriented individuals, on the other hand, made a similar amount of errors regardless of the demand level. Demands on the lower end of the continuum did not lock state-oriented individuals' self-regulatory performance in this study either. Again, the moderating role of action versus state orientation emerged in the difficult but not the easy version of the Stroop task, indicating that the differential effects are due to interindividual differences in self-regulation. To test whether the findings of Study 2 are specific to the Stroop task or can be generalized to another self-regulatory task, we replaced the Stroop task with the Grid task in Study 3.

Table 3.1

Summary of Regression Analyses Predicting Stroop Interference (Errors: Incongruent - Neutral) in Study 1 (N = 164) and Study 2 (N = 120)

	Study 1				Study 2			
	ΔR^2	β	B	[95% CI]	ΔR^2	β	B	[95% CI]
Step 1	.08 **				.15 ***			
Control Variable						-.17	-1.29	[-2.63, 0.04]
Action Orientation (AO)		-.07	-0.51	[-1.68, 0.66]		-.06	-0.47	[-1.81, 0.87]
Demand[a]		-.07	-0.54	[-1.70, 0.64]		-.03	-0.24	[-1.54, 1.06]
Congruency Proportion		.27 ***	2.02	[0.89, 3.16]		.39 ***	2.57	[1.28, 3.86]
Step 2	.00				.01			
AO x Demand[a]		-.00	-0.02	[-1.21, 1.18]		-.06	-0.43	[-1.78. 0.91]
AO x Congruency		.01	0.07	[-1.12, 1.26]		.03	0.24	[-1.10, 1.58]
Demand[a] x Congruency		.04	0.30	[-.89, 1.50]		-.08	-0.64	[-1.95, 0.68]
Step 3	.04*				.04*			
AO x Demand[a] x Congruency		-.21 *	-1.57	[-2.78, -0.36]		-.21 *	-1.56	[-2.90, -0.23]

[a] Study 1: subjective demand (i.e., listlessness); Study 2: induced demand (-1 = completed intention, 1 = uncompleted intention)

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

4. Study 3

Study 3 served to replicate and extend our results from Study 2. To test whether our findings generalize across different self-regulatory tasks, we used the Grid task to measure self-regulatory performance (Kazén et al., 2007, Exp. 2; Dibbelt, 1997). This task has been shown to yield conceptually similar results to an established event-based prospective memory paradigm (Kazén et al., 2007), indicating its convergent validity. In the Grid task, participants pursue the goal to move a cursor towards a target. While moving the cursor on the screen, a second target appears that is closer, further away, or equally distant to the original target. The task is to shift to the second target when it is closer than the original target. When participants shift targets in equally distant trials, this requires self-choice and self-initiation of goal-directed action because the action is not externally cued: the stimulus does not tell participants whether it is better to shift targets or maintain the previous target. Self-regulatory failure is indicated by hesitation (i.e., longer decision latencies) between two equally valid choices – similar to the tale of the donkey who starves between two equally distant stacks of hay. In contrast to externally-cued trials, external support for the decision is lacking. Thus, we measure self-regulation in equally distant trials when participants self-initiate target shifts compared to trials in which the second target externally cues the shift when being closer.

To operationalize demands, we used the same demand induction as in Study 2. We hypothesized that action- compared to state-oriented individuals have longer decision latencies for self-initiated target shifts under a completed versus uncompleted intention.

Participants

The number of participants was determined prior to data collection on the basis of previous studies showing medium to small effects of Action Orientation x Demand interactions on performance in the Grid Task (Kazén et al., 2008, Exp. 1: $f^2 = .19$; Exp. 2: $f^2 = .06$). We used G*Power (Faul et al., 2009) to determine the sample size necessary to detect a small Action Orientation x Demand Condition interaction effect ($f^2 = .07$) with a power of .80 and α=.05 (multiple linear regression: ΔR^2). The results suggested a sample size of 115 participants. We assessed two additional participants to allow for possible dropouts and outliers. One-hundred seventeen university students voluntarily participated in the study and received course credit in return for their participation. Four outlier participants were excluded from all further analyses: three latency outliers ($RT_{self\text{-}initiation}$ - $RT_{externally\text{-}cued}$ > 600 ms) and one accuracy outlier (wrong key presses in 2/3 externally cued trials). The final sample consisted of N = 113 participants (98 women, 15 men, 0 nonbinary) with a mean age of 21.58 years (SD = 3.69, range 18 to 48 years).

Materials

The scales assessing listlessness (Cronbach's α = .78) and action orientation (Cronbach's α = .76) were the same as in Study 1.

Completed vs. Uncompleted Intention. We induced the same completed versus uncompleted intention as in Study 2.

Grid Task. This task is performed on a 24x24 grid on the computer screen. Each trial starts with a cursor (presented as a red square), which should be moved from a starting position in the grid to a target (presented as a yellow square) by pressing the #5 key on the number keypad. While moving the cursor toward the target, a second target (also presented as a yellow square) appears accompanied by a short sound (breaking point). At the breaking point, the participants' task was to move the cursor as quickly as possible to the closer target by pressing the corresponding keys (left = #4, right = #6, up = #8, down = #2). The second target was either equally distant as the first target (self-initiated trials) or closer/further away (externally-cued trials). In self-initiated trials, participants must decide independently which of the two targets to pursue, while in externally-cued trials it was clearly specified which target had to be pursued. Points could be collected in the process (starting with 100 points, -5, if moving too fast; in the self-initiated trials +20 points, in the external-cued trials: +20 if the closer target and -10 if the distant target was pursued).

The starting position of the cursor, the directions (left, right, up, down), and the distance of the targets to the breaking point were counterbalanced across trials. In total, participants completed six practice trials and 60 randomized trials (30 self-initiated; 30 externally- cued divided into 10 trials where target 1 was closer, 20 where target 1 was more distant). In the statistical analyses, only the trials in which participants shifted to the second target were considered.

Procedure

The procedure was the same as in Study 2, with the only difference being that we used the Grid task to measure self-regulation.

Results

Descriptives and Correlations. Before computing decision latencies in the Grid task, we removed erroneous responses and outliers (latencies > 3.000 ms). As listed in Table 3.2, decision latencies were longer for self-initiated compared to externally-cued target shifts, $t(112) = 3.17$, $p < .003$ [95% CI: 12.57, 54.66]. Because of the negative correlation between action

orientation and listlessness (r = -.32, p < .001), we controlled for listlessness in all subsequent analyses. Because of the significant correlations of gender and age with decision latencies, we also controlled for gender and age in all subsequent analyses.

Table 3.2

Means, Standards Deviations and Correlations between Variables in Study 3 (N = 113).

	(2)	(3)	(4)	(5)	(6)	(7)
(1) Gender	.06	.07	.01	-.18	-.20*	-.06
(2) Age		-.08	-.10	.23*	.15	.26**
(3) Action Orientation			-.32**	.03	.00	.07
(4) Listlessness				-.02	-.02	-.03
(5) RT Self-initiated					.91***	.81***
(6) RT Externally Cued						.26***
(6) RT Diff$_{(self - cued)}$						
M	21.58	6.00	2.45	963.62	930.00	33.62
SD	3.67	3.10	0.67	259.71	196.74	112.92

* p < .05 ** p < .001 *** p < .001

Decision latencies. We conducted a regression analysis with decision latencies for self-initiated target shifts as the dependent variable. In Step 1, we controlled for gender, age, listlessness, and latencies for externally cued targets shifts. In Step 2, we entered action orientation and demand condition (-1 = completed intention; 1 = uncompleted intention). In Step 3, we entered the interaction term. As listed in Table 3.3, consistent with expectations, the Action Orientation x Demand Condition interaction was significant, β = -.08, t(1, 105) = -2.15, p = .033, and added significantly to the amount of explained variance, ΔR^2 = .01, F(1, 105) = 4.64, p = .033.

Table 3.3 *Summary of Regression Analysis Predicting Decision Latencies (in ms) for Self-Initiated Target Shifts (Controlling for Externally-Cued Target Shifts) in Study 3 (N = 113)*

	ΔR^2	β	B	[95% CI]
Step 1	.84 ***			
Gender		-.00	-2.00	[-60.96, 56.97]
Age		.09 *	23.35	[3.32, 43.38]
Subjective Listlessness		.00	-0.09	[-19.80, 19.62]
Externally-Cued Target Shifts (ms)		.90 ***	233.67	[213.37, 253.96]
Step 2	.00			
Action Orientation		.05	12.14	[-8.92, 33.20]
Induced Demand[a]		-.03	-7.11	[-27.16, 12.94]
Step 3	.01*			
Action Orientation x Demand[a]		-.08 *	-21.31	[-40.92, -1.70]

[a] -1 = completed intention, 1 = uncompleted intention
* $p < .05$ *** $p < .001$

Unstandardized regression weights using a range of ± 1 SD for action orientation were used to graph this interaction (see Figure 3.3). Simple slope analyses indicated that, among action-oriented participants, decision latencies for self-initiated target shifts were significantly shorter when a demand was present (uncompleted intention) rather than absent (completed intention), $B = -28.04$, $t(105) = -2.02$, $p = .046$. Among state-oriented participants, in contrast, we found a nonsignificant reversal, such that latencies for self-initiated target shifts were descriptively longer when a demand was present rather than absent, $B = 14.58$, $t(105) = 1.03$, $p = .305$. In the uncompleted intention condition, action- and state-oriented individuals did not differ, $B = -8.3$, $t(105) = -0.59$, $p = .558$. In the completed intention condition, action-oriented participants had significantly higher initiation latencies than state-oriented participants, $B = 34.32$, $t(105) = 2.34$, $p = .021$.

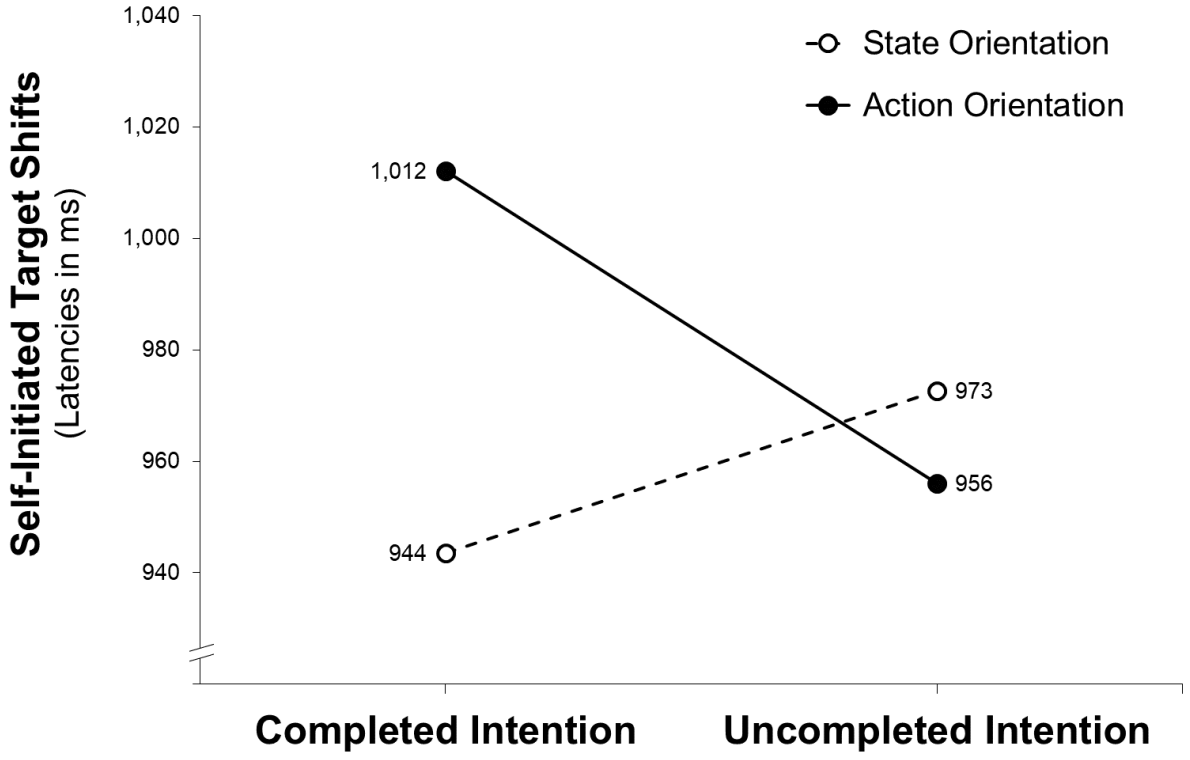

Figure 3.3 Decision latencies (in ms) for self-initiated target shifts, controlling for externally cued target shifts, as a function of induced demands (i.e., completed vs. uncompleted intention) and action versus state orientation in Study 3 (N = 113).

Discussion

The results of Study 3 replicated the results of Study 2 with another self-regulatory task (i.e., the Grid task). We found action versus state orientation to moderate the impact of varying demand levels on decision latencies in the Grid task. Specifically, action-oriented individuals took significantly less time to decide and self-initiate target shifts under an uncompleted intention compared to a completed intention. This higher performance under moderate compared to low demands further supports the unlocking effect for action-oriented individuals. State-oriented individuals showed equally fast self-initiated target shifts under moderate and low demands.

5. General Discussion

Self-motivation is a skill that is found to be important for many key aspects of human functioning (Gross, 2002; Kuhl, 1981) and comes into play precisely when life becomes demanding (Kuhl, 2000, 2001). It is therefore essential to know the circumstances that lock or

unlock self-motivation. The present research investigates this from a dynamic perspective and considers the interaction between person (i.e., action vs. state orientation) and situation (i.e., different demand levels). In previous studies, state-oriented individuals show a well examined locking effect of self-motivation, which is reflected in a reduced self-regulatory performance under high demands (e.g., Birk et al., 2020). In contrast, action-oriented individuals show high self-regulatory performance under high demands (e.g., Friederichs et al., 2020). However, especially from an empirical perspective, it remains unclear whether action-oriented individuals need at least some demand to unlock their self-motivation potential.

The present work sought to extend our knowledge on this issue by focusing on the conditions of the unlocking effect for action-oriented individuals. To unravel the internal dynamic processes, we conducted three studies to investigate the impact of demands on the lower end of the continuum (Study 1: low versus moderate subjective listlessness; Studies 2 and 3: completed versus uncompleted intention) on action- and state-oriented individuals in established self-regulatory tasks (Studies 1 and 2: Stroop task; Study 3: Grid task). Across all studies, action versus state orientation significantly moderated the impact of demands on self-regulatory performance.

Specifically, Study 1 showed that action orientation leads to a descriptively better performance in the Stroop task when participants felt moderate compared to low listlessness. This effect became statistically significant in Study 2 when we replicated Study 1 but manipulated demand levels experimentally instead of assessing subjective listlessness. Study 3 generalized the findings by using the same experimental manipulation as in Study 2 but a different self-regulation task. In particular, results showed that action-oriented individuals were also faster in self-initiated target shifts under moderate compared to low demands. In all studies, state-oriented individuals showed consistent self-regulatory performance under varying demand levels at the overall lower end of the continuum.

Taken together, our results indicate that how well individuals self-regulate under different demand levels depends on their action versus state orientation. Note, that this moderating role of action versus state orientation was observed across three studies with two different demands (subjective listlessness, uncompleted intention) and two different self-regulatory tasks (Stroop task, Grid task). This methodical convergence increases confidence in the robustness of our findings.

It Takes Some Demand to Unlock Self-motivation for Action-oriented People

Undeniably, the most important finding in our studies is the unlocking effect for action-oriented individuals. Across three studies, action-oriented individuals showed better self-regulatory performance under moderate compared to low demands. This pattern of response is in line with our theoretical assumption (PSI-theory, Kuhl, 2000, 2001) that action-oriented individuals need some kind of demand to unlock their self-motivational potential. In the literature, many findings show that action-oriented individuals function well under high demands (e.g., Baumann & Kuhl, 2005; Baumann et al., 2018; Dieffendorf et al., 2000; Kuhl & Beckmann, 1994). The present results add to this by showing that action-oriented individuals activate their self-motivation potential only above a certain demand level. In other words, our research contributes to a more differentiated understanding of action orientation by considering self-motivation as a dynamic process that needs to be unlocked. This unlocking process among action-oriented individuals occurs at some demand level between low and moderate intensities.

Compared to other research in this field, we tried to investigate demands on the lower end of the continuum to make the unlocking effect appear. Note that this approach may result in our "moderate demand" condition being more similar to the "low demand" condition in other studies. This can explain why many studies find a stability effect among action-oriented individuals as indicated by constant rather than higher self-regulatory performance under demands. At this point, however, it is important to mention that there is no common metric to measure the level of demands (for a detailed elaboration of this point, see Koole et al., 2012). This makes it almost impossible to predict the exact nature of the fine line at which the unlocking effect for action orientation occurs. Although we cannot give exact specifications regarding the conditions of the unlocking effect, we provide first experimental support that action-orientated individuals need at least some demand to unlock their self-motivation potential.

Not Every Demand Locks Self-motivation for State-oriented People

The findings of our research also contribute to a more differentiated picture of state orientation that is widely known for a locking effect under high demand. Unlike previous research (e.g., Birk et al., 2020), the demand conditions in our studies did not affect the self-regulatory performance of state-oriented individuals. Across three studies, state-oriented individuals showed a constant performance under low versus moderate demands. This pattern can be explained if one assumes that the self-motivation potential of state-oriented individuals is only

locked at higher demand levels. Thus, different demand levels on the lower continuum are not enough to have an impact on the self-motivation potential of state-oriented individuals.

It is important to note that, according to PSI-theory (Kuhl, 2000, 2001), the reasons for performance deficits in self-regulatory tasks differ for action- and state-oriented individuals. While action-oriented individuals have a *motivational* deficit under low demands, state-oriented individuals show a *functional* deficit under high demands (Kuhl, 1981; Kuhl et al., 2021). That is, action-oriented individuals can draw on their self-motivation skills under low demands but do not want to. State-oriented individuals, in contrast, cannot draw on their self-motivation skills under high demands although they want to (Baumann et al., 2018; Kuhl & Beckmann, 1994).

Dynamics of Personality

In sum, our studies highlight the importance of considering the dynamics between situation and person, by showing that the self-regulatory performance of action- and state-oriented individuals depends on the present demand level. While most studies (e.g., Kazén et al., 2008) highlight state orientation as the challenging and action orientation as the desirable disposition, the findings of our experiment contribute to a more differentiated view. In three studies, we counteract the positive image of action orientation and the negative image of state orientation by focusing more on their dynamic interaction with the situation. Both action and state orientation have advantageous and challenging sides depending on the demand level. Thus, the locking effect for state-oriented individuals does not only imply poor self-regulatory performance under high demands (e.g., Birk et al., 2020), but also no losses in self-motivation under lower demands. Additionally, the unlocking effect for action-oriented individuals does not only imply good self-regulatory performance under high demands (e.g., Jostmann & Koole, 2007), but also a lack of motivation if the demands are too low. This highlights the importance of considering the dynamics of personality. Under different conditions, personality dispositions such as action versus state orientation may have virtually opposing effects.

Finally, our findings should not be understood as pointing out the weakness of action and state orientation, but more as a contribution to a better understanding of the functionality of action and state orientation. Their different pattern of behavior can be explained when understanding self-regulatory efforts as a finite resource (Baumeister et al., 2007): Action-oriented individuals behave according to Ach's law of difficulty (1910) and mobilize their self-regulatory effort with increasing demands. State-oriented individuals on the other hand deplete their resources with

increasing demands. This is in line with ego-depletion effects, which only occur among state-oriented but not among action-oriented individuals (Kazen & Kuhl, 2020; Kazén et al., 2015).

6. Limitations and Future Directions

Despite the contribution of the present research to the understanding of action and state orientation, it is important to underscore some limitations. First, mediators need to be investigated. We invoke differences in self-motivation as the reason for the varying self-regulatory performance observed among action-oriented individuals under different demands (Kuhl, 2000, 2001). However, the differences found in our study could have resulted from other processes than self-motivation. An instrument that allows for such investigation would have to enable continuous measurements of fine gradations in positive affect. In facial electromyography (EMG), for example, participants show activity in the zygomatic muscle in response to positive stimuli even when they are unaware about the presentation of the stimuli (e.g., Dimberg et al., 2000, for an overview, see Hess, 2009). It would be informative to measure facial EMG as a proxy for positive affect during the Stroop and Grid tasks.

Second, future studies should extend the range of demands and vary, for example, the quality (e.g., intra-, inter-, and non-personal demands), quantity, level, range, and duration of demands. The term demand is often used as a summary for different conditions (e.g., demanding life circumstances, subjective listlessness, uncompleted intention, task difficulty, memory load). To improve comparability between studies, a taxonomy is needed that allows the systematic classification of demands on a manageable number of dimensions (for a possible approach, see the subjective taxonomy of health information sources by Wedderhoff et al., 2018). A common metric of demands would also allow more clarification on the exact demand intensities needed for the occurrence of the unlocking effect. This in turn would facilitate the conduction of a single study design investigating the crossover pattern of action and state orientation.

In addition, it would be important to know if our results can be generalized to self-regulatory performance in real life. Previous studies show that action and state orientation also act as moderators under real-life demands (Baumann et al., 2005, 2018; Koole et al., 2022; Kuhl & Beckmann, 1994). For example, Heckhausen and Strang (1988) show the locking effect in a study with basketball players, in which state-oriented players show a worse performance when trying to break their personal record as compared to normal training conditions. However, to our knowledge, the unlocking effect for action-oriented individuals has not been investigated in real life settings. Further research in this area will help to establish a bridge between laboratory and real-life settings. For example, a longitudinal study could assess the

implementation rate of personal goals among action- and state-oriented individuals. In addition, this study should assess the difficulty of participants' personal goals and the demands in their current life circumstances during this period.

7. Conclusion

Overall, two important conclusions can be drawn from our research. First, how demands affect self-regulatory performance depends on whether an individual is action- or state-oriented. Second, dispositional action and state orientation are neither good nor bad but have virtually opposite effects depending on the context. Specifically, our findings complement the existing literature and counteract the bad image of state orientation by showing that varying demand levels on the lower end of the continuum do not impede state-oriented individuals' self-regulatory performance. In addition, we countered the exclusively positive image of action orientation by showing that action-oriented individuals do not unlock their self-motivation potential unless there is some kind of demand. Our research highlights the importance of understanding personality as a dynamic construct.

References of Chapter 3

Ach, N. (1910). *Über den Willensakt und das Temperament: eine experimentelle Untersuchung*. Quelle & Meyer.

Baumann, N., Kaschel, R., & Kuhl, J. (2005). Striving for unwanted goals: stress-dependent discrepancies between explicit and implicit achievement motives reduce subjective well-being and increase psychosomatic symptoms. *Journal of Personality and Social Psychology*, *89*(5), 781-799. https://doi.org/10.1037/0022-3514.89.5.781

Baumann, N., & Kuhl, J. (2005). How to resist temptation: The effects of external control versus autonomy support on self-regulatory dynamics. *Journal of Personality*, *73*(2), 443-470. https://doi.org/10.1111/j.1467-6494.2005.00315.x

Baumann, N., Kazén, M., Quirin, M., & Koole, S. L. (Eds.) (2018). *Why people do the things they do. Building on Julius Kuhl's contributions to the psychology of motivation and volition.* Göttingen, Germany: Hogrefe.

Baumeister, R. F., & Showers, C. J. (1986). A review of paradoxical performance effects: Choking under pressure in sports and mental tests.*European Journal of Social Psychology*, *16*(4), 361-383. https://doi.org/10.1002/ejsp.242016040

Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current directions in psychological science*, *16*(6), 351-355. https://doi.org/10.1111/j.1467-8721.2007.00534.x

Beilock, S. L., & Carr, T. H. (2001). On the fragility of skilled performance: What governs choking under pressure? *Journal of Experimental Psychology: General*, *130*(4), 701-725. https://doi.org/10.1037/0096-3445.130.4.701

Bettschart, M., Wolf, B. M., Herrmann, M., & Brandstätter, V. (2021). Age-related development of self-regulation: Evidence on stability and change in action orientation. *Journal of Research in Personality, 91*, 104063. https://doi.org/10.1016/j.jrp.2020.104063

Birk, M. V., Mandryk, R. L., & Baumann, N. (2020). Just a click away: Action–state orientation moderates the impact of task interruptions on initiative. *Journal of Personality*, *88*(2), 373-390. https://doi.org/10.1111/jopy.12498

Deci, E. L., & Ryan, R. M. (2000). The" what" and" why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227-268. https://doi.org/10.1207/S15327965PLI1104_01

DeWitte, S., Bruyneel, S., & Geyskens, K. (2009). Self-regulating enhances self-regulation in subsequent consumer decisions involving similar response conflicts. *Journal of Consumer Research*, *36*(3), 394-405. https://doi.org/10.1086/598615

Dibbelt, S. (1997). Wechseln und Beibehalten von Zielen als Subfunktionen der Handlungskontrolle [Change and maintenance of goals as functional components of action control]. *Unpublished doctoral dissertation, University of Osnabrück, Osnabrück, Germany*.

Diefendorff, J. M. (2004). Examination of the roles of action-state orientation and goal orientation in the goal-setting and performance process. *Human Performance*, *17*(4), 375–395. https://doi.org/10.1207/s15327043hup1704_2

Diefendorff, J. M., Hall, R. J., Lord, R. G., & Strean, M. L. (2000). Action–state orientation: Construct validity of a revised measure and its relationship to work-related variables. *Journal of Applied Psychology*, *85*(2), 250-263. https://doi.org/10.1037/0021-9010.85.2.250

Diefendorff, J. M., Richard, E. M., & Gosserand, R. H. (2006). Examination of situational and attitudinal moderators of the hesitation and performance relation. *Personnel Psychology*, *59*(2), 365-393. https://doi.org/10.1111/j.1744-6570.2006.00040.x

Dimberg, U., Thunberg, M., & Elmehed, K. (2000). Unconscious facial reactions to emotional facial expressions. *Psychological Science, 11*(1), 86–89. https://doi.org/10.1111/1467-9280.00221

Faul, F., Erdfelder, E., Buchner, A., & Lang, A. G. (2009). Statistical power analyses using G* Power 3.1: Tests for correlation and regression analyses. *Behavior Research Methods*, *41*(4), 1149-1160. https://doi.org/10.3758/BF03193146

Fischer, R., Dreisbach, G., & Goschke, T. (2008). Context-sensitive adjustments of cognitive control: conflict-adaptation effects are modulated by processing demands of the ongoing task. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *34*(3), 712. https://doi.org/10.1037/0278-7393.34.3.712

Frese, M., Fay, D., Hilburger, T., Leng, K., & Tag, A. (1997). The concept of personal initiative: Operationalization, reliability and validity in two German samples. *Journal of Occupational and Organizational Psychology, 70*(2), 139-161. https://doi.org/10.1111/j.2044-8325.1997.tb00639.x

Friederichs, K. M., Kees, M. C., & Baumann, N. (2020). When tough gets you going: Action orientation unfolds with difficult intentions and can be fostered by mental contrasting. *Personality and Individual Differences*, *161*, 109970. https://doi.org/10.1016/j.paid.2020.109970

Gendolla, G. H., & Richter, M. (2010). Effort mobilization when the self is involved: Some lessons from the cardiovascular system. *Review of General Psychology*, *14*(3), 212-226. https://doi.org/10.1037/a0019742

Goschke, T., & Kuhl, J. (1993). Representation of intentions: Persisting activation in memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *19*(5), 1211-1226. https://doi.org/10.1037/0278-7393.19.5.1211

Gross, J. J. (2002). Emotion regulation: Affective, cognitive, and social consequences. *Psychophysiology*, *39*(3), 281-291. https://doi.org/10.1017/S0048577201393198

Gröpel, P., Baumeister, R. F., & Beckmann, J. (2014). Action versus state orientation and self-control performance after depletion. *Personality and Social Psychology Bulletin*, *40*(4), 476-487. https://doi.org/10.1177/0146167213516636

Gruber, O., & Goschke, T. (2004). Executive control emerging from dynamic interactions between brain systems mediating language, working memory and attentional processes. *Acta Psychologica*, *115*(2-3), 105-121. https://doi.org/10.1016/j.actpsy.2003.12.003

Heckhausen, H., & Strang, H. (1988). Efficiency under record performance demands: Exertion control—an individual difference variable? *Journal of Personality and Social Psychology*, *55*(3), 489-498. https://doi.org/10.1037/0022-3514.55.3.489

Hess, U. (2009). Facial EMG. In E. Harmon-Jones & J. S. Beer (Eds.), *Methods in the neurobiology of social and personality psychology* (pp. 70−91). New York, NY: Guilford Press.

Jostmann, N. B., & Koole, S. L. (2006). On the waxing and waning of working memory: Action orientation moderates the impact of demanding relationship primes on working memory capacity. *Personality and Social Psychology Bulletin*, *32*(12), 1716-1728. https://doi.org/10.1177/0146167206292595

Jostmann, N. B., & Koole, S. L. (2007). On the regulation of cognitive control: Action orientation moderates the impact of high demands in Stroop interference tasks. *Journal of Experimental Psychology: General*, *136*(4), 593-609. https://doi.org/10.1037/0096-3445.136.4.593

Kane, M. J., & Engle, R. W. (2003). Working-memory capacity and the control of attention: the contributions of goal neglect, response competition, and task set to Stroop interference. *Journal of Experimental Psychology: General*, *132*(1), 47-70. https://doi.org/10.1037/0096-3445.132.1.47

Kaschel, R., Kazén, M., & Kuhl, J. (2017). State orientation and memory load impair prospective memory performance in older compared to younger persons. *Aging,*

Neuropsychology, and Cognition, *24*(4), 453-469. https://doi.org/10.1080/13825585.2016.1225664

Kazén, M., & Kuhl, J. (2005). Intention memory and achievement motivation: Volitional facilitation and inhibition as a function of affective contents of need-related stimuli. *Journal of Personality and Social Psychology, 89*(3), 426-448. https://doi.org/10.1037/0022-3514.89.3.426

Kazén, M., & Kuhl, J. (2020). Ego-depletion or invigoration in solving the tower of Hanoi? Action orientation helps overcome planning deficits. *Current Psychology*, 1-9. https://doi.org/10.1007/s12144-020-00770-9

Kazén, M., Kaschel, R., & Kuhl, J. (2008). Individual differences in intention initiation under demanding conditions: Interactive effects of state vs. action orientation and enactment difficulty. *Journal of Research in Personality*, *42*(3), 693-715. https://doi.org/10.1016/j.jrp.2007.09.005

Kazén, M., Kuhl, J., & Leicht, E. M. (2015). When the going gets tough…: Self-motivation is associated with invigoration and fun. *Psychological research*, *79*(6), 1064-1076. https://doi.org/10.1007/s00426-014-0631-z

Koole, S. L., & Jostmann, N. B. (2004). Getting a grip on your feelings: Effects of action orientation and external demands on intuitive affect regulation. *Journal of Personality and Social Psychology*, *87*(6), 974-990. https://doi.org/10.1037/0022-3514.87.6.974

Koole, S. L., Jostmann, N. B., & Baumann, N. (2012). Do demanding conditions help or hurt self-regulation? *Social and Personality Psychology Compass*, *6*(4), 328-346. https://doi.org/10.1111/j.1751-9004.2012.00425.x

Koole, S. L., Kuhl, J., Jostmann, N. B., & Vohs, K. D. (2005). On the hidden benefits of state orientation: Can people prosper without efficient affect regulation skills? In A. Tesser, J. Wood, & D. A. Stapel (Eds.), *On building, defending and regulating the self: A psychological perspective* (pp. 217-243). London, UK: Taylor & Francis.

Koole, S. L., Jostmann, N. B., & Baumann, N. (2022). *From intentions to action: An integrative review of four decades of action control theory and research*. Manuscript under review. https://doi.org/10.1016/bs.aesp.2023.07.001

Kuhl, J. (1981). Motivational and functional helplessness: The moderating effect of state versus action orientation. *Journal of Personality and Social Psychology*, *40*(1), 155-170. https://doi.org/10.1037/0022-3514.40.1.155

Kuhl, J. (1985). Volitional mediators of cognition-behavior consistency: Self-regulatory processes and action versus state orientations. In J. Kuhl & J. Beckmann (Eds.), *Action control: From cognition to behavior* (pp. 101-128). Heidelberg/New York: Springer.

Kuhl, J. (1994). Action versus state orientation: Psychometric properties of the action control scale (ACS-90). In J. Kuhl & J. Beckmann (Eds.), *Volition and personality: Action versus state orientation* (pp. 47–59). Göttingen, Germany: Hogrefe.

Kuhl, J. (2000). A functional-design approach to motivation and self-regulation: The dynamics of personality systems interactions. In M. Boekaerts, P.R. Pintrich & M. Zeidner (Eds.), *Handbook of self-regulation* (pp. 111-169). San Diego: Academic Press. https://doi.org/10.1016/B978-012109890-2/50034-2

Kuhl, J. (2001). *Motivation und Persönlichkeit: Interaktionen psychischer Systeme* [Motivation and personality: Architectures of mood and mind]. Göttingen, Germany: Hogrefe.

Kuhl, J. & Beckmann, J. (Eds.) (1994). *Volition and personality: Action versus state orientation*. Seattle/Göttingen: Hogrefe.

Kuhl, J., & Kazén, M. (1999). Volitional facilitation of difficult intentions: Joint activation of intention memory and positive affect removes Stroop interference. *Journal of Experimental Psychology: General*, *128*(3), 382-399. https://doi.org/10.1037/0096-3445.128.3.382

Kuhl, J., Quirin, M., & Koole, S. L. (2021). The functional architecture of human motivation: Personality systems interactions theory. *Advances in Motivation Science*, *8*, 1-62. https://doi.org/10.1016/bs.adms.2020.06.001

Lewin, K. (1935). A dynamic theory of personality. New York: McGraw Hill.

MacLeod, C. M. (1991). Half a century of research on the Stroop effect: An integrative review. *Psychological Bulletin, 109*(2), 163–203. https://doi.org/10.1037/0033-2909.109.2.163

Muraven, M., & Baumeister, R. F. (2000). Self-regulation and depletion of limited resources: Does self-control resemble a muscle? *Psychological Bulletin*, *126*(2), 247-259. https://doi.org/10.1037/0033-2909.126.2.247

Sniehotta, F. F., Scholz, U., & Schwarzer, R. (2005). Bridging the intention–behaviour gap: Planning, self-efficacy, and action control in the adoption and maintenance of physical exercise. *Psychology & Health*, *20*(2), 143–160. https://doi.org/10.1080/08870440512331317670

Stroop, J. R. (1935). Studies of interference in serial verbal reactions. *Journal of Experimental Psychology, 18*(6), 643–662. https://doi.org/10.1037/h0054651

Wedderhoff, O., Chasiotis, A., Rosman, T., & Mayer, A.-K. (2018). Unveiling the subjective perception of health information sources: A three-dimensional source taxonomy based on similarity judgements. *Frontiers in Communication,* 3(57). https://doi.org/10.3389/fcomm.2018.00057

Wojdylo, K., Karlsson, W., & Baumann, N. (2016). Do I feel ill because I crave for work or do I crave for work because I feel ill? A longitudinal analysis of work craving and health. *Journal of Behavioral Addictions, 5*(1), 90-99. https://doi.org/10.1556/2006.5.2016.005

Chapter 4

The Benefits of Prosocial Power Motivation in Leadership:

Action Orientation Fosters a Win-Win

Friederichs, K. M., Waldenmeier, K., & Baumann, N., 2023

Published in *PloS One, 18* (7), e0287394

https://doi.org/10.1371/journal.pone.0287394

Abstract

Power motivation is considered a key component of successful leadership. Based on its dualistic nature, the need for power (*n*Power) can be expressed in a dominant or a prosocial manner. Whereas dominant motivation is associated with antisocial behaviors, prosocial motivation is characterized by more benevolent actions (e.g., helping, guiding). Prosocial enactment of the power motive has been linked to a wide range of beneficial outcomes, yet less has been investigated what determines a prosocial enactment of the power motive. According to Personality Systems Interactions (PSI) theory, action orientation (i.e., the ability to self-regulate affect) promotes prosocial enactment of the implicit power motive and initial findings within student samples verify this assumption. In the present study, we verified the role of action orientation as an antecedent for prosocial power enactment in a leadership sample (N = 383). Additionally, we found that leaders personally benefited from a prosocial enactment strategy. Results show that action orientation through prosocial power motivation leads to reduced power-related anxiety and, in turn, to greater leader well-being. The integration of motivation and self-regulation research reveals why leaders enact their power motive in a certain way and helps to understand how to establish a win-win situation for both followers and leaders.

Keywords: Action Orientation; Prosocial Power Motivation; Well-Being; Leadership Motivation; Intrinsic Motivation

Introduction

Leadership has long been considered a key driver for organizational success (Hambrick & Quigley, 2014). Today's leadership requirements are radically changing, however, as modern organizations become increasingly complex, technology accelerates, and the demand for long-term value creation, sustainable growth, and better employee well-being is rising (Srinivasan & Yonge, 2021). More than ever, leaders are needed who can empower, relate, and collaborate with their followers, and thus a shift away from traditional, authoritarian, and directive leadership behavior is required (Paustian-Underdahl et al., 2014). Effective leaders in modern organizations prioritize a positive work culture, team empowerment, and ownership. This creates a motivating and engaging environment where team members feel invested in the organization's success. Satya Nadella, CEO of Microsoft, and Indra Nooyi, former CEO of PepsiCo, are prime examples of successful leaders who have implemented these practices. Their approaches have led to remarkable business success and revenue growth, showcasing the significant impact of prosocial leadership behavior on organizational achievement.

To understand what motivates leaders to exhibit certain leadership qualities, extensive research has identified the need for power (*n*Power) as an important factor that influences leadership behavior r (House & Aditya, 1997; Løvaas et al., 2020; McClelland, 1975; Winter, 1991). Given the dual nature of *n*Power (McClelland, 1970), it can be expressed in a self-serving, aggressive, and assertive manner (i.e., dominant power) but also in an other-serving, benevolent, and supportive way (i.e., prosocial power). Dominant power energizes leadership concerns towards personal gains and status, while prosocial power fuels leaders to empower others and foster the common good (Bunderson & Reagans, 2011; Magee & Langner, 2008; Winter, 1973). Thus, the ability to harness one's prosocial power becomes increasingly crucial in today's dynamic business landscape.

Whereas ample evidence highlights the benefits of prosocial power motivation in leaders, such as greater focus on promoting collaboration (Bunderson & Reagans, 2011), employee thriving and well-being (Abid et al., 2018) as well as gender equity [London et al., 2018; see also Harrell & Simpson, 2015; Jacobs & McClelland 1994), less attention has been given to the factors that contribute to prosocial power enactment. By identifying crucial antecedents, leaders may learn how to leverage the positive aspects of their power motivation and thus create more effective leadership practices. According to Personality Systems Interactions (PSI) theory, high self-regulatory ability (i.e., action orientation) is a decisive predictor for the prosocial enactment of the implicit power motive (Baumann et al., 2010; Kuhl, 2001). High self-regulatory ability

helps individuals to maintain access to the self and its integrative capacity so that they are able to support rather than ignore the interest of others in their power-related strivings (Baumann & Kuhl, 2020; Kuhl et al., 2015; Quirin & Kuhl, 2022). Indeed, prior findings within student samples verified the assumption that action orientation acts as an antecedent of prosocial power motivation (Baumann et al., 2015). In the present study, we investigated whether this link can also be found in leaders. Further, research has scarcely considered leaders personal benefits from their leadership behavior [Byrne et al., 2014; see Kaluza et al., 2020, for a review]. Thus, in addition, beneficial effects on leaders themselves were explored, analyzing how leading in a prosocial manner impacts leaders' power-related anxiety and their well-being.

Leadership Needs Power

Leadership above all revolves around power (Antonakis & Day, 2018; Sturm et al., 2021; Trojak & Galić, 2020; Williams, 2014). "One cannot be a leader without having power" (Sturm et al., 2021, p.1), as leaders need power to influence, direct, and motivate followers to contribute their efforts towards achieving organizational aspirations (McClelland, 1985). With power at the center of leadership, scholars identified the motivation to obtain power - defined as a strong inner desire to impact others (*n*Power) (James et al., 2013) - as a crucial leader disposition (James et al., 2021; McClelland, 1975; McClelland & Burnham, 2017; Trojak & Galić, 2020). Individuals high in *n*Power recognize that they contribute to organizational success more effectively by influencing others instead of trying to stand out through their own achievements. Also, they continuously strive for leadership positions and gain satisfaction from their leadership behavior (House & Aditya, 1997; Kehr, 2004). A large body of research has shown that effective and successful leadership is highly correlated with *n*Power (Jacobs & McClelland, 1994; Jenkins, 1994; Kirkpatrick et al., 2002). Further, *n*Power predicts charismatic leadership behavior (De Hoogh et al., 2005), career progression (McClelland, 1975), and advancement into upper managerial roles (McClelland & Boyatzis, 1982). Thus, a highly developed *n*Power seems to be vital in leadership.

The need for power, however, has in general a rather poor reputation as it is mostly associated with socially undesired behaviors, such as lack of compassion (van Kleef et al., 2008), tendency to harm and dehumanize others (Lammers & Stapel 2011; Zimbardo, 1972), antisocial decision making (Magee & Langner, 2008), or selfishness (Sturm & Antonakis, 2015). Less attention has been given to the benevolent side of the desire to impact others, as it also can energize empowering behavior, such as helping and supporting others (Aydinli et al., 2014) as well as mentoring (Schmidt, 1997), prosocial decision making (Magee & Langner, 2008), and greater

willingness to forgive others (Karremans & Smith, 2010). Moreover, research shows that prosocial power motivation is associated with generativity (Hofer et al., 2008), love for children (Chasiotis et al., 2006), and greater psychological safety within followers when considered along with supervisor psychological safety (Frazier & Tupper, 2018); see also Hofer & Chasiotis, 2022).

The dualistic nature of *n*Power points out that a high need for power may not always turn into egoistic, self-serving, or autocratic leadership, but may also bring forward leaders that aim to benefit others, value relationships with followers, and advance collective interest above personal success and dominance (Bolino & Grant, 2016; Bunderson & Reagans, 2011; Lammers et al., 2009). Therefore, prosocial power motivated leaders seem to be a valuable asset for organizations and thus it would be beneficial to understand what fosters the benevolent side of *n*Power. The augmented focus on outcome research in the power motivation domain, however, has neglected the question of what determines how individuals enact their *n*Power (James et al., 2021).

Prosocial Power Enactment and Action Orientation

To date, still very little is known about why individuals engage in specific leadership behavior (Williams, 2014) and what determines how *n*Power is enacted (Galinsky et al., 2015; Moon et al., 2022). Regarding *n*Power as a unitary global construct that is related to toxic and selfish behavior has not contributed to fill this research gap but rather led to contempt power motivation in leadership (Pearce & Manz, 2014). In an effort to advocate the importance of power motivation in leadership, James and colleagues highlighted in their recent article that "it is not the power motive that leads to corruption and tyranny, but rather how the power motive is channeled into behavior by other personality factors" (James et al., 2021, p.1]. In line with this, PSI theory suggests that action orientation (i.e., the ability to self-regulate affect) is a decisive predictor for the prosocial enactment of *n*Power (Baumann et al., 2010; Kuhl, 2001) and initial empirical findings confirm this notion (Baumann et al., 2015).

Action orientation is the ability to self-regulate own emotions and behavior in a context-sensitive way (Baumann & Kuhl, 2002; Koole et al., 2012; Koole & Jostmann, 2004; Kuhl, 1994; for a review see Koole et al., 2023). Action-oriented, relative to state-oriented individuals, show greater psychological functioning in various areas such as professional performance (Diefendorff et al., 2017), decisiveness and productivity (Birk et al., 2020; Chowdhury & Pychyl, 2018), and well-being (Baumann et al., 2005). Several findings show that these benefits

are indeed regulated through the self (Jais et al., 2021; Koole & Coenen, 2007; Koole & Jostmann, 2004). PSI theory posits that the prosocial enactment of *n*Power involves the self, and thus is considered an *intrinsic* enactment strategy (Chasiotis & Hofer, 2017; Kuhl, 2000). Intrinsic enactment strategies are driven by positive affect that is not only inherent in the activity itself but mainly results from efficient self-regulation (Baumann et al., 2010; Baumann et al., 2016; Keller & Bless, 2008; Kuhl & Scheffer, 1999). In contrast, extrinsic enactment strategies (e.g., dominance) are driven by external incentives (e.g., faces signaling low dominance; Schultheiss & Hale, 2007) and hence do not rely on the self. Consequently, as action orientation is the ability to regulate emotions through the self, it is considered highly conducive to enact *n*Power in a prosocial way.

Several empirical findings confirm the link between action orientation and intrinsic motive enactment across all social motives (achievement, affiliation, power). For instance, Baumann and Kuhl (2020) considered all three motives and showed a significant positive relation of action orientation and self-regulated (e.g., intrinsic) motive enactment. Yet, no relation with incentive driven (e.g., dominant) enactment strategies was observed. In addition, they found that fostering action orientation through intervention leads to greater intrinsic motive enactment (Studies 3-5). Applying different self-regulation trainings, they demonstrated a pre-post increase in self-regulated motive enactment (Study 3), as well as differential treatment effects (Study 4 and 5). Specifically, individuals with low self-regulation ability (i.e., state-oriented individuals) showed more self-regulated motive enactment in the treatment compared to the control conditions (Study 4: humoristic talk; Study 5: no treatment). Moreover, further research shows that action orientation is linked to the intrinsic enactment of the achievement motive (flow; Baumann & Scheffer, 2010), the affiliation motive (intimacy; Hofer & Busch, 2011), and the power motive (prosocial guidance; Baumann et al., 2015).

The Present Study

In the present study, we are following up on the results of Baumann and colleagues' (2015) research. Based on the assumptions of PSI theory (Kuhl, 2001; Kuhl et al., 2021) that the self-regulatory ability of action orientation increases the intrinsic, prosocial enactment of the power motive, the researchers examined the relation between action orientation and the prosocial enactment of *n*Power within student samples of aspiring teachers and psychologists. The researchers argued that power motivation is particularly relevant for both professions, as impacting other people by helping, guiding, and transferring knowledge is essential in their daily work. Applying the Operant Motive Test (Kuhl et al., 2003; Kuhl & Scheffer, 1999) they

differentiated five enactment strategies within *n*Power (prosocial guidance, status, coping, dominance, and powerlessness) and examined action orientation as an antecedent for the prosocial enactment of *n*Power. Further, they explored personal benefits (explicit power motivation, well-being) of a prosocial enactment strategy. Across both samples (Study 1 and 2) they confirmed their assumption that prosocial enactment of *n*Power is fueled by self-regulation (i.e., action orientation). Furthermore, action orientation was indirectly associated with well-being through prosocial enactment of *n*Power and the explicit power motive.

As power motivation lies at the center of leadership (James et al., 2021; Trojak & Galić, 2020), we examined action orientation as an antecedent of prosocial power motivation in a large leadership sample and expected to replicate the findings of Baumann and colleagues (2015). Our conceptual model is illustrated in Figure 4.1. Thus, we first tested the relation between action orientation and prosocial enactment of *n*Power and assumed to confirm the link in our sample.

Second, research indicates that the fear of losing power positively correlates with self-serving behavior in leaders (Wisse et al., 2019). Additionally, power threat may negatively impact leadership behavior even if leaders are generally prosocial oriented (Williams, 2014). Action orientation, however, has been shown to lead to reduced anxiety in explicit power striving (Chatterjee et al., 2018; Thakur & Baumann, 2022). Thus, we analyzed whether action orientation has an indirect effect through the prosocial enactment of *n*Power on power-related anxiety. We assumed an indirect negative effect through implicit prosocial power motivation on power-related anxiety.

Finally, we investigated the impact on leaders' well-being. To date, a great amount of research has focused on the effect of leadership behaviors on employee's well-being (e.g., Arnold, 2017), whereas less attention has been placed on leader`s own well-being (Byrne et al., 2014; see Kaluza et al., 2020 for a review). Based on the insight that action orientation is highly advantageous for well-being (Baumann et al., 2005; Baumann & Quirin, 2006; Chatterjee et al., 2018) and not only receiving but also giving support is known to be beneficial for well-being (Deci & Ryan, 2000), we tested whether the indirect path from action orientation through prosocial power enactment on power-related anxiety is associated with leader well-being.

In summary, we tested the following hypotheses: (H1) Action orientation is associated with the prosocial enactment of *n*Power, (H2) action orientation has an indirect negative effect on power-related anxiety through the prosocial enactment of *n*Power, and (H3) action orientation has an

indirect negative effect on power-related anxiety through the prosocial enactment of *n*Power and, in turn, well-being.

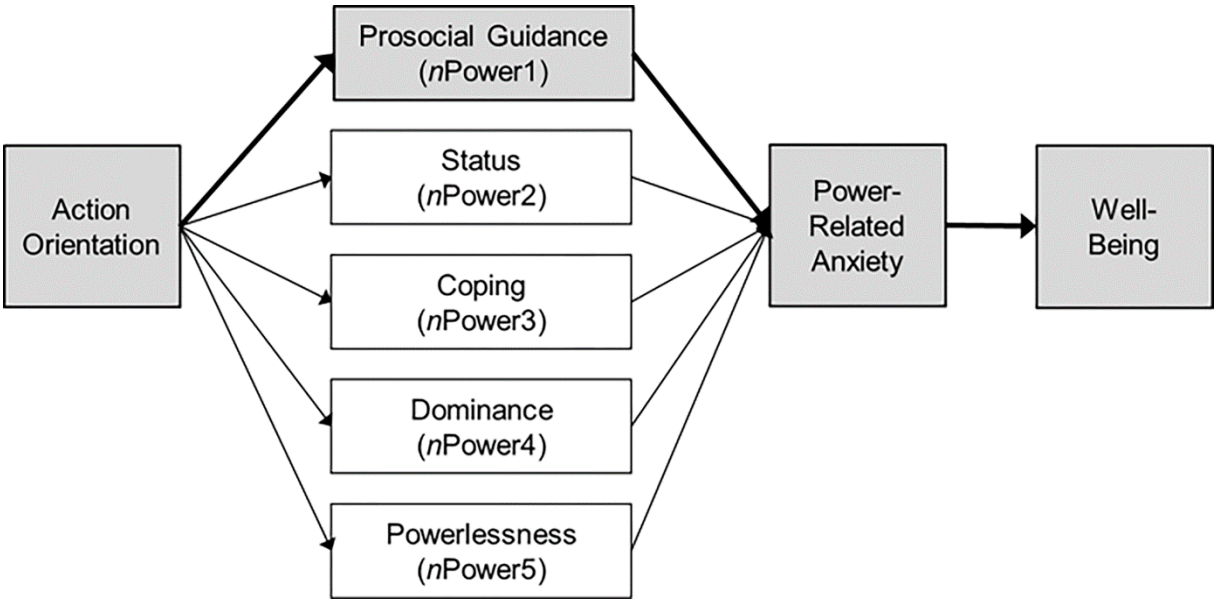

Figure 4.1 Conceptual Model with an Indirect Path from Action Orientation through Prosocial Power Enactment (nPower1) to Power-Related Anxiety and, in turn, Well-Being

Materials and methods

Participants

Data of N = 383 executive leaders (38.40% female) from various companies or organizations were used for the present analysis. Their mean age was 44.08 years (SD = 8.57; range 24-72 years). Participants voluntarily filled out of a series of psychological tests, including those relevant for the present research, within the scope of a self-development counseling setting. The assessments were conducted online so that participants were able to complete them on their own computers. Participants provided written informed consent for the use of collected data for research purposes. Ethical approval for this study was not obtained as data was collected by an external institution and provided in an anonymized form. The present data were made available by IMPART (Institute for Motivation and Personality Development: Assessment, Research, and Training; www.impart.de).

Materials

Action orientation. The Action Control Scale (ACS; Kuhl, 1994) was used to assess action orientation. The ACS consists of two subscales assessing decision-related and failure-related dimensions of action orientation with 12 items each. In the present study, decision-related action orientation was relevant (Cronbach's α = .80). An example item is *"When I am facing a big project that has to be done: (a) I often spend too long thinking about where I should begin, or (b) I don't have any problems getting started."*. Choice "a" reflects the state-oriented (hesitant) alternative whereas the option "b" indicates the action-oriented (initiative) response. Action-oriented responses were totaled, resulting in scale values from 0 to 12. Hereby, lower scores indicate low action orientation (i.e., state orientation) and higher scores indicate high action orientation.

Implicit power motive enactment. We applied the Operant Motive Test (OMT; Kuhl & Scheffer, 1999) to measure implicit power motive enactment. The OMT is comprised of fifteen pictures that are designed to either arouse the affiliation, achievement, or power motive. Participants are asked to decide on a main character in each picture, think of a story around that character, and briefly answer three open questions (see Figure 4.2). The answers are analyzed following a 3-motive x 5-enactment strategies coding procedure. Thereby, each described picture is examined for motive content (i.e., affiliation, achievement, power). A "zero" is coded, if no motive theme can be found. If a motive theme is present, the enactment strategy is determined. To determine the enactment strategy, participants' answers are screened for approach (*n*Power1-4) or avoidance (*n*Power5) tendencies. Passive avoidance (*n*Power5) is only coded when participants explicitly mention negative affect in their answers and report no active coping or regulation attempts. Approach tendencies (*n*Power1-4) are further screened, differentiating whether they are driven by positive affect (*n*Power1-2) or negative affect (*n*Power3-4). Lastly, descriptions are analyzed whether they involve self-regulation processes (*n*Power1&3, e.g., self-positivity, active coping) or are more external and incentive driven (*n*Power 2&4, e.g., outward focus, goal fixation).

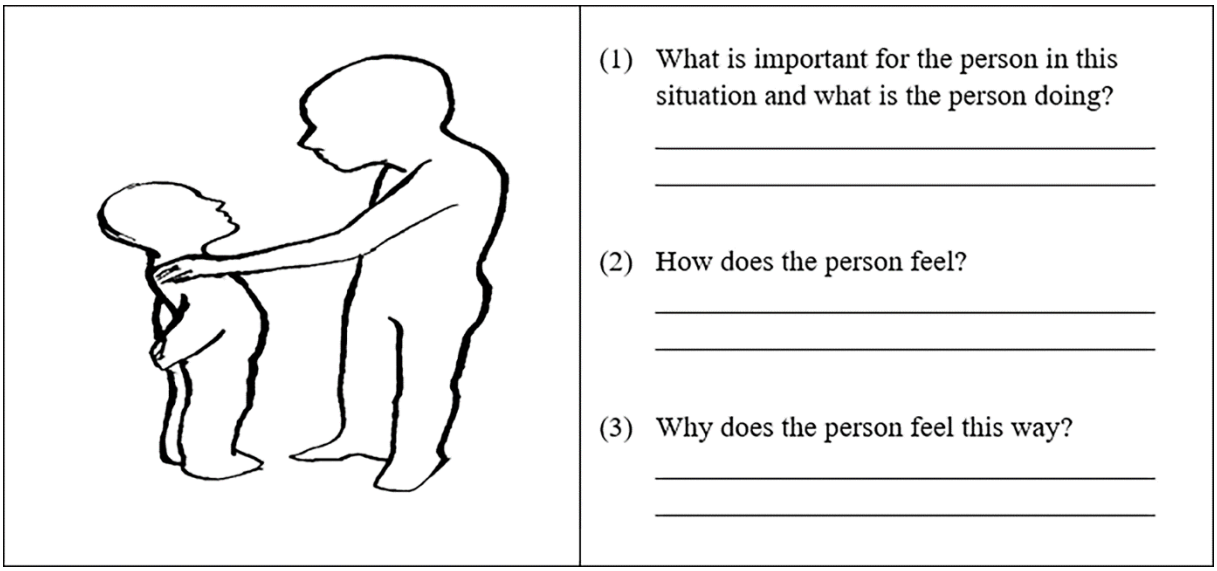

Figure 4.2 Example Picture of the Operant Motive Test (OMT; Kuhl & Scheffer, 1999) that is Designed to Arouse Power Motivation.
Story Samples: **Prosocial Guidance (*n*Power1)**: *"(1) She wants to help the sitting person. (2) Relaxed, supportive, friendly. (3) It's part of her nature."* **Status (*n*Power2)**: *"(1) She wants to motivate. (2) She feels great. (3) The person feels she has been confirmed as she acted in accordance with her role/position."* **Coping (*n*Power3)**: *"(1) Performance review. Other person has made severe mistakes. Empathy and motivation are called for. (2) Clear in the leader role. Empathetic. (3) Regards the mistakes as relative and wants to motivate the person again."* **Dominance (*n*Power4)**: *"(1) She berates the other person. (2) assured and superior. (3) As she is judging the other person."* **Powerlessness (*n*Power5)**: *"(1) To not get in trouble. (2) Anxious. (3) Because the person gets scolded."*

It is not of necessity that the main character deliberately experiences the affective source of their motivation and participants do not always explicitly report it in their descriptions. For instance, narratives of rigid and conflict-ridden behavior (e.g., justifying dominant power behavior with role duty) indicate the presence of hidden negative effect that is not being self-regulated. Hence, *n*Power4 is coded. On the other hand, if negative affect is explicitly mentioned but at the same time creative solutions are elaborated (e.g., supports followers to get back on track after providing negative feedback) *n*Power3 is coded. Only if negative affect is explicitly mentioned without an active coping attempt (e.g., feeling powerless in a situation), *n*Power5 is coded. Therefore, negative affect may either be linked to passive avoidance (*n*Power5) or be related to a coping (*n*Power3) or dominant (*n*Power4) enactment strategy. In the same way, positive affect is either linked to prosocial guidance (*n*Power1) or status related enactment (*n*Power2). In contrast to *n*Power2, which is coded when positive affect is provided

externally and thus incentives (e.g., status, attention) are assessed in the narratives, *n*Power1 is coded when positive affect seems to flow out of the activity itself (e.g., naturally providing support, when needed), indicating self-regulatory functioning (Baumann et al., 2010; Kuhl & Kaschel, 2004; Kuhl & Koole, 2008).

Power-Related Anxiety. The Motive Enactment Test (MET; Kuhl & Henseler, 2004) was used to assess the level of anxiety in explicit power striving (e.g., *"I often feel inferior to people whose behaviour conveys power and superiority"*). The 4 Items (Cronbach's $\alpha = .71$) were rated on a 4-point scale (0 = *"not at all"*; 3 = *"completely"*).

Well-Being. The Complaints Questionnaire (BES; Kuhl, 2001) was used to assess well-being of leaders. It is comprised of 8 Items (Cronbach's $\alpha = .73$). Example items are: "*I often struggle to coordinate work and private life"* or "*I felt calm during the last few days*". Participants rated the extent to which each statement applied to them on a 7-point scale (0 = "not at all", 6 = "very much").

Procedure

Participants were able to complete the test package via the online platform of IMPART (www.impart.de). They could login from any chosen remote computer with their personalized login information that they were provided in advance. After completion, data was accumulated by IMPART and made available for the present study

Results

Descriptives and Correlations. Table 4.1 offers an overview of the descriptive results and correlations among our study variables. Consistent with our first hypothesis, action orientation was positively correlated with prosocial power motive enactment (*n*Power1). Furthermore, action orientation was negatively correlated with power-related anxiety and positively with well-being. In addition, prosocial guidance (*n*Power1) was negatively correlated with power-related anxiety. Finally, power-related anxiety was negatively correlated with well-being.

Table 4.1 *Bivariate Correlations (Pearson), Means, and Standard Deviations (N = 383)*

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	Scale	*M*	*SD*
(1) Action Orientation	.14**	.03	-.02	-.08	.02	.04	-.40**	.41**	0-12	7.43	3.17
(2) Prosocial Guidance (*n*Power1)		-.04	-.07	-.22**	-.13*	.28**	-.18**	.17**	0-15	1.00	1.06
(3) Status (*n*Power2)			-.12*	-.16**	-.13*	.22**	-.10*	.09	0-15	0.75	0.94
(4) Coping (*n*Power3)				-.15**	-.15**	.42**	-.04**	-.05	0-15	1.31	1.29
(5) Dominance (*n*Power4)					-.11**	.39**	.09	-.18**	0-15	2.56	1.37
(6) Powerlessness (*n*Power5)						.23**	.13*	-.09	0-15	0.96	1.00
(7) Implicit Power Motive (*n*Power)							-.04	-.07	0-15	6.58	1.81
(8) Power-Related Anxiety								-.34**	0-3	0.92	0.61
(9) Well-Being									0-6	4.92	0.53

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

Direct and indirect effects on power-related anxiety. To test whether action orientation had an indirect effect through prosocial guidance (*n*Power1) on power-related anxiety, we conducted a mediation analysis with 5,000 bootstrap resamples using the SPSS macro-Model 4 described by Hayes (2012, 2017). Using this procedure, we computed a point estimate and a 95% confidence interval for the mediation effect.

In the model using enactment strategies of the implicit power motive as dependent variables (see Table 4.2), action orientation was significantly associated with prosocial guidance (*n*Power1), $R^2 = .02$, $F(1, 381) = 7.99$, $p = .005$. In contrast, action orientation was not associated with any other enactment strategy of the implicit power motive (*n*Power2-5), Fs < 2.51, p > .11.

Table 4.2 *Direct Effects of Action Orientation on the Five Enactment Strategies of the Implicit Power Motive (N=383)*

	B	*SE*	*t*	*p*	*Boot LLCI*	*Boot ULCI*
Prosocial Guidance (*n*Power1)						
Action Orientation	.14	.05	2.83	.005	.044	.243
Status (*n*Power2)						
Action Orientation	.03	.05	0.56	.574	-.072	.130
Coping (*n*Power3)						
Action Orientation	-.02	.05	-0.29	.770	-.116	.086
Dominance (*n*Power4)						
Action Orientation	-.08	.05	-1.58	.115	-.181	.020
Powerlessness (*n*Power5)						
Action Orientation	.03	.05	0.45	.655	-.078	.124

Note. LLCI and ULCI = Lower and Upper Limit of Confidence Interval.

In the model using the power-related anxiety as a dependent variable (see upper columns of Table 4.3), there were significant direct effects of action orientation and *n*Power1 indicating that higher action orientation and higher prosocial guidance were associated with lower power-

related anxiety. In addition, *n*Power5 was associated with higher power-related anxiety, whereas *n*Power2, *n*Power3, and *n*Power4 were not associated with power-related anxiety.

Table 4.3. *Direct and Indirect Effects of Action Orientation and the Five Enactment Strategies of the Implicit Power Motive on Power-Related Anxiety (N=383)*

	Power-Related Anxiety					
	B	*SE*	*t*	*p*	*Boot LLCI*	*Boot ULCI*
Action Orientation	-.38	.05	-8.08	.000	-.470	-.286
Prosocial Guidance (*n*Power1)	-.11	.05	-2.18	.030	-.204	-.011
Status (*n*Power2)	-.08	.05	-1.69	.093	-.178	.014
Coping (*n*Power3)	-.04	.05	-0.75	.452	-.133	.059
Dominance (*n*Power4)	.04	.05	0.69	.493	-.064	.133
Powerlessness (*n*Power5)	.11	.05	2.30	.022	.016	.209
Indirect Effect of Action Orientation on Power-Related Anxiety through			*b*	*SE*	*Boot LLCI*	*Boot ULCI*
Prosocial Guidance (*n*Power1)			-.015	.008	-.034	-.001
Status (*n*Power2)			-.002	.005	-.014	.008
Coping (*n*Power3)			.001	.004	-.006	.009
Dominance (*n*Power4)			-.003	.005	-.015	.006
Powerlessness (*n*Power5)			.003	.007	-.010	.018

Note. LLCI and ULCI = Lower and Upper Limit of Confidence Interval.

The significance of the indirect effect of action orientation through *n*Power1 on power-related anxiety was verified with bootstrapped errors and 95% confidence intervals (CIs). Consistent with our second hypothesis, the indirect effect of action orientation on power-related anxiety through *n*Power1 was significant because the limits of the 95% confidence interval did not include zero (see lower columns of Table 4.3). No other indirect path was significant.

Altogether, the model accounted for approximately 20% of the variance in power-related anxiety, $R^2 = .20$, $F(6, 376) = 15.31$, $p < .001$.

Direct and indirect effects on well-being. To test whether there was an indirect effect of action orientation through implicit prosocial power motivation (*n*Power1) and power-related anxiety on well-being, we conducted a mediation analysis with 5,000 bootstrap samples using the SPSS macro-Model 6 (Hayes, 2012, 2017). With this process, we calculated a point estimate and a 95% confidence interval for the mediation effect. The statistical model and results are illustrated in Figure 4.3.

As listed in Table 4.2, action orientation was significantly associated with *n*Power1, $B = .14$, $SE = .05$, $t = 2.83$, $p = .005$ [95% CI: .044, .243]. Consistent with Table 4.3, when action orientation and *n*Power1 were entered simultaneously to predict power-related anxiety, *n*Power1, $B = -.12$, $SE = .05$, $t = -2.61$, $p < .01$ [-.216, -.030], and action orientation, $B = -.38$, $SE = .05$, $t = -8.01$, $p < .001$ [-.471, -.285], were significantly associated with power-related anxiety. Finally, when action orientation, *n*Power1, and power-related anxiety were entered simultaneously to predict well-being, action orientation and power-related anxiety were significantly associated with well-being whereas *n*Power1 was not (see upper half of Table 4.4).

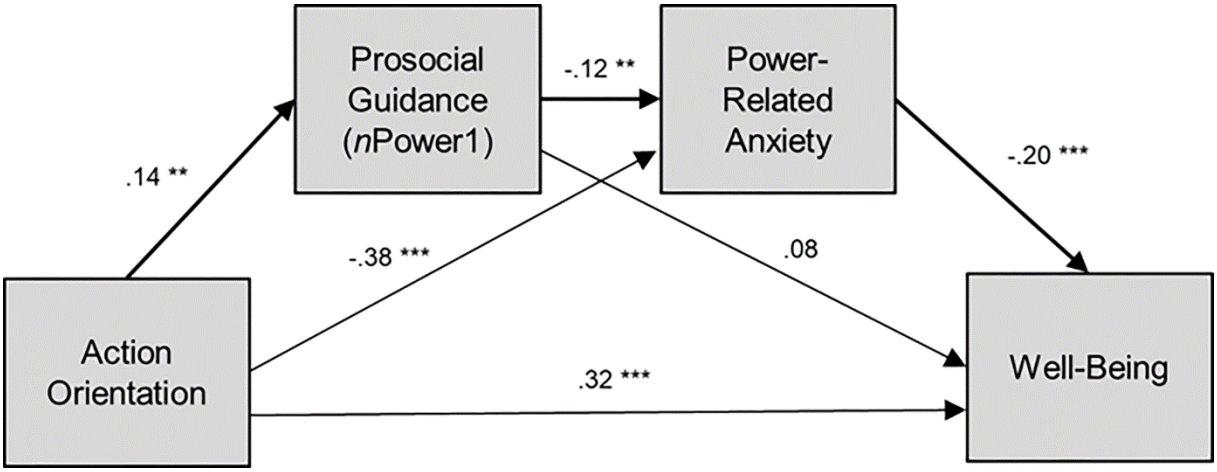

Figure 4.3 Statistical model with a significant indirect path from action orientation through prosocial power enactment (nPower1) and power-related anxiety to well-being.

The significance of the indirect effect of action orientation through *n*Power1 and power-related anxiety on well-being was verified with bootstrapped errors and 95% confidence intervals (CIs). Consistent with our third hypothesis, the indirect effect of action orientation on well-

being through prosocial guidance (*n*Power1) and power-related anxiety was significant because the limits of the 95% confidence interval did not include zero (see lower half of Table 4.4). In addition, the indirect effect of action orientation on well-being through power-related anxiety was significant. Altogether, the mediation model accounted for approximately 21% of the variance in well-being, $R^2 = .21$, $F(3, 379) = 33.35$, $p < .001$.

Table 4.4. *Direct and Indirect Effects of Action Orientation, Prosocial Power Enactment (Prosocial Guidance), and Power-Related Anxiety on Well-Being*

	Well-Being					
	B	*SE*	*t*	*p*	*Boot LLCI*	*Boot ULCI*
Action Orientation	.32	.05	6.32	.000	.218	.414
Prosocial Guidance (*n*Power1)	.08	.05	1.82	.070	-.007	.176
Power-Related Anxiety	-.20	.05	-3.94	.000	-.300	-.099
Indirect Effect of Action Orientation on Well-Being through			*b*	*SE*	*Boot LLCI*	*Boot ULCI*
*n*Power1			.012	.008	-.001	.030
Power-Related Anxiety			.075	.022	.035	.122
*n*Power1 and Power-Related Anxiety			.004	.002	.001	.008

Note. LLCI and ULCI = Lower and Upper Limit of Confidence Interval.

Discussion

"A good leader is prosocial" (Lorenzi, 2004, p.283). Scholars and leadership experts have long called for a new leadership that is characterized by empowering, relational, and collaborative behavior. Early research efforts by McClelland (1975) and Winter (1973) have identified the need for power as a decisive motivational factor in leadership that can either be expressed in a prosocial or dominant way (McClelland, 1970). Little is known, however, about factors that

determine how leaders enact their implicit need for power (James et al., 2021). In the present research, we took a closer look at personal antecedents and benefits of prosocial power motivation enactment in leaders. Building on the prior research results by Baumann and colleagues (2015) who showed that action orientation acts as a predictor of the prosocial enactment of *n*Power, we analyzed this link within a large leadership sample. Our findings confirm that action orientation is linked to implicit prosocial power motivation. Further, we showed that action orientation through prosocial power motivation leads to reduced power-related anxiety and, in turn, to greater leader well-being. The present findings contribute to a better understanding *why* leaders enact their need for power in a certain way: Prosocial leadership is not only a matter of motivation but also of leaders' self-regulatory ability.

Theoretical Implications

Our findings have several theoretical implications. First, the present research further supports PSI theory's notion that *intrinsic* motivation depends on unconscious workings of self-regulatory functions (Baumann et al., 2010; Kaschel & Kuhl, 2004; Kuhl, 2000; Kuhl & Koole, 2008; Kuhl & Scheffer, 1999) and complements prior empirical findings demonstrating the link between action orientation and intrinsic motive enactment (Baumann et al., 2015; Baumann and Kuhl, 2020; Baumann and Scheffer, 2010; Hofer and Busch, 2011). Additionally, despite the early conceptualization of implicit assessments (Morgan & Murray, 1935) and the acknowledged value of implicit processes in leadership, measuring implicit psychological phenomena in organizational settings is still rare (see Chong et al., 2017 for a review). On the one hand, this is due to limited access to corporate and non-corporate leader samples. Moreover, as implicit processes operate outside of conscious awareness, they cannot be assessed through self-reports but are assessed with projective measures which are more time consuming for participants and data analysis requires trained experts (Schultheiss & Pang, 2007). This often leads to either only relatively small leader samples in studies or a move back to more accessible student samples when investigating implicit motives. With a relatively large leader sample, we thus contribute to an extended understanding of implicit motives in the leadership context. The conceptual replication of Baumann and colleague's study (2015) with a leadership sample (instead of student sample) further increase confidence in the demonstrated results.

Second, while prior research has emphasized the positive impact of prosocial power motivation on others, there may also be a potential "dark side" to such strivings. If prosocial targets don't align with company goals, individuals may experience negative outcomes, including work overload, heightened stress (Bolino & Grant, 2016; Bolino & Turnley, 2005; Grant, 2008), and

difficulties in balancing prosocial motivation with actual work tasks (Grant & Sumanth, 2009). Research conducted by Kibler and colleagues (2019) on prosocial motivation within entrepreneurs revealed that it negatively impacts well-being due to the struggle of balancing commercial and prosocial goals. In contrast, however, our research suggests that leaders benefit from their prosocial striving. Despite the daily challenges that leaders face, including balancing competing interests, managing external pressure, and meeting stakeholder demands that may not align with their prosocial strivings, our research reveals that prosocial power enactment contributes positively to their well-being and reduces their power-related anxiety. We propose that self-regulatory ability (i.e., action orientation), may play a critical role in mitigating the potential "dark side" of prosocial power motivation. However, further research is needed to explore this idea in greater depth.

Third, as prosocial leadership behavior decisively impacts the prosperity of organizations (Poulin et al., 2007; Williams, 2014), leaders who naturally strive for making a prosocial impact should be particularly desirable for organizations. However, the desire to impact others is commonly rather discredited as it has been mostly connected to selfish and toxic behavior, and the benevolent manifestation of *n*Power is often overlooked. Concurring with other scholars (e.g., James at al., 2021; Trojak and Galisnky, 2020), the present research points out the value of considering implicit power motivation in leadership, as its prosocial enactment leads to a variety of beneficial outcomes, including, as our results show, for leaders themselves. Moreover, our research goes beyond bringing forward the mere importance of prosocial power motivation in leadership, but also indicates that the benevolent enactment of *n*Power is not only a question of choice but also of ability. Many findings show that action orientation is indeed the *ability* to access and enact motives effectively even under challenging conditions (e.g., high workload, time pressure, stakeholder demands) and without being affected by own emotional states (Baumann & Kuhl, 2003; Chatterjee et al., 2013; Diefendorff et al., 2017; Jostmann & Koole, 2006). The finding that action orientation is an antecedent of prosocial power enactment is therefore good news as self-regulatory ability can be trained and thus a prosocial enactment of the power motive can be fostered.

Practical Implications

Several practical implications can be derived from the present findings. First, our present findings contribute to a currently growing body of research that requests a shift in leadership development from building leadership behavior, skills, and strategies to a greater focus on developing internal attributes that are beneficial to effective leadership (Day, 2001; Folan,

2019). The present results further support action orientation as a favorable individual attribute for effective leadership. Research has shown that action orientation develops into advanced old age (Gröpel et al., 2005) and can be promoted by intervention (Baumeister et al., 2007; Hartung & Schulte, 1994; Kuhl, 2004; Kuhl et al., 2015). There are various target-oriented interventions such as mental contrasting (Friederichs et al., 2020; Oettingen et al., 2001), affective shifting (Friederichs et al., 2022), and other established self-regulation methods (e.g., Baumann & Kuhl, 2020; Edelman & van Knippenberg, 2017) that foster action orientation and therefore could promote prosocial enactment within leaders. We hope these findings encourage organizations and leadership consultancies to enhance their focus on nurturing self-regulation abilities within leadership development programs.

The present study goes beyond well-established effects of leadership behavior on employee´s health and well-being (e.g., Montano et al., 2017). Contributing to recent efforts in leadership research (Kaluza et al., 2020), our study instead highlights the impact on leaders' own well-being. Paying attention to leader's well-being in leadership research has far reaching implications. For instance, it supports the identification of beneficial leadership behaviors for both leaders and followers, and thus helps to establish a win-win. Our results indicate that action orientation is a significant enabler for that win-win. Moreover, psycho-symptomatic problems, such as burnout, are quite common among leaders and the prevalence is continuously rising (Global Leadership Forecast, 2021). According to Frieze and Boneva (2001), individuals high in power motivation that express it in antisocial or dominant ways (e.g., anger, hostility) are at greater risk to suffer from burnout. In contrast, perceived prosocial impact of own behavior has been shown to act as a protector against burnout (Grant & Sonnentag, 2010). Consequently, we suggest that enacting *n*Power in a prosocial manner may also act as a protective factor notably in power-related occupations, and thus promoting action orientation in leaders may minimize burnout risk among leaders.

Striving for power also means once in power, there is a chance one may lose power again. The possibility of losing power triggers threatening or aversive feelings and people high in *n*Power are presumed to be specifically sensitive towards signals of power constraints (Maner & Mead, 2010). Research shows that leaders under power threat are more likely to act in a self-serving manner (Wisse et al., 2019) - even if they are usually prosocial oriented (Williams, 2014) - and try to sustain power although it may harm the interest of their own group members or organization (Maner & Mead, 2010). For instance, facing a power threat, leaders are more likely to antagonize subordinates against each other to prevent alliances among them (Case & Maner,

2014). Further, leaders are less inclined to support a power threatening idea and thus have a higher tendency to inhibit knowledge creation within group processes (Urbach & Fay, 2018). Action orientation, however, has been shown to lead to reduced anxiety in explicit power striving (Chatterjee et al., 2018). Building on this, we demonstrated that action orientation through prosocial power motivation leads to reduced power-related anxiety. This indicates that leaders high in action orientation may experience less power threat concerns and thus show less behaviors that impact followers, colleagues, and organizations in negative ways. Considering these beneficial outcomes, we propose to explore these relations more in future research especially in the leadership context.

Limitations and Future Perspectives

The present research is not without limitations that should be addressed in future research. First, we neither collected information about leaders` environments (e.g., company size, sector, non-profit/profit, amount of followers etc.) nor about their position (e.g., CEO, director, team leader, supervisor etc.). Spangler and colleagues (2014) suggest that different types of organizations require different types of leadership, implying that there is no gold standard of leadership. Implicit motives are considered rather stable dispositions, whereas their enactment may vary strongly over time in response to context conditions (Baumann et al., 2005; Kuhl & Scheffer, 1999). Although, according to our and previous results (Baumann et al., 2015), action-oriented people are more inclined to enact their *n*Power in a prosocial manner, their enactment strategy may vary in different contexts, if (Koole & Jostmann, 2004). In contrast to their state-oriented counterparts, this variation is not volatile but based on their self-regulatory ability to adapt to present conditions (Kuhl, 1994). Nevertheless, in future studies, environment and leadership levels should be assessed to capture if action-oriented individuals refer to different enactment strategies specific to a position or environment.

Second, we did not assess followers' benefits of prosocial leadership but derived them from existing literature (e.g., Harrell & Simpson, 2016). Future research should consider assessing specific follower benefits, for example, with 360° assessments when investigating antecedents and benefits of prosocial power motivation enactment. Third, to assess well-being, we asked leaders to report the manifestation of physical and mental complaints, and thus considered the absence of complaints as an indicator of greater well-being. In future research, we suggest verifying the present findings with more established well-being measures, such as the WHO-Five Well-Being Index (WHO, 1998) or the Satisfaction with Life Scale (Diener et al., 1985).

Conclusion

Today`s leadership requirements in modern organizations are high and more than ever individual leader qualities are in demand that enable and empower followers. Power motivation is highlighted as central in leadership, however, few have focused on its prosocial side. In order to illuminate *why* leaders may enact their power motivation in a more benevolent way, we examined the influence of self-regulation (i.e., action orientation) on power motivation. Our findings yield that it takes action orientation to bring out the benevolent side of *n*Power. Further, a prosocial enactment of the power motive goes beyond increasing the well-being of others, but also boosts personal benefits for leaders themselves and creates a win-win. In conclusion, the present research gives promise to build more great leaders as the ability to empower others can be promoted.

References of Chapter 4

Abid, G., Sajjad, I., Elahi, N. S., Farooqi, S., & Nisar, A. (2018). The influence of prosocial motivation and civility on work engagement: The mediating role of thriving at work. *Cogent Business & Management*, *5*(1), 1493712. https://doi.org/10.1080/23311975.2018.1493712

Antonakis, J., & Day, D. V. (2018). Leadership: Past, present, and future. In J. Antonakis & D. V. Day (Eds.), *The nature of leadership* (pp. 3–26). Sage Publications, Inc. https://doi.org/ 10.1177/0018726701544004

Arnold, K. A. (2017). Transformational leadership and employee psychological well-being: A review and directions for future research. *Journal of Occupational Health Psychology*, *22*(3), 381–393. https://doi.org/10.1037/ocp0000062

Aydinli, A., Bender, M., Chasiotis, A., Cemalcilar, Z., & van de Vijver, F. J. (2014). When does self-reported prosocial motivation predict helping? The moderating role of implicit prosocial motivation. *Motivation and Emotion*, 38(5), 645–658. https://doi.org/10.1007/s11031-014-9411-8

Baumann, N., Chatterjee, M. B., & Hank, P. (2015). Guiding others for their own good: Action orientation is associated with prosocial enactment of the implicit power motive. *Motivation and Emotion*, *40*(1), 56–68. https://doi.org/10.1007/s11031-015-9511-0

Baumann, N., Kaschel, R., & Kuhl, J. (2005). Striving for unwanted goals: Stress-dependent discrepancies between explicit and implicit achievement motives reduce subjective well-being and increase psychosomatic symptoms. *Journal of Personality and Social Psychology*, *89*(5), 781–799. https://doi.org/10.1037/0022-3514.89.5.781

Baumann, N., Kazén, M., & Kuhl, J. (2010). A look from personality systems interaction theory. In O. C. Schultheiss & J. C. Brunstein (Eds.), Implicit motives (pp. 375–403). Oxford: Oxford University Press.

Baumann, N., & Kuhl, J. (2002). Intuition, affect, and personality: Unconscious coherence judgments and self-regulation of negative affect. *Journal of Personality and Social Psychology*, *83*(5), 1213–1223. https://doi.org/10.1037/0022-3514.83.5.1213

Baumann, N., & Kuhl, J. (2003). Self-infiltration: Confusing assigned tasks as self-selected in memory. *Personality and Social Psychology Bulletin*, *29*(4), 487–497. https://doi.org/10. 1177/014 6167202250916

Baumann, N., & Kuhl, J. (2020). Nurturing your self: Measuring and changing how people strive for what they need. *The Journal of Positive Psychology*, *16*(6), 726–737. https://doi. Org/10.1080/17439760.2020.1805503

Baumann, N., Lürig, C., & Engeser, S. (2016). Flow and enjoyment beyond skill-demand balance: The role of game pacing curves and personality. *Motivation and Emotion*, *40*(4), 507–519. https://doi.org/10.1007/s11031-016-9549-7

Baumann, N., & Quirin, M. (2006). Motivation und Gesundheit. [Motivation and Health] *Zeitschrift Für Gesundheitspsychologie*, *14*(2), 46–53. https://doi.org/10.1026/0943-8149.1 4.2.46

Baumann, N., & Scheffer, D. (2010). Seeing and mastering difficulty: The role of affective change in achievement flow. *Cognition & Emotion*, *24*(8), 1304–1328. https://doi.org/10. 1080/02699930903319911

Baumeister, R. F., Vohs, K. D., & Tice, D. M. (2007). The strength model of self-control. *Current Directions in Psychological Science*, *16*(6), 351–355. https://doi.org/10.1111/j.1467-8721. 2007.00534.x

Birk, M. V., Mandryk, R. L., & Baumann, N. (2020). Just a click away: Action–state orientation moderates the impact of Task Interruptions on initiative. *Journal of Personality*, *88*(2), 373–390. https://doi.org/10.1111/jopy.12498

Bolino, M. C., & Grant, A. M. (2016). The bright side of being prosocial at work, and the dark side, too: A review and agenda for research on other-oriented motives, behavior, and impact in organizations. *Academy of Management Annals*, *10*(1), 599–670. https://doi.Org/10.5465/19416520.2016.1153260

Bolino, M. C., & Turnley, W. H. (2005). The personal costs of citizenship behavior: The relationship between individual initiative and role overload, job stress, and work-family conflict. *Journal of Applied Psychology*, *90*(4), 740–748. https://doi.org/10.1037/0021-9010.90.4.740

Bunderson, J. S., & Reagans, R. E. (2011). Power, status, and learning in organizations. *Organization Science*, *22*(5), 1182–1194. https://doi.org/10.1287/orsc.1100.0590

Byrne, A., Barling, J., & Dupré, K. E. (2013). Leader apologies and employee and leader well-being. *Journal of Business Ethics*, *121*(1), 91–106. https://doi.org/10.1007/s10551-013-1685-3

Case, C. R., & Maner, J. K. (2014). Divide and conquer: When and why leaders undermine the cohesive fabric of their group. *Journal of Personality and Social Psychology*, *107*(6), 1033–1050. https://doi.org/10.1037/a0038201

Chasiotis, A., & Hofer, J. (2017). Implicit prosocial power motivation: Views from evolutionary and developmental cross-cultural psychology. In N. Baumann, M. Kazén, M. Quirin, & S. L. Koole (Eds.), *Why People Do the Things They Do: Building on Julius Kuhl's Contributions to the Psychology of Motivation and Volition* (1st ed., pp. 73–86). Hogrefe Publishing.

Chasiotis, A., Hofer, J., & Campos, D. (2006). When does liking children lead to parenthood? Younger siblings, implicit prosocial power motivation, and explicit love for children predict parenthood across cultures. *Journal of Cultural and Evolutionary Psychology*, *4*(2), 95–123. https://doi.org/10.1556/jcep.4.2006.2.2

Chatterjee, M. B., Baumann, N., & Osborne, D. (2013). You are not alone: Relatedness reduces adverse effects of state orientation on well-being under stress. *Personality and Social Psychology Bulletin*, *39*(4), 432–441. https://doi.org/10.1177/0146167213476895

Chatterjee, M. B., Baumann, N., Osborne, D., Mahmud, S. H., & Koole, S. L. (2018). Cross-cultural analysis of volition: Action orientation is associated with less anxious motive enactment and greater well-being in Germany, New Zealand, and Bangladesh. *Frontiers in Psychology*, *9*. https://doi.org/10.3389/fpsyg.2018.01043

Chong, S., Djurdjevic, E., & Johnson, R. E. (2017). Implicit measures for leadership research. In *Handbook of methods in leadership research* (pp. 13-47). Edward Elgar Publishing.

Chowdhury, S. F., & Pychyl, T. A. (2018). A critique of the construct validity of active procrastination. *Personality and Individual Differences*, *120*, 7–12. https://doi.org/10.1016/ j.paid.2017. 08.016

Day, D. V., & Halpin, S. M. (2001). *Leadership development: A Review of Industry Best Practices*. U.S. Army Research Institute for the Behavioral and Social Sciences.

Deci, E. L., & Ryan, R. M. (2000). The "what" and "why" of goal pursuits: Human needs and the self-determination of behavior. *Psychological Inquiry*, *11*(4), 227–268. https://doi.Org/10.1207/s15327965pli1104_01

De Hoogh, A. H. B., Den Hartog, D. N., Koopman, P. L., Thierry, H., Van den Berg, P. T., Van der Weide, J. G., & Wilderom, C. P. M. (2005). Leader motives, Charismatic Leadership, and subordinates' work attitude in the profit and voluntary sector. *The Leadership Quarterly*, *16*(1), 17–38. https://doi.org/10.1016/j.leaqua.2004.10.001

Diefendorff, J. M., Richard, E. M., Dinh, P. V., & LeNoble, C. (2017). Action-state orientation at work. Dynamic effects in organizational contexts. In N. Baumann, M. Kazén, M. Quirin, & S. L. Koole (Eds.), *Why People Do the Things They Do: Building on Julius*

Kuhl's Contributions to the Psychology of Motivation and Volition (1st ed., pp. 303–321). Hogrefe Publishing.

Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The satisfaction with life scale. *Journal of Personality Assessment*, *49*(1), 71–75. https://doi.org/10.1207/s15327752jpa4901_13

Edelman, P. J., & van Knippenberg, D. (2016). Training leader emotion regulation and leadership effectiveness. *Journal of Business and Psychology*, *32*(6), 747–757. https://doi.org/10.1007/s1 0869-016-9471-8

Folan, L. N. (2019). *Defining a research model of leader resilience and evaluating the dispositional effect of resilience on transformational leadership* (dissertation). Murdoch University.

Frazier, M. L., & Tupper, C. (2018). Supervisor Prosocial Motivation, Employee Thriving, and Helping Behavior: A Trickle-Down Model of Psychological Safety. *Group & Organization Management*, *43*(4), 561–593. https://doi.org/10.1177/1059601116653911

Friederichs, K. M., Jostmann, N. B., Kuhl, J., & Baumann, N. (2022). The art of getting things done: Training affective shifting improves intention enactment. *Emotion.* Advance online publication. https://doi.org/10.1037/emo0001128

Friederichs, K. M., Kees, M.-C., & Baumann, N. (2020). When tough gets you going: Action orientation unfolds with difficult intentions and can be fostered by mental contrasting. *Personality and Individual Differences*, *161*, https://doi.org/10.1016/j.paid.2020.109970109970

Frieze, I. H., & Boneva, B. S. (2001). Power motivation and motivation to help others. *The Use and Abuse of Power*, 75–89.

Galinsky, A. D., Rucker, D. D., & Magee, J. C. (2015). Power: Past findings, present considerations, and future directions. In *APA handbook of personality and social psychology, Volume 3: Interpersonal relations* (pp. 421–460). American Psychological Association. https://doi.org/10.1037/14344-016

Global Leadership Forecast. DDI. (2021). Retrieved February 17, 2022, from https://www.ddiworld.com/glf

Grant, A. M. (2008). Does intrinsic motivation fuel the Prosocial Fire? Motivational Synergy in predicting persistence, performance, and productivity. *Journal of Applied Psychology*, *93*(1), 48–58. https://doi.org/10.1037/0021-9010.93.1.48

Grant, A. M., & Sonnentag, S. (2010). Doing good buffers against feeling bad: Prosocial impact compensates for negative task and self-evaluations. *Organizational Behavior and Human Decision Processes*, *111*(1), 13–22. https://doi.org/10.1016/j.obhdp.2009.07.003

Grant, A. M., & Sumanth, J. J. (2009). Mission possible? The performance of prosocially motivated employees depends on manager trustworthiness. *Journal of Applied Psychology*, *94*(4), 927–944. https://doi.org/10.1037/a0014391

Gröpel, P., Kuhl, J., & Kazén, M. (2005, July 1). Toward an integrated self: Age differences and the role of action orientation. *Conference Proceedings "Self-Concept, Motivation and Identity."* Third International SELF Research Conference "Self-concept, Motivation and Identity: Where to from here?", Australia.

Hambrick, D. C., & Quigley, T. J. (2014). Toward more accurate contextualization of the CEO effect on firm performance. *Strategic Management Journal*, *35*(4), 473–491. https://doi.org/10.1002/ smj.2108

Harrell, A., & Simpson, B. (2015). The dynamics of Prosocial Leadership: Power and influence in collective action groups. *Social Forces*, *94*(3), 1283–1308. https://doi.org/10.1093/sf/sov110

Hartung, J., & Schulte, D. (1994). Action and state orientation during therapy of phobic disorders. In Kuhl, J. & Beckmann, J. (Eds.), *Volition and personality: Action versus state orientation* (pp. 217–231), Hogrefe & Huber Publishers.

Hayes, A. F. (2012). *PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]*. http://www.afhayes.com/public/process2012.pdf

Hayes, A. F. (2017). *Introduction to mediation, moderation, and conditional process analysis, second edition: A regression-based approach*. Guilford Publications.

Hofer, J., & Busch, H. (2011). Interpersonal identity achievement accounts for the link between action control and self-informed realization of the implicit affiliation-intimacy motive. *Identity*, *11*(3), 231–246. https://doi.org/10.1080/15283488.2011.560813

Hofer, J., Busch, H., Chasiotis, A., Kärtner, J., & Campos, D. (2007). Concern for generativity and its relation to implicit prosocial power motivation, generative goals, and satisfaction with life: A cross-cultural investigation. *Journal of Personality*, *76*(1), 1–30. https://doi.Org/10.1111/j.1467-6494.2007.00478.x

Hofer, J., & Chasiotis, A. (2022). Implicit motives across cultures. *Online Readings in Psychology and Culture*, *4*(1). https://doi.org/10.9707/2307-0919.1177

House, R. J., & Aditya, R. N. (1997). The social scientific study of leadership: Quo vadis? *Journal of Management*, *23*(3), 409–473. https://doi.org/10.1177/014920639702300306

Jacobs, R. L., & McClelland, D. C. (1994). Moving up the corporate ladder: A longitudinal study of the leadership motive pattern and managerial success in women and men. *Consulting Psychology Journal: Practice and Research*, *46*(1), 32–41. https://doi.org/10.10 37/1061-40 87.46.1.32

Jais, M., Bakaç, C., Kehr, H. M., Baumann, N., & Quirin, M. (2021). Misattribution of duties as free choices: The role of emotional awareness in self-infiltration. *Acta Psychologica*, *220*, 103401. https://doi.org/10.1016/j.actpsy.2021.103401

James, L. R., Bennett, N., & Blum, T. C. (2021). To push performance, check the leader's power motive. *Business Horizons*, *64*(2), 181–188. https://doi.org/10.1016/j.bushor.20 20.11.002

James, L. R., LeBreton, J. M., Mitchell, T. R., Smith, D. R., DeSimone, J. A., Cookson, R., & Lee, H. J. (2013). Use of conditional reasoning to measure the power motive. In *Modern research methods for the study of behavior in organizations* (pp. 233–263). Routledge/ Taylor & Francis Group.

Jenkins, S. R. (1994). Need for power and women's careers over 14 years: Structural power, job satisfaction, and motive change. *Journal of Personality and Social Psychology*, *66*(1), 155–165. https://doi.org/10.1037//0022-3514.66.1.155

Jostmann, N. B., & Koole, S. L. (2006). On the waxing and waning of working memory: Action orientation moderates the impact of demanding relationship primes on working memory capacity. *Personality and Social Psychology Bulletin*, *32*(12), 1716–1728. https://doi.org/ 10.1177/ 0146167206292595

Kaluza, A. J., Boer, D., Buengeler, C., & van Dick, R. (2020). Leadership behaviour and leader self-reported well-being: A review, integration and meta-analytic examination. *Work & Stress*, *34*(1), 34–56. https://doi.org/10.1080/02678373.2019.1617369

Karremans, J. C., & Smith, P. K. (2010). Having the Power to Forgive: When the Experience of Power Increases Interpersonal Forgiveness. *Personality and Social Psychology Bulletin*, *36*(8), 1010–1023. https://doi.org/10.1177/0146167210376761

Kaschel, R., & Kuhl, J. (2004). Motivational counseling in an extended functional context: Personality systems interaction theory and assessment. In W. M. Cox & E. Klinger (Eds.), Motivational counseling. Concepts, approaches, and assessment (pp. 99–120). Sussex: Wiley.

Kehr, H. M. (2004). Implicit/Explicit Motive Discrepancies and Volitional Depletion among Managers. *Personality and Social Psychology Bulletin*, *30*(3), 315–327. https://doi.org/1 0.1177/01 46167203256967

Keller, J., & Bless, H. (2008). Flow and Regulatory Compatibility: An experimental approach to the flow model of intrinsic motivation. *Personality and Social Psychology Bulletin*, *34*(2), 196–209. https://doi.org/10.1177/0146167207310026

Kibler, E., Wincent, J., Kautonen, T., Cacciotti, G., & Obschonka, M. (2019). Can prosocial motivation harm entrepreneurs' subjective well-being? *Journal of Business Venturing*, *34*(4), 608–624. https://doi.org/10.1016/j.jbusvent.2018.10.003

Kirkpatrick, S. A., Wofford, J. C., & Baum, J. R. (2002). Measuring motive imagery contained in the vision statement. *The Leadership Quarterly*, *13*(2), 139–150. https://doi.org/10.1016/S1048-9843(02)00096-6

Koole, S. L., & Coenen, L. H. M. (2007). Implicit self and affect regulation: Effects of action orientation and subliminal self priming in an affective priming task. *Self and Identity*, *6*(2–3), 118–136. https://doi.org/10.1080/15298860601118835

Koole, S. L., & Jostmann, N. B. (2004). Getting a grip on your feelings: Effects of action orientation and external demands on intuitive affect ´regulation. *Journal of Personality and Social Psychology*, *87*(6), 974–990. https://doi.org/10.1037/0022-3514.87.6.974

Koole, S. L., Jostmann, N. B., & Baumann, N. (2012). Do demanding conditions help or hurt self-regulation? Self-regulation under demanding conditions. *Social and Personality Psychology Compass*, *6*(4), 328–346. https://doi.org/10.1111/j.1751-9004.2012.00425.x

Koole, S. L., Jostmann, N. B., & Baumann, N. (2023). From intentions to action: An integrative review of four decades of action control theory and research. *Advances in Experimental Social Psychology.* https://doi.org/10.1016/bs.aesp.2023.07.001

Kuhl, J. (1994). Action versus state orientation: Psychometric properties of the action control scale (ACS-90). In J. Kuhl & J. Beckmann (Eds.), *Volition and personality: Action versus state orientation* (1st ed., pp. 47–59). Hogrefe & Huber Publishers.

Kuhl, J. (2000). A functional-design approach to motivation and self-regulation: The dynamics of Personality Systems Interactions. In M. Boekaerts, P. R. Pintrich, & M. Zeidner (Eds.), *Handbook of Self-Regulation* (pp. 111–169). Academic Press.

Kuhl, J. (2001). Motivation und Persönlichkeit: Interaktionen psychischer Systeme [Motivation and personality: Architectures of mood and mind]. Hogrefe.

Kuhl, J. (2004). Was bedeutet Selbststeuerung und wie kann man sie entwickeln? [What drives self-management and how can it be developed?]. 37, Personalführung 30–39.

Kuhl, J., & Henseler, W. (2004). Entwicklungsorientiertes Scanning (EOS) [Development-oriented scanning (EOS)]. In L. von Rosenstiel & J. Erpenbeck (Eds.), Handbuch der Kompetenzmessung (pp. 428–453). Spektrum Akademischer Verlag.

Kuhl, J., & Kaschel, R. (2004). Entfremdung als Krankheitsursache: Selbstregulation von Affekten und integrative Kompetenz. [Alienation as cause of illness: self-regulation of affects and integrative competence] *Psychologische Rundschau*, *55*(2), 61–71. https://doi. Org/10.10 26/0033-3042.55.2.61

Kuhl, J., & Koole, S. L. (2008). The functional architecture of approach and avoidance motivation. In A. J. Elliot (Ed.), *Handbook of approach and avoidance motivation* (pp. 535–553). Taylor & Francis.

Kuhl, J., Quirin, M., & Koole, S. L. (2015). Being Someone: The Integrated Self as a Neuropsychological System: Being Someone. *Social and Personality Psychology Compass*, *9*(3), 115–132. https://doi.org/10.1111/spc3.12162

Kuhl, J., Quirin, M., & Koole, S. L. (2021). The functional architecture of human motivation: Personality Systems Interactions theory. *Advances in Motivation Science*, 1–62. https://doi.org/10.1016/bs.adms.2020.06.001

Kuhl, J., & Scheffer, D. (1999). Scoring manual for the Operant Multi-Motive Test (OMT). University of Osnabrück.

Kuhl, J., Scheffer, D., & Eichstaedt, J. (2003). Der Operante Motiv-Test (OMT): Ein neuer Ansatz zur Messung impliziter Motive [The Operant Motive Test (OMT): A new approach to measure implicit motives]. In J. Stiensmeier-Pelster & F. Rheinberg (Eds.), Diagnostik von Motivation und Selbstkonzept (pp.129–149). Hogrefe.

Lammers, J., & Stapel, D. A. (2011). Power increases dehumanization. *Group Processes & Intergroup Relations*, *14*(1), 113–126. https://doi.org/10.1177/1368430210370042

Lammers, J., Stoker, J. I., & Stapel, D. A. (2009). Differentiating Social and Personal Power: Opposite Effects on Stereotyping, but Parallel Effects on Behavioral Approach Tendencies. *Psychological Science*, *20*(12), 1543–1548. https://doi.org/10.1111/j.1467-9280.2009.02479.x

London, M., Bear, J. B., Cushenbery, L., & Sherman, G. D. (2019). Leader support for gender equity: Understanding prosocial goal orientation, leadership motivation, and Power Sharing. *Human Resource Management Review*, *29*(3), 418–427. https://doi.org/10.1016/j.hrmr.2018. 08.002

Lorenzi, P. (2004). Managing for the common good: *Organizational Dynamics*, *33*(3), 282–291. https://doi.org/10.1016/j.orgdyn.2004.06.005

Løvaas, B. J., Jungert, T., Van den Broeck, A., & Haug, H. (2020). Does managers' motivation matter? Exploring the associations between motivation, transformational leadership, and innovation in a religious organization. *Nonprofit Management and Leadership*, *30*(4), 569–589. https://doi.org/10.1002/nml.21405

Magee, J. C., & Langner, C. A. (2008). How personalized and socialized power motivation facilitate antisocial and prosocial decision-making. *Journal of Research in Personality*, *42*(6), 1547–1559. https://doi.org/10.1016/j.jrp.2008.07.009

Maner, J. K., & Mead, N. L. (2010). The essential tension between leadership and power: When leaders sacrifice group goals for the sake of self-interest. *Journal of Personality and Social Psychology*, *99*(3), 482–497. https://doi.org/10.1037/a0018559

McClelland, D. C. (1970). The Two Faces of Power. *Journal of International Affairs*, *24*(1), 29–47.

McClelland, D. C. (1975). *Power: The inner experience*. Irvington Publishers.

McClelland, D. C. (1985). How motives, skills, and values determine what people do. *American Psychologist*, *40*(7), 812–825. https://doi.org/10.1037/0003-066X.40.7.812

McClelland, D. C., & Boyatzis, R. E. (1982). Leadership motive pattern and long-term success in management. *Journal of Applied Psychology*, *67*(6), 737–743. https://doi.org/10.1037/ 0021-9010 .67.6.737

McClelland, D. C., & Burnham, D. H. (2017). Power is the great motivator. *Leadership Perspectives*, 271–279. https://doi.org/10.4324/9781315250601-20

Montano, D., Reeske, A., Franke, F., & Hüffmeier, J. (2017). Leadership, followers' mental health and job performance in organizations: A comprehensive meta-analysis from an occupational health perspective. *Journal of Organizational Behavior*, *38*(3), 327–350. https://doi.org/10.1002/job.2124

Moon, B., Lee, N. M.-H., & Bourdage, J. S. (2022). Personalized and socialized need for power: Distinct relations to employee traits and behaviors. *Canadian Journal of Behavioural Science/Revue Canadienne Des Sciences Du Comportement*, *54*(1), 28–39. https://doi.Org/10.1037/cbs0000279

Morgan, C. D., & Murray, H. A. (1935). A method for investigating fantasies: The Thematic Apperception Test. *Archives of Neurology & Psychiatry*, *34*(2), 289–306. https://doi.org/10.1001/archneurpsyc.1935.02250200049005

Oettingen, G., Pak, H.-ju, & Schnetter, K. (2001). Self-regulation of goal-setting: Turning free fantasies about the future into binding goals. *Journal of Personality and Social Psychology*, *80*(5), 736–753. https://doi.org/10.1037/0022-3514.80.5.736

Paustian-Underdahl, S. C., Walker, L. S., & Woehr, D. J. (2014). Gender and perceptions of leadership effectiveness: A meta-analysis of contextual moderators. *The Journal of Applied Psychology*, *99*(6), 1129–1145. https://doi.org/10.1037/a0036751

Pearce, C. L., & Manz, C. C. (2014). The leadership disease…and its potential cures. *Business Horizons*, *57*(2), 215–224. https://doi.org/10.1016/j.bushor.2013.11.005

Poulin, B. J., Hackman, M. Z., & Barbarasa-Mihai, C. (2007). Leadership and succession: The Challenge to succeed and the vortex of failure. *Leadership*, *3*(3), 301–324. https://doi.org/ 10.1177/1742715007079311

Quirin, M., & Kuhl, J. (2022). The concert of personality: Explaining personality functioning and coherence by personality systems interactions. *European Journal of Personality*, *36*(3), 274–292. https://doi.org/10.1177/08902070221078478

Schmidt, L. C. (1997). *A motivational approach to the prediction of mentoring relationship satisfaction and future intention to mentor*. University of Pittsburgh.

Schultheiss, O. C., & Hale, J. A. (2007). Implicit motives modulate attentional orienting to facial expressions of emotion. *Motivation and Emotion*, *31*(1), 13–24. https://doi.org/10.1007/ s11031-006-9042-9

Schultheiss, O. C., & Pang, J. S. (2007). Measuring implicit motives. In R. W. Robins, R. C. Fraley, & R. Krueger (Eds.), In R. W. Robins, R. C. Fraley, & R. Krueger (Eds.), *Handbook of Research Methods in Personality Psychology* (pp. 322–344). Guilford Press.

Spangler, W. D., Tikhomirov, A., Sotak, K. L., & Palrecha, R. (2014). Leader motive profiles in eight types of organizations. *The Leadership Quarterly*, *25*(6), 1080–1094. https://doi. org/ 10.1016/j.leaqua.2014.10.001

Srinivasan, P., & Yonge, J. M. de. (2021, March 26). *How can today's leaders realize Tomorrow's opportunities?* EY. Retrieved February 17, 2022, from https://www.ey.com /en_gl/ceo/how-can-today-s-leaders-realize-tomorrow-s-opportunities

Sturm, R. E., & Antonakis, J. (2015). Interpersonal Power: A Review, Critique, and Research Agenda. *Journal of Management*, *41*(1), 136–163. https://doi.org/10.1177/0149206314555769

Sturm, R. E., Herz, H., & Antonakis, J. (2021). The science of leader power. *The Leadership Quarterly*, *32*(4), 101550. https://doi.org/10.1016/j.leaqua.2021.101550

Thakur, N., & Baumann, N. (2022). Breaking the anxious cycle of self-criticism: Action orientation buffers the detrimental effects of self-critical personality style. *Journal of Affective Disorders, 301,* 30-35. https://doi.org/10.1016/j.jad.2022.01.014

Trojak, N., & Galić, Z. (2020). How to select a true leader? Introducing methods for measurement of implicit power motive. *Management: Journal of Contemporary Management Issues*, *25*(1), 235–253. https://doi.org/10.30924/mjcmi.25.1.13

Urbach, T., & Fay, D. (2018). When proactivity produces a power struggle: How supervisors' power motivation affects their support for employees' promotive voice. *European Journal of Work and Organizational Psychology*, *27*(2), 280–295. https://doi.org/10.1080/13 59432x.2018.1435528

van Kleef, G. A., Oveis, C., van der Löwe, I., LuoKogan, A., Goetz, J., & Keltner, D. (2008). Power, distress, and compassion. *Psychological Science*, *19*(12), 1315–1322. https://doi. org/10.1111/j.1467-9280.2008.02241.x

Williams, M. J. (2014). Serving the Self From the Seat of Power: Goals and Threats Predict Leaders' Self-Interested Behavior. *Journal of Management*, *40*(5), 1365–1395. https://doi.org/10.1177/0149206314525203

Winter, D. G. (1973). The power motive. Free Press.

Winter, D. G. (1991). A motivational model of leadership: Predicting long-term management success from TAT measures of power motivation and responsibility. *The Leadership Quarterly*, *2*(2), 67–80. https://doi.org/10.1016/1048-9843(91)90023-U

Wisse, B., Rus, D., Keller, A. C., & Sleebos, E. (2019). "Fear of losing power corrupts those who wield it": The combined effects of leader fear of losing power and competitive climate on leader self-serving behavior. *European Journal of Work and Organizational Psychology*, *28*(6), 742–755. https://doi.org/10.1080/1359432x.2019.1635584

World Health Organization (WHO): Regional Office for Europe (1998). "Well-being measures in primary health care: the DepCare Project. in Consensus Meeting, Stockholm, Sweden.

Zimbardo, P. G. (1972). *The psychology of imprisonment: Privation, power and pathology*. Stanford University

Chapter 5

Cheat Codes as External Support for Players Navigating Fear of Failure and Self-Regulation Challenges in Digital Games

Waldenmeier, K., Pöller, S., Dechant, M. J., Baumann, N. & Mandryk, R. L., 2023

Published in *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems* (Article 363, pp. 1-13).

https://doi.org/10.1145/3613904.3642603

Abstract

Failure is an integral element of most games, and while some players may benefit from external support, such as cheat codes, to prompt self-soothing, most games lack supportive elements. We asked participants (N=88) to play Anno 1404 in single-player mode, and presented a money-generating cheat code in a challenging situation, also measuring the personality trait of action-state orientation, which explains differences in self-regulation ability (i.e., self-soothing) in response to threats of failure. Individuals higher in state orientation were more likely to take the offer, and used the cheat code more frequently. The cheat code also acted as an external support, as differences in experienced pressure between action- and state-oriented participants vanished when it was used. We found no negative consequences of using external support in intrinsic motivation, needs satisfaction, flow, or performance. We argue that external support mechanisms can help state-oriented players to self-regulate in gaming, when faced with failure.

Keywords: action-state orientation, PSI theory, digital games, cheating, cheat codes, player experience, pressure, self-regulation, fear of failure

Introduction

People play games for a variety of motivations, including for stress relief (Russoniello et al., 2009), alleviating boredom (Larche & Dixon, 2021), repairing noxious moods (Bowman & Tamborini, 2013), escaping through fantasy (Stenseng et al., 2021), and recovering from life's demands (Chen, 2021). These motivations relate to a growing body of evidence that support the idea that people play games as a way of self-regulating their emotions (e.g., Rieger et al., 2014; Russoniello et al., 2009) - in particular, to reduce unwanted affect (e.g., Bowman & Tamborini, 2012; Reinecke, 2009), which includes high-arousal-low-valence emotional states, such as frustration and stress, and low-arousal-low-valence states, such as boredom and depression. Although game designers often intend players to work within the game's system of rules and procedures to eventually beat a game (Fullerton, 2008), research suggests that a majority of players have taken agency over their emotional experience within single-player games by using in-game cheats (Passmore et al., 2020). In-game cheats originated from developer codes used to facilitate the development process, that were accidentally (or intentionally) left in shipped games and discovered by players; however, in addition to cheat codes, games often include loopholes (e.g., skipping parts of a dungeon in World of Warcraft), exploits (e.g., by purposely gaining an advantage by utilizing a broken mechanic in-game; Castelot, 2023), mods (e.g., gaining vision through walls using additional modifications; Ashworth, 2022), or even game settings (e.g., “Free Building Mode” in city management games; Marusic, 2022) that may be frowned upon by other players as ‘cheating’, rather than achieving the objective through skill and dedication. Cheating in games carries a negative connotation, primarily as a result of the consistent view that cheating within multi-player games is unfair (Consalvo, 2007; Doherty et al., 2014; Yan & Randell, 2005) or even toxic (Platzer, 2011; Prather et al., 2017). However, researchers suggest that in single-player scenarios, players use in-game cheats to help expedite progress toward achieving a game's objectives, and tailor their game experience to best match their emotional needs and optimize recovery through play (Consalvo, 2007; Doherty et al., 2014; Passmore et al., 2020). Passmore et al. (2020) suggest that because of these potential recovery benefits, researchers and designers should consider avoiding imposing the morality of cheating in multiplayer games onto single-player games, and rather reframe cheating as a “micro-intervention” for players to autonomously improve their play experiences and facilitate restorative play.

Supporting in-game cheats for restorative play is important because for some people, it is more difficult to self-regulate unwanted affect and repair noxious moods. Self-regulation theory describes this difference in the ability to self-regulate affect as action orientation and state

orientation (Kuhl, 2000, 2001; Kuhl et al., 2021). Action-oriented individuals tend to have stronger self-regulatory abilities, whereas state-oriented individuals tend to have more difficulties with self-regulation. These differences in self-regulatory ability only appear when people are under stress (e.g., Koole et al., 2012; Kuhl, 1994), when up-regulation of positive affect (i.e., self-motivation) or down-regulation of negative affect (i.e., self-soothing) is necessary. Therefore, two dimensions of action-state orientation are generally distinguished: demand-related action-state orientation (i.e., the ability to self-motivate under stress) and threat-related action-state orientation (i.e., the ability to self-soothe under stress; hereafter referred to as tASO). The affect-regulation advantage of action- over state-oriented individuals under pressure has been demonstrated in many contexts, including in health (e.g., Palfai et al., 2002), sports (e.g., Gröpel, 2016), and academia (e.g., Schlüter et al., 2018). In the context of gaming, the threat of failure is considered by many as fundamental to the play experience (Aytemiz & Smith, 2020; Frommel et al., 2021; Juul, 2013), and most game scholars include an uncertain and quantifiable game outcome in their definitions of what a game is (e.g., Salen & Zimmerman, 2005). Beyond just the threat of failure, many single-player games use time pressure, resource management, complex rule sets, and conflict (Fullerton, 2008) to create a play experience that can feel overwhelming, stressful, full of pressure, and often results in multiple failures prior to success (Frommel et al., 2021). This repeated failure has been described as essential to the enjoyment of many play experiences, when it leads to eventual success (Frommel et al., 2021; Juul, 2013); however, it can also be described as stressful, with physiological evidence supporting this view (Mandryk & Gutwin, 2008).

Self-regulation theory (Kuhl, 2000, 2001; Kuhl et al., 2021) suggests that threat-related action-oriented players (i.e., those with greater ability to self-soothe) should be better able to down-regulate negative affect during gaming, essentially being better equipped to cope with in-game pressure and the threat of failure. However, it further suggests that there are strategies that can help mitigate differences related to action-state orientation, as the disadvantages for state-oriented individuals disappear when external support is given (Amlinger-Chatterjee & Baumann, 2018, Baumann et al., 2005b). If—like Passmore et al. (2020)—we frame ‘cheating’ as an in-game mechanism that players use to tailor their emotional experience, then an in-game cheat prompt can be viewed as an external stimulus that could benefit state-oriented players in initiating self-soothing. Self-regulation theory would thus predict that state-oriented players may be more likely to accept the support (i.e., use the cheat code), and benefit from it (i.e., prompt self-soothing), when faced with the pressure of playing a new and complex game. The problem is we have no evidence that tASO predicts behaviour in gaming—a context (unlike

health (Palfai et al., 2002) or academia (Schlüter et al., 2018) in which the threat of failure is seen as integral to the experience, and is even enjoyed by many players (e.g., Frommel et al., 2021; Juul, 2012). However, there are myriad examples outside of self-regulation theory that demonstrate how our identities, personalities, and traits outside of gaming contexts predicts our behaviours within games (e.g., Dechant et al., 2022; Poeller et al., 2021a; Poeller et al., 2021b), even when we as players know that the risks are fabricated and the outcomes inevitable.

To determine whether cheating in single-player games can be viewed as an external support that helps state-oriented players self-soothe, in this study, we investigate tASO in a gaming context. We exposed novice players to a complex city-management game (Anno 1404), in which they quickly lost in-game money and faced failure. Participants were given the opportunity to use a money-generating cheat code (external support) to help with a challenging situation. We posed research questions related to how tASO influenced the use of the external support. Furthermore, we examined whether accepting the external support to initiate self-soothing had any positive or negative consequences in terms of player experience and performance. Our results show that individuals higher in state orientation were more likely to take the offer and use the cheat code, and were likely to use it more frequently. Furthermore, the cheat code did act as external support to state-oriented players, as those who used it benefited: For participants who did not use the cheat code, greater state orientation was associated with higher experienced pressure; however, for those who used the external support (i.e., the cheat code), the effect of action-state orientation on experienced pressure was completely mitigated, in line with what the theory would predict (e.g., Amlinger-Chatterjee & Baumann, 2018). Further, our results suggest no negative consequences of using the external support on player experience, in terms of intrinsic motivation, needs satisfaction during play, flow, or performance. Our work reinforces the perspective of Passmore et al. (2020) of in-game cheats as a mechanism for tailoring play experiences, and adds to the mounting evidence that it is important to consider individual differences of players—including their action-state orientation—when designing games that support players with a diversity of motivations for gaming and styles of play.

Background

Challenge and Failure in Games Research

Experiencing failure is often considered to be a central aspect of gaming (e.g., Aytemiz & Smith, 2020; Frommel et al., 2021; Juul, 2013). Some players intentionally seek out stressful game experiences because success in a game is not “simply winning or avoiding death, but is about

setting goals, experiencing challenges, and beating the odds to triumph over adversity and repeated struggle" (Frommel et al., 2021). Therefore, some types of failures are seen as desirable in game design (Aytemiz & Smith, 2020), and the satisfaction of eventual success can be heightened by multiple failures along the way (Frommel et al., 2021; Petralito et al., 2017). Further, for players higher in challenge orientation, failure can be just as enjoyable as success, because temporary failure is perceived as part of the journey to eventual success—as integral as the eventual triumph (Frommel et al., 2021). From this research on failure in games, we might assume that providing external support to make a game easier might be seen as undesirable, which is likely why 'cheat codes' are becoming less common, even in single-player games. However, self-regulation theory (Kuhl, 2000, 2001; Kuhl et al., 2021) suggests that such assumptions might not be equally true for all players, because some players are less likely to be able to cope with unpleasant play experiences. Therefore, they might be left behind by 'sink or swim' approaches and would instead benefit from external help—such as in-game cheats—to grow and learn to the same extent as action-oriented players.

Cheating and Cheat Codes in Gaming

Generally, cheating is defined as a violation of regulations whether they are official or inferred guidelines of a system (Kamis et al., 2016). Like any sports in the physical world, digital games also face violations of rules (Paay et al., 2018), ranging from simple creative tools to expand a game and modify its ruleset to dedicated applications and assistive systems that aid players to gain a permanent performance advantage over other players (Consalvo, 2007; Friehs et al., 2022; Kamis et al., 2016), such as wall-hacks or aim-bots (Ashworth, 2022). In the dawn of video games, developers used secret codes to add a temporary advantage or mechanic as a means of facilitating game testing, and these codes were sometimes left in shipped games both unintentionally and intentionally (Consalvo, 2007). The taxonomy of Yan and Randell (2005) shows multiple ways in which players may manipulate and overbend the rules of a game, e.g., collusion, abusing game mechanics, or exploiting other players. In multiplayer gaming, there is a general agreement that cheating is negatively regarded when it results in one player receiving an unearned and unfair advantage over others (Consalvo, 2007; Doherty et al., 2014). To keep the game entertaining for everyone, Duh and Chen (2009) emphasize that all players should stick to the rules and avoid the (over)-usage of cheats; however, players have different ideas of what counts as cheating and what is a "smart tactic based on the rules of the game".

Although some players denounce any form of cheating, others still value single-player game cheat codes for various reasons, such as overcoming technical problems, advancing the game

towards completion, or just for pleasure (Doherty et al., 2014). In a large qualitative study, Consalvo (2007) provides four primary motivations for cheating within games: feeling "stuck," "wanting to play God," feeling "bored with the game," and being "a jerk". As Passmore et al., (2020) observe, three of these four motivations are relevant in single-player games. Together, this work implies that cheating may not only be used to gain an advantage, but to enhance the player experience. Passmore et al., (2020) further suggested that cheating within single-player games may be better characterized as cheating for purposes of player agency over gameplay—wherein players can have control over their experiences to reduce negative affect, enable creative solutions to reduce frustrating or boring gameplay, and tailor the game to best match their emotional needs and optimize recovery through play. The reasons for cheating are highly personal and affected by individual motives and goals around what players wish to achieve in the game. However, the role of action-state orientation in this context is still not explored and may help designers gain a theory-based understanding of how, why, and when cheat codes can be used to support certain players.

Self-Regulation Theory

We draw our theoretical background from self-regulation theory—also referred to as action control theory or the theory of Personality Systems Interactions (PSI theory; Kuhl, 2000, 2001; Kuhl et al., 2021). The theory explains two fundamental aspects of a fully functioning personality: implementing difficult intentions (intention enactment) and learning from failures (self-growth). Both of these aspects are particularly important in the context of gaming. Overcoming an unpleasant affective state is essential for both intention enactment—which necessitates self-motivation, and self-growth—which requires the ability to self-soothe. According to self-regulation theory, self-growth requires integrating and overcoming uncomfortable thoughts and experiences. When being confronted with failure, individuals typically experience negative affect, i.e., pain. They tend to focus on the failure, leading to a narrowed mindset, often described as 'tunnel vision'. In order to learn from failure, individuals need to down-regulate this negative affect, essentially practicing self-soothing. Therefore, shifting between opposing affective states (high and low negative affect) is crucial for self-growth.

Individual differences in the ability to self-soothe is described through the construct of action-state orientation and is measured using the Action Control Scale (Kuhl, 1994; Kuhl & Beckmann, 1994; Kuhl et al., 2021). This questionnaire distinguishes between two dimensions of action-state orientation: the demand-related action-state orientation, which describes the high

versus low ability to up-regulate positive affect (self-motivation), and the threat-related action-state orientation (tASO), which describes the high versus low ability to down-regulate negative affect (self-soothing). These two different types of self-regulatory abilities develop independently of each other in childhood due to socializing experiences (Kuhl, 2001; Kuhl & Keller, 2008; Liesenfeld, 2017).

Although an established personality theory, action versus state orientation has been underutilized in HCI and gaming research. Demand-related action-state orientation (i.e., the ability to self-motivate) was recently considered in a study by Birk et al. (2020) that investigated unwanted interruptions during game play, showing that state-oriented individuals were less able to dismiss an interrupting notification during a round of a match-3 game, and among players who did dismiss the dialog, state-oriented players took longer to do so. In this study, the authors considered demand-related action-state orientation, focusing on the ability to up-regulate positive affect under demand (i.e., self-motivate). However, when it comes to understanding how players respond to failure, tASO—the ability to down-regulate negative affect (i.e., self-soothe)—is the more relevant concept to consider. However, within gaming research, tASO has not received any attention, despite the potential it holds to contribute to understanding how players respond to the fear of failure within gaming.

Threat-related Action Orientation: Self-soothing Promotes Self-growth

People with high self-soothing ability are called threat-related action-oriented individuals, people with low self-soothing ability are called threat-related state-oriented individuals (Kuhl, 2000, 2001; Kuhl et al., 2021). Consider a person who, after facing a setback, doesn't dwell on what went wrong but instead keeps pushing forward, perhaps even resorting to taking action without processing their negative emotions or adjusting their approach to a problem. This describes someone who tends to be highly threat-related action-oriented. In contrast, you might be familiar with someone who, when confronted with a negative experience, tends to shut down and becomes engrossed in ruminating about what went wrong or excessively analyzing the situation. This behavior is indicative of a highly threat-related state-oriented individual. Research on differences of tASO has shown that action-oriented compared to state-oriented individuals are better at down-regulating negative affect when exams come closer (Brunstein, 2001). This self-soothing ability helps action-oriented people to better cope with adverse life circumstances such as chronic pain (Buchmann et al., 2021), and bullying (Wojdylo et al., 2014). Action-oriented individuals experience a universal trust that takes the edges off day-to-day experiences (Kuhl et al., 2017). After inducing negative affect in an experiment, action-

oriented individuals are better able to maintain access to their intuition and holistic knowledge (Baumann & Kuhl, 2002), generate goals that are congruent with their own motives (Baumann et al., 2005a), and buffer themselves against social expectations that do not match intrinsic preferences (Kazén et al., 2003). Furthermore, a high sensitivity for negative affect does not impede but even boosts action-oriented individuals in their creativity (Biebrich & Kuhl, 2002). Finally, action orientation promotes people's ability to learn from negative experiences and grow as a person (Liesenfeld, 2017) rather than to persist in a negative state.

Taken together, self-regulation theory explains that people can have similar negative experiences (e.g., failing in a task), but different abilities to cope with them. Some individuals find it harder than others to maintain access to their own needs, preferences and goals, when they are confronted with threats. A uniform approach to game design that focuses solely on main effects while neglecting interaction effects (e.g., 'most players find learning through threats of failure enjoyable') fails to accommodate individual differences. Instead, a tailored approach is essential to address diverse needs.

The Present Study

Under stressful situations (e.g., frustration, failure), action-oriented individuals find themselves at an advantage (Koole et al., 2012). Because state-oriented individuals have difficulties regulating their emotions on their own, they benefit from external support when dealing with frustration or failure. This benefit of external support is shown in studies within non-gaming contexts, demonstrating that differences between action-state orientation disappear when external support is provided (e.g., Amlinger-Chatterjee & Baumann, 2018; Baumann et al., 2005b). In games, stressful situations are common, which leads to a different playing field for action- and state-orientated players. Action-oriented individuals can handle feelings of frustration or failure by themselves, which means they know how to overcome these situations and therefore can continue playing quickly. State-oriented individuals may stay stuck in the feeling of frustration or failure, which could cause them to pause or even quit the game. Cheat codes—as an offer of external support—should theoretically level the playing field by providing state-oriented players with a means to overcome stressful situations during play.

The present study investigates how individual differences in the ability to down-regulate negative affect influence cheat code usage and how this, in turn, affects player performance and experience. During the experiment novice players play the city management game Anno 1404 (Related Designs, 2009) and face a stressful situation (i.e., threat of bankruptcy). At one point participants are presented with the option to either work under this threatening situation or to

remove the threat of bankruptcy with a cheat code. While all participants are placed in a situation where they continuously lost money, they are randomly assigned to one of two conditions: in the poor condition, participants have little gold left and are close to financial ruin; in the rich condition, there is still sufficient capital left to survive for the duration of the lab study even if finances would not be improved by the player. We included the rich and poor conditions to investigate whether the extent of the threat of failure is a relevant factor.

Self-regulation theory (Kuhl, 2000, 2001; Kuhl et al., 2021) describes that state-oriented individuals benefit from external support, and previous research has demonstrated this outside of game contexts (e.g., Amlinger-Chatterjee & Baumann, 2018; Baumann et al., 2005b). What is not known so far is whether state-oriented individuals accept external support instead of, for example, being overwhelmed and shutting down. Furthermore, to our knowledge there is no empirical evidence on tASO in gaming—a context, in which failure is seen as integral to the experience. We also do not know whether accepting external support to initiate self-soothing in a game context will influence player experience or performance. With these considerations in mind, we posed the following research questions:

RQ1. Are players higher in threat-related state orientation more likely to use an external support when playing a game in which they are facing the threat of failure?

- RQ1a. Are players higher in state orientation more likely to use the cheat code under threat of failure?
- RQ1b. Do players who use the cheat generate more money through it when they are higher in state orientation?
- RQ1c. Do such differences depend on the extent of the threat (rich vs. poor)?

RQ2. Does using the cheat code affect player experience?

- RQ2a. Does using an external support such as a cheat code affect player experience (i.e., intrinsic motivation, needs satisfaction, or flow)?
- RQ2b. Does using the external support affect state-oriented players differently than action-oriented players?

RQ3. Did using the external support (i.e., cheat code) affect player performance?

Methods

To answer these research questions, we conducted a lab study.

Participants

The sample consisted of 123 students at the University of Trier, of which 15 were excluded due to missing data or technical problems during the experiment. We also excluded participants who had prior experience with playing Anno 1404 (N = 20), to support a consistent sample in terms of exposure to the game and to ensure the difficulty of the play situation (as experienced players should have little trouble to navigate it). The remaining sample consisted of 88 participants (Mage = 21.89, SD = 4.58; 16 men, 72 women, 0 non-binary). Using established scale cut-off thresholds (Kuhl, 1994), 41 of them were classified as threat-related action-oriented (scale values = 5–12), of which 21 were in the poor condition and 20 in the rich condition; 47 people were classified as threat-related state-oriented (scale values = 0–4), of which 23 were randomly assigned to the poor condition and 24 to the rich condition. While this classification follows a dichotomous distinction depending on a scale cut-off value, this is only used to describe the sample. All analyses were conducted with the continuous variable for action-state orientation, looking at action-state orientation on a spectrum rather than treating it as a categorical variable (Cohen, 1983; McClelland et al., 2015). We did not include a control group (who were not given the option to cheat) as this would have doubled our needed sample size without contributing to answering our research questions; we return to the impacts of this decision in the discussion.

Procedure

Participants arrived at the lab and after providing informed consent, first completed the trait questionnaires. They were then introduced to Anno 1404 through a 5-minute video tutorial and received a summary sheet with a detailed explanation on how to improve their balance sheet, which was printed and available throughout the game. They then began to play; after 5 minutes, participants received a pop-up: “During the next minute you can use a cheat to generate money by clicking the F8 key. You can click it as often as you like!”. The game then continued for another 10 minutes (resulting in a total of 15 minutes play time) after which participants received a pop-up: “The game time is now over. If you want to continue playing, you can extend the game for up to 10 minutes” to avoid frustration caused by an abrupt end to the gameplay. At this point, participants completed questionnaires on the play experience, their gaming experience, their experience with cheating in games, and demographic variables. At the end of the study, participants were rewarded with course credit. The experiment took participants around one hour to complete.

The Game. Anno 1404 (Dawn of Discovery). We chose Anno 1404 (Related Designs, 2009)—a complex city management game, in which players construct a settlement mimicking the age

of discovery—for our game stimulus in our study. In Anno 1404, players need to gather and manage resources for building houses, farms, and industries, without losing sight of the satisfaction of the needs of the growing population. The financial condition of the settlement is crucial for player success, and new players are likely to lose sight of balancing everything. Because we wanted to induce threat of failure, the savegame was started in a suboptimal condition. To manipulate the extent of threat, participants were randomly assigned to one of two conditions: in the rich condition (starting capital of 41961 gold), there was enough money left to play through the experiment even if the balance sheet of the settlement was not improved. In the poor condition (starting capital of 1961 gold), the player was threatened by bankruptcy during the study if they did not improve the situation quickly. A financial collapse (bankruptcy) would leave players unable to obtain goods and production buildings. Aside from the differences in starting capital, the two conditions were held constant. The players' initial balance sheet was negative in both versions, and players lost 583 gold units per minute in both conditions, until they improved the state of their settlement. An AutoIt (Bennett & AutoIt Team, 2009) script steered the experiment and informed participants about the cheat code usage and optional prolonging of the game when the play time was over. Another AutoIt script increased the amount of gold a player had upon using the cheat by altering the memory of the game, because Anno 1404 does not have any built-in publicly-known cheat codes. We chose Anno 1404 as it is a complex game that is challenging to master but for which the rules could be learned in a single play session, because the starting conditions could be manipulated to induce likely failure, and because a single cheat moment could be contrived that would clearly benefit the players.

Measures

The study was carried out in Germany, and accordingly, German versions of all questionnaires were utilized. The questionnaires were sourced either in their already-published German forms (e.g., Flow, Action-State Orientation) or as translated versions of questionnaires used in previous peer-reviewed studies.

Action-State Orientation. Action-state orientation was assessed using the action-control scale (ACS; Kuhl, 1994). The questionnaire consists of 24 items that describe different situations; participants choose one of two possible answers for each situation. The questionnaire can be divided in two scales, each measured with 12 items: demand-related (Cronbach's $\alpha = .80$) and tASO (Cronbach's $\alpha = .81$). An example item for threat-related is "When I am in a competition and have lost every time: (a) I can soon put losing out of my mind; (b) The thought that I lost

keeps running through my mind" with (a) being the action-oriented and (b) the state-oriented response. Action-oriented answers are summed up, resulting in a scale ranging from 0-12, so that individuals fall on a continuum. The ACS is an established scale and reliability and construct validity have been demonstrated by previous work (Baumann et al., 2018; Diefendorff et al., 2000; Kuhl & Beckmann, 1994; for an overview of the validity in 18 languages, including German and English, see Koole et al., 2023).

Intrinsic Motivation. Using the Intrinsic Motivation Inventory (IMI; McAuley et al., 1989; Ryan, 1982; for the German translation see Center for Self-Determination Theory, 2023), we measured the dimensions interest-enjoyment (7 items; e.g., "Playing the game was fun"; Cronbach's α = .87), and perceived competence (6 items; e.g., "I think I am pretty good at this game"; Cronbach's α = .70), pressure-tension (5 items; e.g., "I was anxious while playing the game"; Cronbach's α = .71). Responses were rated on a 5-point Likert scale ranging from "1 = strongly disagree" to "5 = strongly agree". The effort-importance scale was measured but is not included in subsequent analyses because of reliability issues: Cronbach's α was .14, which seems to have been caused by participants not paying attention to two reverse-coded items.

Needs Satisfaction during Play. The satisfaction of player needs was assessed using the Player Experience of Needs Satisfaction questionnaire (PENS; Johnson et al., 2018; Ryan, et al., 2006). PENS surveys competence satisfaction (3 items; e.g. "I feel very capable and effective when playing"; autonomy satisfaction (3 items; e.g. "I experienced a lot of freedom in the game"; Cronbach's α = .82); Cronbach's α = .84), intuitive control (3 items; e.g., "Learning the game controls was easy"; Cronbach's α = .80), and presence (9 items; e.g. "When playing the game, I feel as if I was part of the story"; Cronbach's α = .88). Responses were rated on a 5-point Likert scale ranging from "1 = strongly disagree" to "5 = strongly agree".

Flow Experience. The Flow Short Scale (FKS; Rheinberg et al., 2003, 2009) was used to measure flow experience. The scale consists of 10 items that were rated on a 7-point Likert scale ranging from 1 = "not at all" to 7 = "very much". The items can be summarized as a general factor (Cronbach's α = .84) or divided into two factors: fluency of performance (6 items; e.g. "The right thoughts/movements occur of their own accord"; Cronbach's α = .87) and absorption by activity (4 items; e.g., "I feel just the right amount of challenge"; Cronbach's α = .84).

Player Performance. Player performance was measured by logging how much players improved their balance sheet throughout the game. The balance sheet represents gold income per minute and describes the economic state of the settlement. Regardless of condition, all

players started the game losing 583 gold per minute (a balance of -583). The less gold they lost per minute in the end of the play time, the better their performance. Some participants ended the game in a worsened situation; however, during the first five minutes until the cheat was offered, players improved their balance by 104 gold per minute from an average balance of -583 to -479 (*Mean*= -479, *SD*= 122, *Min*= -643, *Max*= +14). In the end of the 15 minutes play time, players had improved their steady income by 233 gold per minute on average (*Mean*= -350, *SD*= 300, *Min*= -1230, *Max*= +742).

Data Analyses

Data analyses were performed using IBM SPSS Statistics 26. Throughout, we use the Bonferroni-Holm (Holm, 1979) method of alpha correction—which controls familywise error rate and reduces the probability of a Type I error through an alpha adjustment—to interpret significant differences.

RQ1: To test whether state-oriented players are more likely to use the cheat code, we conducted a multiple regression using continuous action-state orientation and experimental condition (poor/rich; RQ1c) as independent variables and cheat code usage (no cheat versus cheat) as the dependent variable (RQ1a). In the second multiple regression, we investigate differences in the amount of cheat code usage (RQ1b). We collected this as an absolute number (ranging from 0-639) and because the standard deviation was very high, we divided the variable into three categories of relatively equal size 1: no cheat (0; n=32), 2: low cheat (<31 button presses; n=29), and 3: high cheat (>30 button presses; n=26). The low cheat group reflects cheating up to once every two seconds, while the high cheat group represents players who either kept pressing the button or held it pressed for the entire minute.

RQ2: Next, we analyze the influence of cheat code use on player experience (intrinsic motivation, needs satisfaction, and flow experience). We conducted 9 multiple regressions using continuous action-state orientation and cheat code usage (no/yes) as the independent variables and the sub-scales of the three categories of player experience as dependent variables (RQ2a), testing for interactions as well in a moderation analysis (RQ2b).

RQ3: For the final research question, which investigates effects of cheating on player performance, we report repeated measurement analysis of variance (ANOVA) with cheat code usage (no/yes) as the independent variable and balance sheet at different measurement time points (1: before cheat; 2: end of game) as the dependent variable. The balance sheet serves as

a reflection of the in-game settlement's gold income (or loss) per minute, providing insight into its current state.

Results

Descriptive statistics for all variables are displayed in Table 5.1. Prior to conducting each analysis, we performed assumption tests, despite most analyses being robust against violations of assumptions. In every instance, these tests did not indicate any reason to discontinue the analysis.

RQ1: Are players higher in threat-related state orientation more likely to use an external support when playing a game in which they are facing the threat of failure?
Both operationalizations of the threat of failure in RQ1 (1: the game situation itself; 2: the increased pressure depending on experimental condition (RQ1c)) were tested concurrently in the same analyses to prevent alpha error inflation.

RQ1a & 1c. Are players higher in state orientation more likely to use the cheat code under threat of failure? Participants higher in state orientation were more likely to use cheat codes ($\beta = -.240$, $t = -2.27$, $p = .03$). There was no main effect of experimental condition (rich versus poor; $\beta = -.164$, $t = -1.55$, $p = .13$), and no interaction effect of action-state orientation and experimental condition (moderation; $\beta = .024$, $t = .07$, $p = .95$).

RQ1b & 1c. Do players who use the cheat generate more money through it when they are higher in state orientation? This analysis revealed a significant main effect of action-state orientation ($\beta = -.243$, $t = -2.29$, $p = .03$), no significant main effect of condition (rich versus poor; $\beta = -.114$, $t = -1.07$, $p = .29$), and no significant interaction term between action-state orientation and condition ($\beta = -.038$, $t = -.10$, $p = .92$). Therefore, regardless of the condition, participants higher in state orientation used cheat codes more than participants higher in action orientation.

RQ2. Does using the cheat code affect player experience?
This second research question comprises two sub questions—because the two sub questions are answered by the same model for each dependent measure (a single multiple regression), we report the results for these two questions together, organized by dependent measure. RQ2a represents the main effects of cheat code use on player experience and RQ2b represents the interaction effects between action-state orientation and cheat code use on player experience. The main effects of action-state orientation on player experience are reported because they are automatically tested in the same model, but are not directly relevant to our research questions

Table 5.1 *Descriptive statistics split by whether or not participants used the cheat codes.*

	Used Cheat					Did Not Use Cheat			
	N	*Min*	*Max*	*Mean*	*SD*	N	*Min*	*Max*	*Mean*	*SD*
IMI: Pressure	55	1.20	3.80	2.52	0.68	32	1.20	4.4	2.59	0.91
IMI: Enjoyment	55	1.00	4.43	2.29	0.82	32	1.29	4.43	2.93	0.98
IMI: Competence	55	1.00	3.50	2.32	0.62	32	1.00	3.83	2.35	0.71
PENS: Competence	55	1.00	3.67	2.01	0.85	32	1.00	3.67	2.00	0.83
PENS: Autonomy	55	1.00	4.67	2.81	1.03	32	1.00	4.33	2.88	1.08
PENS: Intuitive Control	55	1.00	4.67	2.63	0.97	32	1.09	5.00	2.90	1.10
PENS: Presence	55	1.00	3.67	2.17	0.79	32	1.00	3.56	2.17	0.81
Flow: Fluency	55	1.00	5.33	2.86	1.22	32	1.00	6.17	3.13	1.44
Flow: Absorption	55	1.00	6.75	3.74	1.58	32	1.00	6.75	3.58	1.75
Action-State Orientation	55	0	12	3.85	3.00	32	0	12	5.28	3.22
Performance before cheat	55	-643	-158	-482	111	32	-584	14	-475	139
Performance at game end	55	-1230	246	-393	275	32	-1027	742	-276	331

Note. Range of possible values: intrinsic motivation inventory (IMI) and player experience needs satisfaction (PENS): 1–5, flow: 1–7, action-state orientation: 0–12. Higher values indicate more of the construct (e.g., more absorption) and higher values for action-state orientation indicate greater action orientation.

Intrinsic Motivation. See Table 5.2 for all results.

Interest-Enjoyment. There were no significant main effects for tASO or cheat code usage (dichotomous variable) on interest-enjoyment. There was no significant interaction effect of tASO and cheat code usage on interest-enjoyment.

Perceived Competence. There were no significant main effects for tASO or cheat code usage on perceived competence. There was no significant interaction effect between tASO and cheat code usage on perceived competence.

Pressure-Tension. We observed a significant main effect of tASO on pressure/tension (β = −.279, t = −2.6, p = .01). State-oriented participants self-reported that they experienced more pressure on average while playing Anno 1404 than action-oriented participants did. This effect was moderated by cheat code usage (β = .564, t = 2.7, p < .01): only those state-oriented players who did not use the cheat code experienced more pressure, while state-oriented participants who used the cheat code did not experience higher pressure than action-oriented participants. There was no significant main effect of cheat code usage (β = −.104, t= −.97, p = .37). This indicates that action-oriented players did not benefit from the cheat code in the same way that state-oriented individuals did. See Table 5.2 for the results, and Figure 5.1 for a visualization of the interaction effect.

Needs Satisfaction During Play. There were no significant main effects of tASO on the player experience of needs satisfaction scales (competence, autonomy, presence/immersion, and intuitive controls). There were no interaction effects between tASO and cheat code usage. Player experience of needs satisfaction on these four subscales was neither positively nor negatively affected by using the cheat code. See Table 5.3 for all results.

Flow Experience. There was a main effect of tASO on flow—fluency of performance (β = .217, t= 2.0, p = .049); however, this result was not significant after the Bonferroni-Holm correction. There were no other main effects or interaction effects of action-state orientation (tASO) and cheat code usage on flow—fluency of performance or flow—absorption by activity. Flow experience was neither positively nor negatively affected by using the cheat code. See Table 5.4 for all results.

Table 5.2 *Multiple regression results with explained variance at each level, unstandardized regression coefficients (B), standardized regression coefficients (β), and p-values for regressions predicting intrinsic motivation inventory (IMI) measures, using action- state orientation (Step 1), dichotomous cheat (Step 1), and the interaction term (i.e., moderation) (Step 2). Goodness of fit indices (R^2) for each block are provided.*

	IMI: Enjoyment				**IMI: Competence**				**IMI: Pressure/Tension**			
	R^2	B	β	p	R^2	B	β	p	R^2	B	β	p
Step 1	.032				.026				.076*			
Action-State Orientation		.051	.183	.100		.034	.164	.141		-.069	-.279	.011*
Dichotomous Cheat		.072	.040	.720		.010	.007	.949		-.165	-.104	.336
Step 2	.063				.028				.154**			
Interaction (ASO x Cheat)		-.103	-.355	.102		-.018	-.086	.696		.143	.564	.007**

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

Table 5.3: *Multiple regression results with explained variance at each level, unstandardized regression coefficients (B), standardized regression coefficients (β), and p-values for regressions predicting player experience of needs satisfaction (PENS) measures, action-state orientation (Step 1), dichotomous cheat (Step 1), and the interaction term (i.e., moderation) (Step 2). Goodness of fit indices (R^2) for each block are provided.*

	PENS: Competence				**PENS: Autonomy**			
	R^2	B	β	p	R^2	B	β	p
Step 1	.029				.011			
Action-State Orientation		.045	.167	.133		.034	.102	.364
Dichotomous Cheat		.155	.089	.419		-.021	-.010	.931
Step 2	.029				.024			
Interaction (ASO x Cheat)		-.002	-.007	.976		-.081	-.235	.286
	PENS: Int. Control				**PENS: Presence**			
	R^2	B	β	p	R^2	B	β	p
Step 1	.030				.002			
Action-State Orientation		.039	.120	.278		-.013	-.050	.654
Dichotomous Cheat		-.216	-.102	.355		-.020	-.012	.913
Step 2	.034				.004			
Interaction (ASO x Cheat)		-.040	-.118	.588		-.020	-.076	.733

Table 5.4 *Multiple regression results with explained variance at each level, unstandardized regression coefficients (B), standardized regression coefficients (β), and p-values for regressions predicting flow short scale measures, using action-state orientation (Step 1), dichotomous Cheat (Step 1), and the interaction term (i.e., moderation) (Step 2). Goodness of fit indices (R^2) for each block are provided.*

	Flow: Fluency				**Flow: Absorption**			
	R^2	B	β	p	R^2	B	β	p
Step 1	.054				.027			
Action-State Orientation		.090	.217	.049*		.085	.163	.144
Dichotomous Cheat		-.133	-.049	.651		.279	.083	.455
Step 2	.061				.038			
Interaction (ASO x Cheat)		-.071	-.166	.441		-.113	-.209	.338

* $p < .05$

RQ3. Did using the external support (i.e., cheat code) affect player performance?

To estimate performance, the dependent variables we considered were the amount on the participant's balance sheet (settlement gold income per minute) before they had the option to cheat, and their balance sheet at the end of the game (before optional prolonging). In the repeated-measurement ANOVA (rANOVA) we observe no statistically significant difference in player performance between participants who used cheat codes and those who did not ($F1, 85= 2.85$, $\eta 2 = .032$, $p = .095$), indicating that using the cheat code usage had no significant effect on player motivation to improve the state of their in-game settlement (performance).

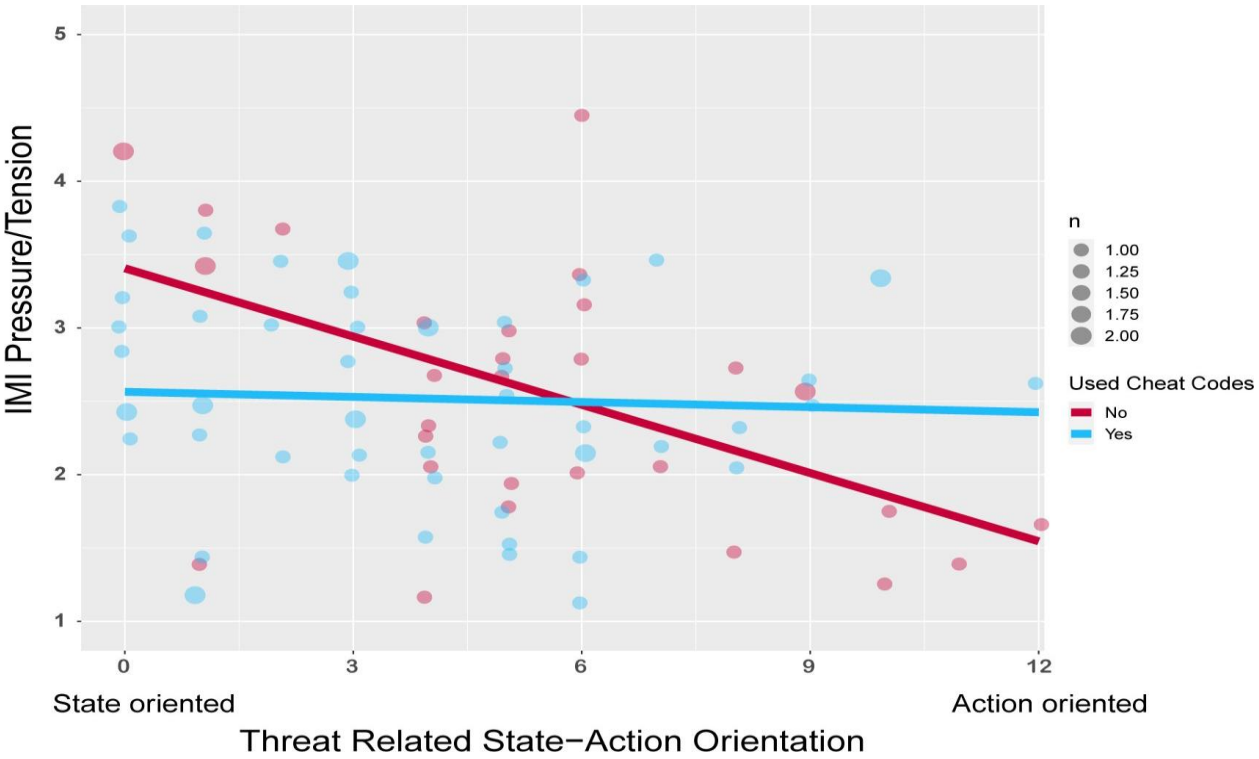

Figure 5.1: Effects of action-state orientation on IMI Pressure/Tension with colour indicating those who used the cheat code (blue) and those who did not (red). The size of the circle in the scatter plot indicates the frequency of the answer and coloured based on whether they used cheat codes. Using the external prompt (cheat code) mitigated the effect of threat-related state-action-orientation on experienced pressure. The orientation is expressed on the X-axis ranging from 0 (= mainly state-oriented) up to 12 (=mainly action-oriented). The colored lines in the scatter plot visualize the overall trend for both conditions (Did not use cheat = red; Used cheat = blue).

Discussion

In this paper, we introduce action-state orientation, a personality disposition which describes individual differences in the way people cope with threatening situations (Koole et al., 2012; Kuhl & Beckmann, 1994). In essence, action-oriented individuals exhibit good self-regulatory abilities under stress (Friederichs et al., 2020); state-oriented individuals, on the other hand, have difficulties motivating or soothing themselves on their own (Baumann et al., 2007; Thakur & Baumann, 2022) and therefore they benefit from external support (Aimlinger-Chatterjee & Baumann, 2018; Baumann et al., 2005b). This led to the assumption that in threatening situations, state-orientation should be related to using an external support, such as cheat codes in single-player games. Beyond just introducing and explaining the theory, we illustrate its utility for games research through an exemplary study.

Summary of Findings

We summarize our main findings by research question.

RQ1: Are players higher in threat-related state orientation more likely to use an external support when playing a game in which they are facing the threat of failure?

- Individuals who have difficulties with self-regulation (state orientation) are both more likely to use cheat codes and to use them with higher frequency when confronted with a complex new game.
- We observed no statistical differences in likelihood of cheating based on the starting resources of the players (i.e., rich or poor starting condition).

RQ2. Does using the cheat code affect player experience?

- Individuals who have difficulties with self-regulation reported more experience of pressure and tension during gameplay than action-oriented individuals; however, when the external support (cheat code) was utilized, this relationship between action-state orientation and pressure disappeared, allowing state-oriented individuals to alleviate the experienced pressure.
- Cheat code usage did not significantly affect player experience (flow experience, needs satisfaction, and the other measured aspects of intrinsic motivation), thus we cannot conclude that cheating made the experience better or worse for these measures.

RQ3. Did using the external support (i.e., cheat code) affect player performance?

- Performance did not differ between players who used cheat codes and those who did not.

Action-State Orientation Influences Cheat Code Usage and Experienced Pressure

In this study, action-state orientation influenced whether or not participants embraced the opportunity to use cheat codes to generate in-game currency. In line with self-regulation theory (Kuhl, 2000, 2001; Kuhl et al., 2021) action-oriented individuals find it easier to soothe themselves while facing a threatening situation (e.g., failure, threat of losing the game) and therefore do not need cheat codes to cope. State-oriented individuals, on the other hand, have trouble navigating stressful situations on their own due to their limited ability to down-regulate negative affect. Previous research in non-gaming contexts (e.g., Amlinger-Chatterjee & Baumann, 2018) shows that state-oriented individuals are likely to benefit from external help.

We replicate this in a game context by demonstrating that players who are new to a complex game and higher in state orientation actively make use of external support.

We show that in a difficult situation, players who struggle with self-regulation self-report higher pressure and tension (compared to action-oriented players), but that this difference disappeared for players who used the cheat code as external support. Thus, the external support removed pressure for players who may find it difficult to self-regulate under stress. Self-regulation theory can be utilized to explain this finding: people who are high in (threat-related) state orientation have a harder time with down-regulating negative affect in a threatening situation. The new game paired with the difficult in-game situation created a situation of threat. Our results suggest that the cheat code allowed state-oriented players to relax more. Furthermore, because we are considering the regulation of negative affect under stress, it is not surprising that there were effects on pressure-tension and not on other measures of player experience, such as enjoyment or flow.

We Observed No Downside to Using Cheat Codes

One might argue that while cheat codes can help people overcome stressful or threatening situations, they may come at a cost in terms of fun (which can be generated by overcoming challenges) and competence (improving at the game). However, we did not observe this in our study. Individuals who used cheat codes did not report lower game enjoyment, perceived competence, competence satisfaction, autonomy satisfaction, intuitive controls, immersion/presence or flow experience. In addition, player performance was not harmed in this study. Through the use of psychological theories, we can add context to these findings: for state-oriented individuals, being the ones more likely to need external support to regulate emotions, using the cheat code merely takes the pressure from a threatening situation, allowing them to focus on the task. They accept external help, which might level the playing-field between state-oriented and action-oriented players. These results are in line with Passmore et al. (2020), who show that cheating in single-player games can be beneficial for those who wish to enact agency over their emotional experience during play. They are also in line with Doherty et al. (2014), who provide 13 motivations for cheating, which include “to advance toward completion in a game”, and to “have fun”. We do not know why our participants chose to use the cheat; however, we do know that players chose to use it and there were no observable differences in experience for those who did. It is possible that in other contexts, these results might differ, because we looked at a sample that had limited gaming experience. Still, we find no indication that providing beginner players with help through the cheat opportunity hindered their experience

or performance when learning a new game. This is in line with previous work demonstrating that assisting players did not impede learning once the assistance was removed, and did not harm experience (see Denisova & Cairns, 2015; Gutwin et al., 2016; Johanson et al., 2017).

Not Wrong, Not Right, Just Different

Our research could easily leave the impression that state-oriented individuals are "inferior" while action-oriented individuals are "superior"; however, this is incorrect. First, differences between action-state orientation only emerge under stress (threat or demands)—under low-stress conditions, the differences between action-state orientation disappear and, in fact, state-oriented individuals sometimes have an advantage (Jostmann & Koole, 2006). Action-oriented individuals shine under pressure, while state-oriented individuals do well without needing pressure; the flip side of this is that action-oriented individuals may need some kind of stress to get going (e.g., Friederichs et al., 2020; Koole et al., 2012; Waldenmeier et al., 2023). Second, previous research has shown that state-oriented individuals benefit from external help (e.g., Aimlinger-Chatterjee & Baumann, 2018; Baumann et al., 2005b). Our results add to this by showing that state-oriented individuals are also more likely to actively accept this help when given. A willingness to accept help can be an advantage and a readiness to use given resources should not be seen as a weakness. Third, it can be an advantage to not to act hastily. For example, having a diverse group of people can improve teamwork and a combination of action and state orientation works best: state-oriented individuals may better contribute a sensitivity for potential risks, a thorough analysis of potential problems, and to counteract excessive optimism, whereas action-oriented individual may find it easier to overcome rumination and encourage trying out possible solutions (Haschke & Kuhl, 1995; Witte & von Pablocki, 1999). Taken together, both action- and state orientation have advantages and disadvantages; however, prior work has identified ways to 'train' action orientation or help to cope with being exposed to stressful situations, because a relaxed atmosphere or external support is not always provided (Aimlinger-Chatterjee & Baumann, 2018; Baumann et al., 2005b; Friederichs et al., 2022; Friederichs et al., 2020).

Implications for Design: The Role of External Support in Digital Games

Our findings show that there is no need to insist on a sink-or-swim approach to provide interesting gameplay or for players to improve their skills. Game communities are often concerned with achievement, and considering gaming as a meritocracy (e.g., Paul, 2018; Siutila & Havaste, 2019) might be one of the reasons why conditions such as social anxiety have been found to translate into gameplay (e.g., Dechant et al., 2020; Dechant et al., 2021). Kuss et al.

(2022) describe how gamers feel that they are not "real" gamers, for reasons such as not playing every day, not being heavily invested in their games, or not playing the "right" type of game. Such tropes of distinguishing between 'casual' and 'hardcore' gamers challenge the legitimacy, credibility, and authenticity of many gamers (Harvey & Shepherd, 2017). However, there are many reasons for playing games beyond seeking challenge, such as stress relief, immersion, or social connection (Mazurek et al., 2015). Playing digital games can improve symptoms in players with social anxiety and depression (Gavriloff & Lusher, 2015; Lin et al., 2020) and both competitive and cooperative gameplay can reduce stress levels in players (Roy & Ferguson, 2016). Just as there are many motivations for gaming (Isbister & Hodent, 2008), there are many ways to support players with different needs. Our work shows that when given external support, the pressure for state-oriented plays who accept it is reduced, which is in line with previous work showing that aiding players does not harm their learning, even when the support is later removed (Gutwin et al., 2016; Johanson et al., 2017). Additionally, game designers may consider the role of other players as a support mechanic: In some games, like Dark Souls 3 (BNE Entertainment, 2018), players can ask friends to assist with challenging parts of the game. Through enabling players to help each other, game designers enable state-oriented players not only to overcome a challenge in a less stressful way but also help them to satisfy social needs by playing cooperatively with friends (Depping et al., 2018). Our game explored the injection of a cheat opportunity in a moment when failure was clearly apparent; in games, the opportunity to cheat and the conditions in which the opportunity presents itself are more subtle and varied. Our findings empirically demonstrate the benefits of a cheat in our specific game scenario, but may not generalize to other genres or game contexts.

Our work showed that accepting help did not harm experience, which is in line with work showing that adapting challenges to the skill of the player benefits experience (Denisova & Cairns, 2015). There are already ways to adjust difficulty levels in many games, including Anno 1404; however, action- and state-oriented individuals are unlikely to differ in their preference for game difficulty levels because they do not differ in their motivation for achievement and challenge (Baumann et al., 2007), but rather differ in their ability to overcome failure-related rumination.

By introducing a well-established theory of self-regulation and intertwining it with questions concerning game design and user experience, we aim to provide an additional toolkit for comprehending players. This approach provides precise terminology for describing and classifying players, facilitating the differentiation between traits that are commonly observed together but might not be causal relationships. For instance, while it may seem that players who

avoid challenging or stressful games do not seek achievement and mastery, it is plausible that these players are instead just deterred by specific design aspects of these games and not by the achievement aspect itself.

Limitations and Future Directions

There are some limitations that should be considered. First, we did not include a control group that did not have the option to use cheat codes, which would have doubled our needed sample size without contributing to answering our research questions; however, would have allowed us to investigate whether having the option to use a cheat code when things get difficult leads to an improvement in the player experience of state-oriented individuals. We did, however, observe that the amount of pressure that state-oriented players experienced was only lower for those who accepted the cheat code as an external support. Future work could investigate the effects of using the cheat code on player experience, including a control group for comparison. Second, future studies should examine the generalization of these results by investigating a more heterogeneous sample (i.e., more men, non-students), different gaming contexts (e.g., multiplayer games, other game genres) as well as other forms of threat/failure (e.g., not being able to solve a puzzle) and external support. Third, we introduced two dimensions of action-state orientation in the theoretical background, because we are introducing the theory to HCI and we wanted to highlight the distinction between different types of self-regulation. However, we did not investigate demand-related action-state orientation as there was no theoretical reason to assume that demand-related action-state orientation would be a relevant factor in our experimental setting. Future work could investigate how game designers can help state-oriented individuals overcome difficulties in self-motivation.

Conclusion

The main contribution of this work is theoretical: we introduce and explain an underutilized theory to HCI researchers. To illustrate self-regulation theory and give an example of how it can be applied, we conducted an exemplifying user study with the goal of demonstrating its utility and value to games research. We demonstrated how individual differences in self-regulation (specifically in down-regulating negative affect) are related to cheat code usage and how that, in turn, might affect player performance and experience. Overall, two important conclusions can be drawn from our study. First, individuals higher in state orientation, who have difficulties with self-regulation when they experience fear of failure, are more likely to use cheat codes (an external support) to overcome threatening in-game situations. Individuals higher in (threat-related) action orientation used cheat codes less often and less frequently and

also did not observably benefit from them. Second, using cheat codes does not have negative consequences in terms of player performance and experience. Rather, the opposite might be true: cheat codes allowed state-oriented individuals to have a more relaxed gaming experience by offering them a way to regulate externally.

References of Chapter 5

Amlinger-Chatterjee, M. B., & Baumann, N. (2018). The we helps me: Poor emotion-regulators benefit from relatedness. *Polish Psychological Bulletin*, *49*(1), 50-58. https://doi.org/10.24425/119471

Ashworth, M. (2022). Modern Warfare 2 (MW2) Cheats: Aimbot, Wallhack, Rapid Fire. https://www.gamerevolution.com/guides/912595-modern-warfare-2-cheats-aimbot-wallhack-pc-ps5-ps4-xbox-mw2

Aytemiz, B., & Smith, A. M. (2020, September). A diagnostic taxonomy of failure in videogames. In P*roceedings of the 15th International Conference on the Foundations of Digital Games* (pp. 1-11). https://doi.org/10.1145/3402942.3402979

Baumann, N., Kaschel, R., & Kuhl, J. (2005a). Striving for unwanted goals: stress-dependent discrepancies between explicit and implicit achievement motives reduce subjective well-being and increase psychosomatic symptoms. *Journal of personality and social psychology*, *89*(5), 781. https://doi.org/10.1037/0022-3514.89.5.781

Baumann, N., Kaschel, R., & Kuhl, J. (2007). Affect sensitivity and affect regulation in dealing with positive and negative affect. *Journal of Research in Personality*, *41*(1), 239-248. https://doi.org/10.1016/j.jrp.2006.05.002

Baumann, N., Kazén, M., Quirin, M., & Koole, S. L. (2018). Why people do the things they do. *Building on Julius Kuhl's Contributions to the Psychology of Motivation and Volition. Göttingen: Hogrefe*.

Baumann, N., & Kuhl, J. (2002). Intuition, affect, and personality: unconscious coherence judgments and self-regulation of negative affect. *Journal of Personality and Social Psychology*, *83*(5), 1213. https://doi.org/10.1037/0022-3514.83.5.1213

Baumann, N., Kuhl, J., & Kazén, M. (2005b). Left-hemispheric activation and self-infiltration: Testing a neuropsychological model of internalization. *Motivation and emotion*, *29*, 135-163. https://doi.org/10.1007/s11031-005-9439-x

Biebrich, R., & Kuhl, J. (2002). Neurotizismus und Kreativität: Strukturelle Unterschiede in der Beeinflussung kreativer Leistung. *Zeitschrift für Differentielle und Diagnostische Psychologie*. https://doi.org/10.1024//0170-1789.23.2.171

Birk, M. V., Mandryk, R. L., & Baumann, N. (2020). Just a click away: Action–state orientation moderates the impact of task interruptions on initiative. *Journal of Personality*, *88*(2), 373-390. https://doi.org/10.1111/jopy.12498

Bowman, N. D., & Tamborini, R. (2012). Task demand and mood repair: The intervention potential of computer games. *New Media & Society*, *14*(8), 1339-1357. https://doi.org/10.1177/1461444812450426

Bowman, N. D., & Tamborini, R. (2015). "In the mood to game": Selective exposure and mood management processes in computer game play. *New Media & Society*, *17*(3), 375-393.. https://doi.org/10.1177/1461444813504274

Brunstein, J. C. (2001). Persönliche Ziele und Handlungs-versus Lageorientierung. Wer bindet sich an realistische und bedürfniskongruente Ziele?. *Zeitschrift für differentielle und diagnostische Psychologie*. https://doi.org/10.1024/0170-1789.22.1.1

Buchmann, J., Baumann, N., Meng, K., Semrau, J., Kuhl, J., Pfeifer, K., Vogel. H., & Faller, H. (2021). Volitional action control and depression in chronic pain: Does action versus state orientation moderate the relations of pain-related cognitions to depression?. *Current Psychology*, 1-18. https://doi.org/10.1007/s12144-021-01914-1

Platzer, C. (2011). Sequence-based bot detection in massive multiplayer online games. In *2011 8th International Conference on Information, Communications & Signal Processing* (pp. 1-5). IEEE.https://doi.org/10.1109/ICICS.2011.6174239

Castelot, O. (2023). Overwatch 2 Exploit Makes Wrecking Ball Much Better. https://gamerant.com/overwatch-2-wrecking-ball-exploit/

Center for Self-Determination Theory (2023). Intrinsic Motivation Inventory (IMI) - German. https://selfdeterminationtheory.org/intrinsic-motivation-inventory/.

Chen, C. (2021). Playing mobile games for stress recovery purposes: A survey of Chinese adolescents. *Telematics and Informatics*, *56*, 101481. https://doi.org/10.1016/j.tele.2020.101481

Cohen, J. (1983). The cost of dichotomization. *Applied psychological measurement*, *7*(3), 249-253.

Consalvo, M. (2007). Cheating: Gaining Advantage in Videogames. *The MIT Press*. https://doi.org/10.7551/mitpress/1802.001.0001

Dechant, M., Poeller, S., Johanson, C., Wiley, K., & Mandryk, R. L. (2020, April). In-game and out-of-game social anxiety influences player motivations, activities, and experiences in MMORPGs. In *Proceedings of the 2020 CHI conference on human factors in computing systems* (pp. 1-14). https://doi.org/10.1145/3313831.3376734

Dechant, M. J., Frommel, J., & Mandryk, R. L. (2021). The development of explicit and implicit game-based digital behavioral markers for the assessment of social anxiety. *Frontiers in Psychology*, *12*, 760850. https://doi.org/10.3389/fpsyg.2021.760850

Dechant, M. J., Welsch, R., Frommel, J., & Mandryk, R. L. (2022, April). (Don't) stand by me: How trait psychopathy and NPC emotion influence player perceptions, verbal responses, and movement behaviours in a gaming task. In *Proceedings of the 2022 CHI Conference on Human Factors in Computing Systems* (pp. 1-17). https://doi.org/10.1145/3491102.3502014

Denisova, A., & Cairns, P. (2015). Adaptation in digital games: the effect of challenge adjustment on player performance and experience. In *Proceedings of the 2015 Annual Symposium on Computer-Human Interaction in Play* (pp. 97-101). https://doi.org/10.1145/2793107.2793141

Depping, A. E., Johanson, C., & Mandryk, R. L. (2018, October). Designing for friendship: Modeling properties of play, in-game social capital, and psychological well-being. In *Proceedings of the 2018 Annual Symposium on computer-human interaction in play* (pp. 87-100). https://doi.org/10.1145/3242671.3242702

Diefendorff, J. M., Hall, R. J., Lord, R. G., & Strean, M. L. (2000). Action–state orientation: Construct validity of a revised measure and its relationship to work-related variables. *Journal of Applied Psychology*, *85*(2), 250. https://doi.org/10.1037/0021-9010.85.2.250

Doherty, S. M., Liskey, D., Via, C. M., Frederick, C., Kring, J. P., & Liu, D. (2014, September). An analysis of expressed cheating behaviors in video games. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting* (Vol. 58, No. 1, pp. 2393-2396). Sage CA: Los Angeles, CA: SAGE Publications. https://doi.org/10.1177/1541931214581498

Duh, H. B. L., & Chen, V. H. H. (2009). Cheating behaviors in online gaming. In *Online Communities and Social Computing: Third International Conference, OCSC 2009, Held as Part of HCI International 2009, San Diego, CA, USA, July 19-24, 2009. Proceedings 3* (pp. 567-573). Springer Berlin Heidelberg. https://doi.org/10.1007/978-3-642-02774-1_61

Friederichs, K. M., Jostmann, N. B., Kuhl, J., & Baumann, N. (2023). The art of getting things done: Training affective shifting improves intention enactment. *Emotion*, *23*(3), 651. https://doi.org/10.1037/emo0001128

Friederichs, K. M., Kees, M. C., & Baumann, N. (2020). When tough gets you going: Action orientation unfolds with difficult intentions and can be fostered by mental contrasting. *Personality and Individual Differences*, *161*, 109970.https://doi.org/10.1016/J.PAID.2020.109970

Friehs, M. A., Klarkowski, M., Frommel, J., Phillips, C., & Mandryk, R. L. (2022). Enhanced esports: community perspectives on performance enhancers in competitive gaming. *Proceedings of the ACM on Human-Computer Interaction*, *6*(CHI PLAY), 1-29. https://doi.org/10.1145/3549494

Frommel, J., Klarkowski, M., & Mandryk, R. L. (2021, August). The struggle is Spiel: On failure and success in games. In *Proceedings of the 16th International Conference on the Foundations of Digital Games* (pp. 1-12). https://doi.org/10.1145/3472538.3472565

BNE Entertainment FromSoftware Inc. and MORE (2018). Dark Souls.

Fullerton, T. (2024). *Game design workshop: a playcentric approach to creating innovative games*. AK Peters/CrC Press. https://doi.org/10.1007/s13398-014-0173-7.2 arxiv:9809069v1 [gr-qc]

Gavriloff, D., & Lusher, J. (2015). Social anxiety and mindfulness in online gamers. *The Computer Games Journal*, *4*, 123-132. https://doi.org/10.1007/s40869-015-0010-z

Gröpel, P. (2016). Self-focused attention and motor skill failure: The moderating role of action orientation. *Sport, Exercise, and Performance Psychology*, *5*(3), 206. https://doi.org/10.1037/spy0000059

Gutwin, C., Vicencio-Moreira, R., & Mandryk, R. L. (2016, October). Does helping hurt? Aiming assistance and skill development in a first-person shooter game. In *Proceedings of the 2016 Annual Symposium on Computer-Human Interaction in Play* (pp. 338-349). https://doi.org/10.1145/2967934.2968101

Harvey, A., & Shepherd, T. (2017). When passion isn't enough: gender, affect and credibility in digital games design. *International Journal of Cultural Studies*, *20*(5), 492-508. https://doi.org/10.1177/1367877916636140

Haschke, R., & Kuhl, J. (1995). Frust und Fliegen [Frustration and flying]. *Aeromed Info*, *6*, 1-2.

Holm, S. (1979). A simple sequentially rejective multiple test procedure. *Scandinavian journal of statistics*, 65-70.

Isbister, K., & Hodent, C. (2022). Interview: With Nick Yee, Co-Founder of Quantic Foundry. In *Game Usability* (pp. 293-298). CRC Press.

Johanson, C., Gutwin, C., & Mandryk, R. L. (2017). The effects of navigation assistance on spatial learning and performance in a 3D game. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (pp. 341-353). https://doi.org/10.1145/3116595.3116602

Johnson, D., Gardner, M. J., & Perry, R. (2018). Validation of two game experience scales: the player experience of need satisfaction (PENS) and game experience questionnaire (GEQ). *International Journal of Human-Computer Studies*, *118*, 38-46. https://doi.org/10.1016/j.ijhcs.2018.05.003

Bennett, J., & AutoIt Team (2009). AutoIt Scripting Language.

Jostmann, N. B., & Koole, S. L. (2006). On the waxing and waning of working memory: Action orientation moderates the impact of demanding relationship primes on working memory capacity. *Personality and Social Psychology Bulletin*, *32*(12), 1716-1728. https://doi.org/ 10.1177/0146167206292595

Julius, J., & Heidi, K. (2008). Affect-regulation, self-development and parenting. A functional-design approach to cross-cultural differences. *Handbook of motivation and cognition across cultures*. https://doi.org/10.1016/B978-0-12-373694-9.00002-7

Juul, J. (2013). *The art of failure: An essay on the pain of playing video games*. MIT press.

Kamis, D., Newmark, T., Begel, D., & Glick, I. D. (2016). Cheating and sports: history, diagnosis and treatment. *International Review of Psychiatry*, *28*(6), 551-555. https://doi.org/10.1080/09540261.2016.1208162

Kazén, M., Baumann, N., & Kuhl, J. (2003). Self-infiltration vs. self-compatibility checking in dealing with unattractive tasks: The moderating influence of state vs. action orientation. *Motivation and emotion*, *27*, 157-197. Issue 3. https://doi.org/10.1023/A:1025043530799

Koole, S. L., & Jostmann, N. B. (2004). Getting a grip on your feelings: effects of action orientation and external demands on intuitive affect regulation. *Journal of personality and social psychology*, *87*(6), 974. https://doi.org/10.1037/0022-3514.87.6.974

Koole, S. L., Jostmann, N. B., & Baumann, N. (2012). Do demanding conditions help or hurt self-regulation?. *Social and Personality Psychology Compass*, *6*(4), 328-346. https://doi.org/10.1111/j.1751-9004.2012.00425.x

Koole, S. L., Jostmann, N. B., & Baumann, N. (2023). From intentions to action: An integrative review of action control theory and research. *Advances in experimental social psychology*, *68*, 291-375. https://doi.org/10.1016/bs.aesp.2023.07.001

Kuhl, J. (1994). Action versus state orientation: Psychometric properties of the Action Control Scale (ACS-90). *Volition and personality: Action versus state orientation*, *47*(56), 47-59.

Kuhl, J. (2000). A functional-design approach to motivation and self-regulation: The dynamics of personality systems interactions. In *Handbook of self-regulation* (pp. 111-169). Academic Press. https://doi.org/10.1016/B978-012109890-2/50034-2

Kuhl, J. (2001). *Motivation und persönlichkeit: Interaktionen psychischer systeme*. Hogrefe.

Kuhl, J., & Beckmann, J. (1994). Volition and personality: Action versus state orientation. Hogrefe and Huber Publishers.

Kuhl, J., Mitina, O., & Koole, S. L. (2017). The extended trust hypothesis: Single-attractor self-contagion in day-to-day changes in implicit positive affect predicts action-oriented coping and psychological symptoms. *Nonlinear Dynamics, Psychology & Life Sciences*, *21*, 505–518.

Kuhl, J., Quirin, M., & Koole, S. L. (2021). The functional architecture of human motivation: Personality systems interactions theory. In *Advances in motivation science* (Vol. 8, pp. 1-62). Elsevier. https://doi.org/10.1016/BS.ADMS.2020.06.001

Kuss, D. J., Kristensen, A. M., Williams, A. J., & Lopez-Fernandez, O. (2022). To be or not to be a female gamer: A qualitative exploration of female gamer identity. *International Journal of Environmental Research and Public Health*, *19*(3), 1169. https://doi.org/10.3390/ijerph19031169

Larche, C. J., & Dixon, M. J. (2021). Winning isn't everything: The impact of optimally challenging smartphone games on flow, game preference and individuals gaming to escape aversive bored states. *Computers in Human Behavior*, *123*, 106857. https://doi.org/10.1016/j.chb.2021.106857

Liesenfeld, K. M. (2018). The supportive role of fathers for children's development of the authentic self. *Why do people do the things they do*, 375-392.

Lin, A. J., Cheng, F., & Chen, C. B. (2020). Use of virtual reality games in people with depression and anxiety. In *Proceedings of the 5th International Conference on Multimedia and Image Processing* (pp. 169-174). https://doi.org/10.1145/3381271.3381299

Mandryk, R. L., & Gutwin, C. (2008, May). Perceptibility and utility of sticky targets. In *Proceedings of graphics interface 2008* (pp. 65-72).

Marusic, L., (2022). How to Turn On Infinte Money in City Skylines? https://gametaco.net/how-to-turn-on-infinite-money-in-cities-skylines/

Mazurek, M. O., Engelhardt, C. R., & Clark, K. E. (2015). Video games from the perspective of adults with autism spectrum disorder. *Computers in Human behavior*, *51*, 122-130. https://doi.org/10.1016/j.chb.2015.04.062

McAuley, E., Duncan, T., & Tammen, V. V. (1989). Psychometric properties of the Intrinsic Motivation Inventory in a competitive sport setting: A confirmatory factor analysis. *Research quarterly for exercise and sport*, *60*(1), 48-58. https://doi.org/10.1080/02701367.1989.10607413

McClelland, G. H., Lynch Jr, J. G., Irwin, J. R., Spiller, S. A., & Fitzsimons, G. J. (2015). Median splits, Type II errors, and false–positive consumer psychology: Don't fight the power. *Journal of Consumer Psychology*, *25*(4), 679-689. https://doi.org/10.1016/j.jcps.2015.05.006

Paay, J., Kjeldskov, J., Internicola, D., & Thomasen, M. (2018, September). Motivations and practices for cheating in Pokémon GO. In *Proceedings of the 20th International Conference on Human-Computer Interaction with Mobile Devices and Services* (pp. 1-13). https://doi.org/10.1145/3229434.3229466

Palfai, T. P., McNally, A. M., & Roy, M. (2002). Volition and alcohol-risk reduction: The role of action orientation in the reduction of alcohol-related harm among college student drinkers. *Addictive Behaviors*, *27*(2), 309-317. https://doi.org/10.1016/S0306-4603(01)00186-1

Passmore, C. J., Miller, M. K., Liu, J., Phillips, C. J., & Mandryk, R. L. (2020, November). A cheating mood: The emotional and psychological benefits of cheating in single-player games. In *Proceedings of the Annual Symposium on Computer-Human Interaction in Play* (pp. 58-70). https://doi.org/10.1145/3410404.3414252

Paul, C. A. (2018). The toxic meritocracy of video games: Why gaming culture is the worst. *U of Minnesota Press*. https://doi.org/10.5749/j.ctt2204rbz

Petralito, S., Brühlmann, F., Iten, G., Mekler, E. D., & Opwis, K. (2017, May). A good reason to die: how avatar death and high challenges enable positive experiences. In *Proceedings of the 2017 CHI conference on human factors in computing systems* (pp. 5087-5097). https://doi.org/10.1145/3025453.3026047

Poeller, S., Seel, S., Baumann, N., & Mandryk, R. L. (2021a). Seek what you need: Affiliation and power motives drive need satisfaction, intrinsic motivation, and flow in league of legends. *Proceedings of the ACM on Human-Computer Interaction*, *5*(CHI PLAY), 1-23. https://doi.org/10.1145/3474715

Poeller, S., Waldenmeier, K., Baumann, N., & Mandryk, R. (2021b). Prepare for trouble and make it double: the power motive predicts pokemon choices based on apparent strength. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* (pp. 1-12). https://doi.org/10.1145/3411764.3445084

Prather, J., Nix, R., & Jessup, R. (2017, June). Trust management for cheating detection in distributed massively multiplayer online games. In *2017 15th Annual Workshop on Network and Systems Support for Games (NetGames)* (pp. 1-3). IEEE.. https://doi.org/10.1109/NetGames.2017.7991547

Reinecke, L. (2009). Games and recovery: The use of video and computer games to recuperate from stress and strain. *Journal of media psychology*, *21*(3), 126-142. https://doi.org/10.1027/1864-1105.21.3.126

Related Designs (2009). Anno 1404; Dawn of Discovery. https://anno-union.com/games/anno-1404-history-edition/

Rheinberg, F., Vollmeyer, R., & Engeser, S. (2003). Die Erfassung des Flow-Erlebens. [Unveröffentlichter Forschungsbericht]. Universität Potsdam.

Rheinberg, F., Vollmeyer, R., & Engeser, S. (2019). FKS. Flow-Kurzskala [Verfahrensdokumentation, Fragebogen und Normtabelle]. *Open Test Archive. ZPID,* 4488. https://doi.org/10.23668/psycharchives

Rieger, D., Wulf, T., Kneer, J., Frischlich, L., & Bente, G. (2014). The winner takes it all: The effect of in-game success and need satisfaction on mood repair and enjoyment. *Computers in Human Behavior*, *39*, 281-286. https://doi.org/10.1016/j.chb.2014.07.037

Roy, A., & Ferguson, C. J. (2016). Competitively versus cooperatively? An analysis of the effect of game play on levels of stress. *Computers in Human Behavior*, *56*, 14-20. https://doi.org/10.1016/j.chb.2015.11.020

Russoniello, C. V., O'Brien, K., & Parks, J. M. (2009). The effectiveness of casual video games in improving mood and decreasing stress. *Journal of CyberTherapy & Rehabilitation*, *2*(1), 53-66.

Ryan, R. M. (1982). Control and information in the intrapersonal sphere: An extension of cognitive evaluation theory. *Journal of personality and social psychology*, *43*(3), 450.

Ryan, R. M., Rigby, C. S., & Przybylski, A. (2006). The motivational pull of video games: A self-determination theory approach. *Motivation and emotion*, *30*, 344-360. https://doi.org/10.1007/s11031-006-9051-8

Tekinbas, K. S., & Zimmerman, E. (Eds.). (2005). *The game design reader: A rules of play anthology*. MIT press.

Schlüter, C., Fraenz, C., Pinnow, M., Voelkle, M. C., Güntürkün, O., & Genç, E. (2018). Volition and academic achievement: Interindividual differences in action control mediate the effects of conscientiousness and sex on secondary school grading. *Motivation Science*, *4*(3), 262. https://doi.org/10.1037/mot0000083

Siutila, M., & Havaste, E. (2019). A pure meritocracy blind to identity: Exploring the Online Responses to All-Female Esports Teams in Reddit. *Transactions of the Digital Games Research Association*, *4*(3). https://doi.org/10.26503/todigra.v4i3.97

Stenseng, F., Falch-Madsen, J., & Hygen, B. W. (2021). Are there two types of escapism? Exploring a dualistic model of escapism in digital gaming and online streaming. *Psychology of Popular Media*, *10*(3), 319. https://doi.org/10.1037/ppm0000339

Thakur, N., & Baumann, N. (2022). Breaking the anxious cycle of self-criticism: Action orientation buffers the detrimental effects of a self-critical personality style. *Journal of Affective Disorders*, *301*, 30-35. https://doi.org/10.1016/j.jad.2022.01.014

Tomakic, I., (2022). This is everything you need to know about WoW Dragonflight Vault of the Incarnates. https://dotesports.com/wow/news/wow-dragonflight-vault-of-the-incarnates-guide-entrance-location-item-level-boss-fights-and-achievements

Waldenmeier, K., Friederichs, K. M., Kuhl, J., & Baumann, N. (2023). (Un) Locking self-motivation: Action versus state orientation moderates the effect of demanding conditions on self-regulatory performance. *Journal of Research in Personality*, *104*, 104361. https://doi.org/10.1016/j.jrp.2023.104361

Witte, E. H., & Von Pablocki, F. (1999). Differences in styles of behavior: State-and action-orientation in problem-solving dyads. *Psychological Test and Assessment Modeling*, *41*(3), 308.

Wojdylo, K., Baumann, N., Kuhl, J., & Horstmann, J. (2014). Self-Regulation as a Buffer against the Health Effects of Bullying. *ZEITSCHRIFT FUR KLINISCHE PSYCHOLOGIE UND PSYCHOTHERAPIE*.

Yan, J., & Randell, B. (2005, October). A systematic classification of cheating in online games. In *Proceedings of 4th ACM SIGCOMM workshop on Network and system support for games* (pp. 1-9). https://doi.org/10.1145/1103599.110360

Chapter 6

General Discussion

What is the key to unlocking one's personal power? To address this question, the present dissertation investigates individual differences in self-regulation – specifically, how varying situational conditions interact with the personality dispositions of action versus state orientation (Kuhl & Beckmann, 1994; Kuhl, 2001). It is based on the understanding that these dispositions are not fixed but respond dynamically to situational factors. Therefore, the central assumption is, that action versus state orientation each require different conditions to fully unlock their potential.

Grounded in the theoretical framework of Personality Systems Interactions (PSI) theory (Kuhl, 2000, 2001; Kuhl et al., 2021), this dissertation pursues three main objectives: (1) to deepen our understanding of action versus state orientation as distinct personality dispositions; (2) to examine how these dispositions dynamically interact with changing situational factors; and (3) to identify how action- and state-oriented individuals can be individually supported in unlocking their personal power.

To achieve this, the dissertation draws on a series of empirical studies on action versus state orientation involving diverse samples, including university students (Chapter 2, 3 & 5) and individuals in leadership roles (Chapter 4). A multimethod approach was employed, conducted with experimental designs (Chapter 3 & 5) and survey-based research (Chapter 2 & 4) across various contextual settings, including gaming behavior (Chapter 5), workplace dynamics (Chapter 4), and goal pursuit (Chapter 2 & 3). This approach enables a comprehensive analysis of the mechanisms underlying action versus state orientation.

In the following, the key findings of each chapter are summarized and then discussed in relation to the overarching aims of the dissertation. Lastly, directions for future research are outlined, followed by concluding remarks.

Summary of Results

Chapter 2: Who Climbs Mount Everest?
Individual Differences in Achieving Difficult Goals (Waldenmeier & Baumann, 2025)

This chapter delved into a fundamental assumptions of PSI theory: Are action-oriented individuals better able to achieve difficult goals compared to their state-oriented counterparts? To explore this, a longitudinal study was designed (N = 199), incorporating three theoretically important constraints: self-generated goals, goal difficulty was used to operationalize demands, and goal achievement as an indicator for goal implementation. Even though, this combination of constraints is theoretically necessary to investigate differences in action versus state orientation in goal achievement, it hasn't been examined so far in previous research. The findings revealed differences between action- and state-oriented individuals in goal achievement, with action-oriented individuals being better able to achieve difficult goals than state-oriented individuals. This chapter shows, that the disparity between action versus state orientation emerges even in real-life settings as fundamental as goal achievement. While some previous studies may have failed to detect this effect (e.g., Henneke & Freund, 2016; Norman et al., 2003; Zhang et al., 2013), I argue that by accounting for the theoretically important constraints, differences in action versus state orientation in goal achievement become visible.

Chapter 3: (Un)Locking Self-Motivation:
Action versus State Orientation Moderates the Effect of Demanding Conditions on Self-Regulatory Performance (Waldenmeier, Friederichs, Kuhl & Baumann, 2023)

Chapter 3 provided a nuanced exploration of the differences between action versus state orientation under *low* demands. While previous research has extensively examined the *locking effect* of state-oriented individuals – demonstrating good self-regulatory performance under low demands but faltering under high demands (e.g., Birk et al., 2020; Jostmann & Koole, 2007; Friederichs et al., 2020) - less is known about the *unlocking effect* of action-oriented individuals. Action-oriented individuals are known for their good self-regulatory ability under high demands (e.g., Friederichs et al., 2020; Gröpel et al.; 2014; Jostmann & Koole, 2006). However, a key question remains: do action-oriented individuals need at least some demands to unlock their self-regulatory potential? To address this, three laboratory studies were conducted, examining differences in self-regulatory performance of action versus state orientation under low and moderate demands, using different operationalization of demands (i.e., subjective listlessness, uncompleted intention) as well as differing self-regulatory tasks (i.e., Stroop-task,

Grid-task). The results revealed that, across three studies, action versus state orientation moderates the effect of demanding conditions on self-regulatory performance, with action-oriented individuals showing better self-regulatory performance under moderate compared to low demands. This adds to prior research by showing that action-oriented individuals need at least some kind of demands to unlock their self-regulatory potential.

Chapter 4: The Benefits of Prosocial Power Motivation in Leadership: Action Orientation Fosters a Win-Win (Friederichs, Waldenmeier & Baumann, 2023)

This chapter delved into how action versus state orientation impact the enactment of the power motive in leadership contexts. A core aspect of effective leadership is power motivation, which can be expressed in either a dominant or a prosocial way. While dominant power motivation is linked to antisocial behaviors, prosocial motivation is associated with benevolent actions such as guiding and supporting others (McClelland, 1970). According to PSI theory, the enactment of the prosocial power motive depends on the engagement of 'the self' (Baumann et al., 2010; Kuhl & Scheffer 1999; Kuhl, 2001). As action-oriented individuals are able to effectively regulate their affect by engaging internal resources – i.e., the self – (Koole & Jostmann, 2004; Kuhl, 1981; Kuhl 2001), we hypothesized that they pursue their power motives in prosocial rather than dominant ways. Building on earlier findings with student samples (Baumann et al., 2015), the present study extended this research to a leadership sample (N = 383). The results confirmed that action orientation predicts prosocial power enactment among leaders. Moreover, this prosocial enactment strategy reduced power-related anxiety and improved leader well-being, demonstrating a benefit for both leaders and their followers.

Chapter 5: Cheat Codes as External Support for Players Navigating Fear of Failure and Self-Regulation Challenges in Digital Games (Waldenmeier, Pöller, Dechant, Baumann & Mandryk, 2024)

Chapter 5 introduced a broader picture of self-regulation, specifically focusing on threat-related action versus state orientation, the dimension of action versus state orientation that focuses on the ability to self-sooth (down-regulation of negative affect) rather than to self-motivate (up-regulation of positive affect). As state-oriented individuals struggle with self-regulation they profit from external support, as known from previous research (Baumann & Kuhl, 2005; Kazén et al., 2008; Jostmann & Koole, 2006). To examine whether they *actively seek* external support in threatening situations, we conducted a study in which participants (N = 88) played the computer game Anno 1404. In this game a threatening situation was simulated and participants

were offered a cheat code as a form of external support. Results indicated that state-oriented individuals were not only more likely to accept external support but also used it more frequently throughout the threatening scenario compared to their action-oriented counterparts. Furthermore, the use of cheat codes leveled the playing field, eliminating differences in experienced pressure between action versus state orientation. Importantly, using cheat codes did not yield negative consequences on player experience and performance.

Contributions of the Present Thesis

The Role of Demands

One of the most important aspects in investigating differences between action- and state-oriented individuals is recognizing that these differences – and particularly the self-regulatory advantages of action orientation – typically emerge only under conditions of stress (e.g., Dibbelt, 1997; Friederichs et al., 2020; Kazen et al., 2008). Stress, within the framework of PSI theory (Kuhl, 2000, 2001, Kuhl et al., 2021), can be conceptualized along two dimensions: demands and threats, with demands playing a more central role in this thesis.

According to PSI theory, demands are defined as situations that reduce positive affect and activate intention memory, which is necessary so concrete action steps can be planned (Kazén & Kuhl, 2005; Kuhl & Kazén, 1999; Goschke & Kuhl, 1993 ; Kuhl & Quirin, 2011). Examples explored in this thesis are goal difficulty (Chapter 2), subjective listlessness (Chapter 3, Study 1), and uncompleted intentions (Chapter 3, Study 2 & 3). These conditions determine whether differences in self-regulation between action- and state-oriented individuals become visible at all.

As emphasized by Koole and colleagues (2012), most empirical research has focused on high-demand conditions – where action-oriented individuals consistently outperform state-oriented individuals. This has contributed to the positive framing of action orientation and the negative portrayal of state orientation. However, at the low-demand end of the spectrum, the pattern changes: here, state-oriented individuals often perform equally well or even better than their action-oriented counterparts (e.g., Friederichs et al., 2020; Gröpel et al., 2014). Therefore, demands are not only necessary for these differences in self-regulation to emerge, but they also shape the direction of the differences. Figure 6.1, adapted from Koole et al. (2012), illustrates the proposed interaction between action versus state orientation and demands, showing how the self-regulation advantage may shift depending on the level of demand. Chapter 3 aligns with

this by demonstrating that action-oriented individuals require a certain level of demand to activate their self-regulation, performing worse under low compared to moderate demands.

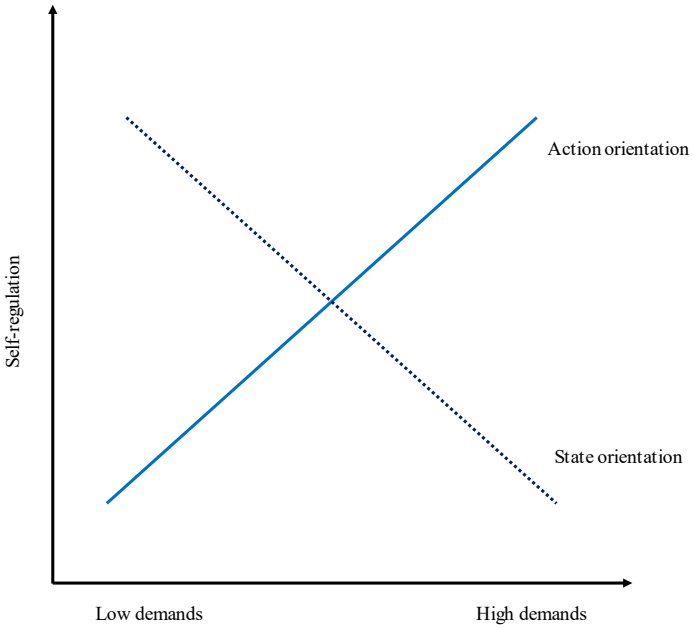

Figure 6.1 The proposed impact of different demand levels on self-regulation for action versus state orientation (adapted by Koole et al., 2012)

This highlights the need to move beyond static perspectives. In a world that is quick to label people as "extraverted", "conscientious", or "action-oriented", often with a fixed image in mind, the impact of the context is frequently overlooked. Yet, personality dispositions should never be interpreted in isolation, because they only manifest in interaction with the situation, and their benefit can shift depending on the situational context, i.e., demands.

I argue, that even in studies that did not explicitly manipulate or measure demands (e.g., Diefendorff et al., 2000; Oginska-Bulik, 2005; Schifter & Ajzen, 1985), demands were likely present nonetheless, as real-world environments are rarely demand-free. Interpersonal tensions, information overload, constant availability expectations, or subtle mental burdens like uncompleted intentions contribute to a baseline of everyday psychological demands. Overlooking such situational impact risks a misinterpretation of action versus state orientation as fixed traits, rather than dynamic patterns that interact with situational conditions.

While state orientation has been linked to outcomes such as reduced well-being (Dietrich & Latzko, 2020; Gröpel & Kuhl, 2009), increased procrastination (Bossong, 1994; Blunt & Pychyl, 1998, 2005) and depressive symptoms (Keller et al., 1994; Nielsen-Prohl et al., 2013) it is worth questioning whether these associations would hold in a low-demand environment? Is the constant presence of psychological demands natural, or rather a byproduct of modern life? Is it really "bad" to not be able to deal with that? Although addressing these broader questions is beyond the scope of this thesis, the present work emphasizes a crucial point: Stress, i.e., demands and threat are the decisive factor whether differences between action- and state-oriented individuals emerge – and how the direction of these differences is shaped.

A New Understanding of Self-regulation

From a developmental perspective, self-regulatory abilities are thought to emerge from early socialization experiences (Kuhl, 2001; Kuhl & Keller, 2008; Liesenfeld, 2017). Individuals who had the opportunity to learn and internalize effective regulation strategies – such as self-motivation and self-soothing – are more likely to develop action orientation. In contrast, state-oriented individuals have had fewer opportunities to develop these competencies through modeling or supportive interactions in childhood.

Seen in this light, the tendency of state-oriented individuals to seek external support may not merely reflect a regulatory deficit, but rather an attempt to learn regulatory abilities. This aligns with longitudinal findings suggesting that individuals tend to become more action-oriented over time, possibly as a result of accumulated learning across adolescence and adult life (Bettschart et al., 2021; Gröpel el al., 2005; Henneke & Freund, 2016).

PSI theory, along with other theories like Self-Determination Theory (Ryan & Deci, 2000, 2017) distinguishes between internal and external regulation. Internal regulation, or self-regulation, refers to strategies that individuals use to manage their own affective states (e.g., cognitive reframing, positive self-talk). External regulation, by contrast, involves regulatory input from others – such as social encouragement, deadlines, or structured guidance. However, the active help-seeking behavior exhibited by state-oriented individuals, as demonstrated in Chapter 5, may not fit into this binary distinction. While such behavior depends on others, it is initiated by the individual itself. It could be labelled as *external self-regulation* – where individuals compensate for limited self-regulatory ability by intentionally mobilizing external support from their environment.

Recognizing one's own regulatory limits and responding adaptively by seeking external support can itself be viewed as a form of *regulatory competence*. This may also explain why differences between action- and state-oriented individuals are sometimes absent in field settings (e.g., Henneke & Freund, 2016; Norman et al., 2003; Zhang et al., 2013): either because situational demands are low, or because state-oriented individuals are able to effectively compensate through external support.

Importantly, access to external regulation is not equally available across all contexts. Some domains (e.g., education or therapy) facilitate support-seeking behavior, while others (e.g., leadership roles or competitive work environments) may stigmatize dependence on others. Nevertheless, for state-oriented individuals, help-seeking can be an adaptive strategy – particularly when embedded in supportive environments.

Action versus State Orientation

One of the main contributions of my thesis is to move beyond labeling action- and state-oriented individuals as simply 'good' and 'bad' personality dispositions. The labels are limiting to both dispositions, as they fail to highlight, that each disposition can unlock their personal power – they just require different situational conditions.

In this thesis, I showed that, whether an individual is action- or state-oriented impacts the outcome – including goal achievement (Chapter 2), the response to demands (Chapter 3), interpersonal behavior (Chapter 4), and the usage of external regulation (Chapter 5). To interpret these findings accurately, it is essential to draw on PSI theory (Kuhl, 2000, 2001; Kuhl et al., 2021), as it provides the theoretical framework for action versus state orientation. Differences between action versus state orientation emerge due to differences in *self-access* — the ability to connect with internal needs, values, and goals (Jais et al.,2021; Koole & Jostmann, 2004; Kuhl, 2001; Quirin et al., 2021; Quirin & Kuhl, 2018), which is shaped by early socialization experiences (Kuhl, 2001; Kuhl & Keller, 2008; Liesenfeld, 2017). When facing demands or threats, action-oriented individuals are typically able to reconnect with their self and regulate their affect effectively, while state-oriented individuals often struggle to do so (Koole & Jostmann, 2004; Kuhl, 2001). This difficulty is not due to a lack of willpower or knowledge, but rather to limited access to their internal system (the "self") that enables motivation and soothing.

Based on this, I introduce a new understanding of action versus state orientation: instead of seeing them as either beneficial or maladaptive, they should be understood as distinct personality dispositions, reacting differently to situational demands.

- Action-oriented individuals tend to maintain self-access even under high demands, enabling them to regulate affect and initiate intended behavior autonomously (Chapter 2). This makes them particularly effective in high-pressure environments that require quick decisions and independent action. However, they may require a certain level of demand to become activated (Chapter 3).

- State-oriented individuals often function well in low to moderate demand environments (Chapter 3). Under high demands, they tend to lose access to the self, leading to impaired self-regulatory performance (Chapter 2). This can be a disadvantage, especially when quick decisions or autonomous action are required. However, the tendency to "pause & reflect" can also serve as a strength – particularly in situations that require careful consideration or long-term planning (Koole et al., 2005). Moreover, state-oriented individuals are capable of compensating through external regulation. In fact, they may actively seek external support, which enables them to achieve outcomes comparable to those of action-oriented individuals (Chapter 5).

Here, it is also important to mention, that individuals differ in their degree of action versus state orientation, as the scale represents a continuum rather than discrete categories (Kuhl, 1994). Consequently, an individual labelled as action-oriented may show 'state-oriented responses' in certain situations and vice versa. This further underscores the importance of viewing personality dispositions dynamically, rather than pathologizing one end of the spectrum.

However, this thesis does not seek to downplay the challenges faced by state-oriented individuals. Numerous studies have shown that state-oriented individuals face substantial difficulties across a range of life domains – including addiction (e.g., Błachnio & Przepiorka, 2016; Cudo et al., 2020), alcohol use (Palfai et al., 2002), mental health disorders (Ward-Ciesielski et al., 2018; Keller et al., 1994; Kadzikowska-Wrzosek, 2012; Edel et al., 2019), and performance in key areas such as academics, work, and interpersonal functioning (Fuhrer, 1994; Wanberg et al., 2010; Busch & Hofer, 2012; for an overview, see Koole et al., 2023). Yet, to support individuals effectively, it is crucial to first understand them – not only in terms of their deficits, but also their competencies. Recognizing different regulatory abilities, including those

that involve external self-regulation, enables the development of more individualized intervention.

Limitations & Future Research Directions

While my research provides new insights into understanding action versus state orientation, it also opens up important questions that warrant further exploration.

Uncertainty in Defining and Measuring Demands

A central contribution of this thesis is, that action versus state orientation cannot be understood without situational demands. However, the construct ‘demand’ is inconsistently defined and operationalized across the literature. According to PSI theory (Kuhl, 2000, 2001, Kuhl et al., 2021), demands are characterized by reduced positive affect and the activation of intention memory. The types of demands examined in empirical studies vary widely: demanding life circumstances (Schlinkert & Koole, 2018; Baumann et al., 2005), being primed with high difficult goals (Friederichs et al., 2020), visualizing a demanding person (Jostmann & Koole, 2006), time pressure (Stiensmeier-Pelster et al., 1991), subjective listlessness (Kazén et al., 2008), uncompleted intention (Kazén et al., 2008), high memory load (Kaschel et al., 2017), or the interruption during a game (Birk et al., 2020; or an overview, see Koole et al., 2023).

However, not all yield consistent effects (e.g., ego-depletion effect; Vohs et al., 2021). This inconsistency may stem from inaccurate operationalizations – meaning that not all conditions labeled as ‘demanding’ may actually activate intention memory. Furthermore, not all individuals perceive the same situation as equally demanding (e.g., based on their skills). Future research should therefore systematically compare different types of demands, in terms of quality and quantity, and include manipulation checks to test whether intention memory is truly activated.

This also applies to low-demand conditions or the control conditions. Just because an experimental condition is designed to be low in demand does not mean that participants experience it that way. Personal stressors (e.g., “After the experiment, I still have to...”) may impact self-regulation. Thus, more assessment of perceived demands of individuals is essential. As low-demand conditions are difficult to induce, future studies should further explore the effects of relaxation interventions (e.g., transitions from tension to relaxation – which are fundamentally different than autonomy conditions, under which state-oriented individuals typically struggle; Baumann & Kuhl, 2005; Kadzikowska-Wrzosek, 2013; Penningroth, 2011).

Moreover, the distinction between demands and threats requires further investigation. Some life situations may induce threats rather than demands, which are associated with negative affect and can impair self-access. It is plausible that individuals may be demand-related action-oriented, but threat-related state-oriented, leading to impaired self-regulatory performance, due to reduced self-access. Exploring the interaction between demand and threat responses could provide a more differentiated understanding of action versus state orientation.

External Support in State Orientation

A second important area for future research is the role of external support – particularly for state-oriented individuals. Rather than being passive under demands, state-oriented individuals may be skilled at mobilizing external help. As discussed in Chapter 5, state-oriented individuals actively seek help when it is available, which may reflect a form of external self-regulation.

Future studies should examine the strategies used by action- and state-oriented individuals in regulatory performance. These strategies could be categorized as either self-regulation (e.g., mental rehearsal, self-talk), external regulation (e.g., deadline) and external self-regulation (e.g., support seeking). Research is also needed on regulatory awareness: to what extent are individuals aware of their self-regulatory limitations, and how does this awareness influence their help-seeking behavior? Much existing research relies heavily on psychology students who are potentially biasing results due to heightened awareness.

Longitudinal and Intervention Studies

Future longitudinal research should investigate which interventions are most effective in supporting state-oriented individuals. Modern environments are demanding – and likely to remain so – requiring individuals to function under demands and threats. This makes the ability to regulate under demand not just beneficial, but essential.

One promising approach comes from Katja Friederichs and colleagues, research on mental contrasting (Friederichs et al., 2020) and affective shifting (Friederichs et al., 2023). In mental contrasting, individuals alternate between visualizing a desired future and obstacles, thereby inducing affective shifts between low and high positive affect. In affective shifting individuals focus on the shifts between high and low positive affect. These shifts are thought to promote shifts between intention memory and intuitive behavior control, both of which are relevant for intention enactment. Results show, that state-oriented individuals benefit from these interventions, suggesting that the learning of the regulation of positive affect may be a key mechanism to enhance self-regulatory ability.

While there is also longitudinal evidence suggesting that self-regulation can be improved through training (e.g., Baumeister et al., 2006; Muraven et al., 1999; Oaten & Cheng, 2006), future studies should investigate the effectiveness of such interventions specifically for state-oriented individuals over extended periods – that means across multiple years rather than just weeks or months.

Methodological Constraints

Lastly, several methodological limitations must be acknowledged. The samples in most studies – including those in this thesis – mainly consist of psychology students, with limited variation in age, socioeconomic status, or cultural background. This restricts the generalizability of the findings. Future studies should strive for more diverse samples.

Additionally, many terminologies vary across theoretical frameworks. For instance, terms like self-control and self-regulation are often used interchangeably, as noted by Milyavskaya et al. (2019). This highlights the need for more interdisciplinary work to unify concepts and methodologies - such as integrating approaches from PSI theory and Self-Determination Theory (e.g., Quirin et al., 2021).

Conclusion

To fully understand action versus state orientation, it is not enough to repeatedly highlight the advantages of action over state orientation. What also matters are the situational conditions: demands, threats, and the availability of external regulation. Combined with action versus state-orientation, these conditions shape how an individual achieves goals, under which conditions their self-regulatory performance is best, how they treat others - and how they find their own ways to cope with stress. Therefore, it can be concluded that both action- and state-oriented individuals can unlock their personal power, they simply require different situational conditions.

At the beginning of this thesis, I raised the question: is it really as simple as Nike's famous slogan "Just do it"? As the slogan implies that self-regulation is always available, just waiting to be activated, I would definitely answer with "No". Because that's not the case for everyone in every situation. And yet, maybe that slogan persists for a reason. For state-oriented individuals, it might serve as a form of motivational external support. For action-oriented individuals, it might create a sense of demand, activating the self-regulation they need to actually do it.

References of Chapter 1 and 6

Achtziger, A., & Gollwitzer, P. M. (2018). Motivation und Volition im Handlungsverlauf. In J. Heckhausen & H. Heckhausen (Hrsg.), *Motivation und Handeln* (S. 355–388). Springer. https://doi.org/10.1007/978-3-662-53927-9_12

Baumann, N., Chatterjee, M. B., & Hank, P. (2015). Guiding others for their own good: Action orientation is associated with prosocial enactment of the implicit power motive. *Motivation and Emotion*, *40*(1), 56–68. https://doi.org/10.1007/s11031-015-9511-0

Baumann, N., Kaschel, R., & Kuhl, J. (2005). Striving for unwanted goals: Stress-dependent discrepancies between explicit and implicit achievement motives reduce subjective well-being and increase psychosomatic symptoms. *Journal of Personality and Social Psychology, 89*, 781-799. https://doi.org/10.1037/0022-3514.89.5.781

Baumann, N., Kazén, M., & Kuhl, J. (2010). A look from personality systems interaction theory. In O. C. Schultheiss & J. C. Brunstein (Eds.), *Implicit motives* (pp. 375–403). Oxford: Oxford University Press.

Baumann, N., & Kuhl, J. (2005). How to resist temptation: The effects of external control versus autonomy support on self-regulatory dynamics. *Journal of Personality, 73*, 443-470. https://doi.org/10.1111/j.1467-6494.2005.00315.x

Baumeister, R. F., Gailliot, M., DeWall, C. N., & Oaten, M. (2006). Self-regulation and personality: How interventions increase regulatory success, and how depletion moderates the effects of traits on behavior. *Journal of Personality*, 74(6), 1773–1802. https://doi.org/ 10.1111/j.1467-6494.2006.00428.x

Bettschart, M., Wolf, B. M., Herrmann, M., & Brandstätter, V. (2021). Age-related development of self-regulation: Evidence on stability and change in action orientation. *Journal of Research in Personality, 91*, 104063. https://doi.org/10.1016/j.jrp.2020.104063

Birk, M. V., Mandryk, R. L., & Baumann, N. (2020). Just a click away: Action–state orientation moderates the impact of task interruptions on initiative. *Journal of Personality*, *88*(2), 373-390. https://doi.org/10.1111/jopy.12498

Błachnio, A., & Przepiorka, A. (2016). Dysfunction of self-regulation and self-control in Facebook addiction. *Psychiatric Quarterly, 87*(3), 493–500. https://doi.org/10.1007/s11126- 015-9403-1

Blunt, A., & Pychyl, T. A. (1998). Volitional action and inaction in the lives of undergraduate students: State orientation, boredom, and procrastination. *Personality and Individual Differences, 248*, 837–846. https://doi.org/10.1016/S0191-8869(98)00018-X

Blunt, A., & Pychyl, T.A. (2005). Project systems of procrastinators: A personal project-analytic and action control perspective. *Personality and Individual Differences, 38,* 1771-1780. https://doi.org/10.1016/j.paid.2004.11.019

Bossong, B. (1994). Scholastic stressors and achievement-related anxiety. In J. Kuhl & J. Beckmann (Eds.), *Volition and personality,* (pp. 397-406). Göttingen, Germany: Hogrefe & Huber.

Buchmann, J., Baumann, N., Meng, K., Semrau, J., Kuhl, J., Pfeifer, K., Kazén, M., Vogel, H. & Faller, H. (2021). Endurance and avoidance response patterns in pain patients: Application of action control theory in pain research. *Plos One, 16*(3), e0248875. https://doi.org/10.1371/journal.pone.0248875

Busch, H., & Hofer, J. (2012). Self-regulation and milestones of adult development: intimacy and generativity. *Developmental psychology, 48*(1), 282–293. https://doi.org/10.1037/a0025521

Cudo, A., Torój, M., Demczuk, M., & Francuz, P. (2020). Dysfunction of self-control in Facebook addiction: Impulsivity Is the key. *Psychiatric Quarterly, 91*(1), 91–101. https://doi.org/10.1007/s11126-019-09683-8

Dahling, J. J., Kay, S. A., & Vargovic, N. F. (2015). Eyes on the prize: A longitudinal study of action–state orientation, affect, and academic self-regulation. In *New ways of studying emotions in organizations, 11*, pp. 423-441). Emerald Group Publishing Limited. https://doi.org/10.1108/S1746-979120150000011016

Dibbelt, S. (1997). Wechseln und Beibehalten von Zielen als Subfunktionen der Handlungskontrolle [Change and maintenance of goals as functional components of action control]. *Unpublished doctoral dissertation, University of Osnabrück, Osnabrück, Germany*.

Diefendorff, J. M., Hall, R. J., Lord, R. G., & Strean, M. L. (2000). Action-state orientation: construct validity of a revised measure and its relationship to work-related variables. *The Journal of applied psychology, 85*(2), 250–263. https://doi.org/10.1037/0021-9010.85.2.250

Dietrich, S., & Latzko, B. (2020). Action orientation in novice pre-service teachers—A predictor for academic success and academic progress. *Performance Enhancement & Health, 7*(3-4), 100156. https://doi.org/10.1016/j.peh.2019.100156

Edel, M. A., Pfütze, E. M., Lieder, A., Assion, H. J., Ribbert, H., Juckel, G., & Brüne, M. (2009). Self concept, action control and ADHD symptoms under methylphenidate treatment in

adults with ADHD. Pharmacopsychiatry, 42(3), 109–113. https://doi.org/10.1055/s-0028-1112130

Ferrari, J. R., Johnson, J. L., McCown, W. G., Flett, G. L., Blankstein, K. R., & Martin, T. R. (1995). Procrastination, negative self-evaluation, and stress in depression and anxiety: A review and preliminary model. *Procrastination and task avoidance: Theory, research, and treatment*, 137-167.

Friederichs, K. M., Jostmann, N. B., Kuhl, J., & Baumann, N. (2023). The art of getting things done: Training affective shifting improves intention enactment. Emotion (Washington, D.C.), 23(3), 651–663. https://doi.org/10.1037/emo0001128

Friederichs, K. M., Kees, M. C., & Baumann, N. (2020). When tough gets you going: Action orientation unfolds with difficult intentions and can be fostered by mental contrasting. *Personality and Individual Differences*, *161*, 109970. https://doi.org/10.1016/j.paid.2020.109970

Friederichs, K. M., Waldenmeier, K., & Baumann, N. (2023). The benefits of prosocial power motivation in leadership: Action orientation fosters a win-win. *Plos One 18*(7): e0287394. https://doi.org/10.1371/journal.pone.0287394

Fuhrer, U. (1994). The search for information in an unfamiliar field setting as a function of action versus state orientation. In J. Kuhl, & J. Beckmann (Eds.),. *Volition and personality*, (pp.407-415) Göttingen. Germany: Hogrefe & Huber.

Goschke, T., & Kuhl, J. (1993). Representation of intentions: Persisting activation in memory. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, *19*(5), 1211-1226. https://doi.org/10.1037/0278-7393.19.5.1211

Gröpel, P., Baumeister, R. F., & Beckmann, J. (2014). Action versus state orientation and self-control performance after depletion. *Personality and Social Psychology Bulletin*, *40*(4), 476-487. https://doi.org/10.1177/0146167213516636

Gröpel, P., & Kuhl, J. (2009). Maintaining balance in life: Action orientation as a buffer against life stress. *Studia Psychologica, 51*(2/3), 137.

Gröpel, P., Kuhl, J., & Kazén, M. (2005). Toward an integrated self: Age differences and the role of action orientation. In *Conference proceedings of the Third International SELF Research Conference "Self-concept, Motivation and Identity". SELF Research Centre*.

Heckhausen, J., & Heckhausen, H. (Eds.). (2006). *Motivation und handeln*. Springer-Verlag.

Hennecke, M., & Freund, A.M. (2016). Age, action orientation, and self-regulation during the pursuit of a dieting goal. *Applied Psychology: Health and Well-Being, 8,* 19-43. https://doi.org/10.1111/aphw.12060

Jais, M., Bakaç, C., Kehr, H. M., Baumann, N., & Quirin, M. (2021). Misattribution of duties as free choices: The role of emotional awareness in self-infiltration. *Acta Psychologica*, *220,* 103401. https://doi.org/10.1016/j.actpsy.2021.103401

Jostmann, N. B., & Gieselmann, A. (2014). When you have to climb downhill to reach the top. Experimental Psychology.

Jostmann, N. B., & Koole, S. L. (2006). On the waxing and waning of working memory: action orientation moderates the impact of demanding relationship primes on working memory capacity. Personality & social psychology bulletin, 32(12), 1716–1728. https://doi.org/10.1177/0146167206292595

Jostmann, N. B., & Koole, S. L. (2007). On the regulation of cognitive control: Action orientation moderates the impact of high demands in Stroop interference tasks. *Journal of Experimental Psychology: General*, *136*(4), 593-609. https://doi.org/10.1037/0096-3445.136.4.593

Kadzikowska-Wrzosek, R. (2012). Perceived stress, emotional ill-being and psychosomatic symptoms in high school students: the moderating effect of self-regulation competences. *Archives of Psychiatry and Psychotherapy*, *3*, 25-33.

Kadzikowska-Wrzosek, R. (2013). Perseverance and effectiveness of action: the effect of the fit between individual differences in willpower and the situational context. Current Issues in Personality Psychology, 1(1), 26-38. h ttps://doi.org/10.5114/cipp.2013.40634

Kaschel, R., Kazén, M., & Kuhl, J. (2017). State orientation and memory load impair prospective memory performance in older compared to younger persons. *Aging, Neuropsychology, and Cognition, 24*(4), 453-469. https://doi.org/10.1080/13825585.2016.1225664

Kazén, M., & Kuhl, J. (2005). Intention memory and achievement motivation: Volitional facilitation and inhibition as a function of affective contents of need-related stimuli. *Journal of Personality and Social Psychology, 89*(3), 426-448. https://doi.org/10.1037/0022-3514.89.3.426

Kazén, M., Kaschel, R., & Kuhl, J. (2008). Individual differences in intention initiation under demanding conditions: Interactive effects of state vs. action orientation and enactment difficulty. *Journal of Research in Personality*, 42, 693-715. https://doi.org/10.1016/j.jrp.2007.09.005

Keller, F., Straub, R., & Wolfersdorf, M. (1994). State orientation and depression: A multilevel approach. *Volition and personality: Action versus state orientation*, 363-371.

Koole, S. L., & Jostmann, N. B. (2004). Getting a grip on your feelings: Effects of action orientation and external demands on intuitive affect ´regulation. *Journal of Personality and Social Psychology*, *87*(6), 974–990. https://doi.org/10.1037/0022-3514.87.6.974

Koole, S. L., Jostmann, N. B., & Baumann, N. (2012). Do demanding conditions help or hurt Self-regulation? Self-regulation under demanding conditions. *Social and Personality Psychology Compass, 6*(4), 328–346. https://doi.org/10.1111/j.1751-9004.2012.0042

Koole, S. L., Jostmann, N. B., & Baumann, N. (2023). From intentions to action: An integrative review of action control theory and research. *Advances in experimental social psychology*, 68, 291-375. https://doi.org/10.1016/bs.aesp.2023.07.001

Koole, S. L., Kuhl, J., Jostmann, N. B., & Vohs, K. D. (2005). On the Hidden Benefits of State Orientation: Can People Prosper Without Efficient Affect-Regulation Skills? In A. Tesser, J. V. Wood, & D. A. Stapel (Eds.), *On building, defending and regulating the self: A psychological perspective* (pp. 217–243). Psychology Press.

Kuhl, J. (1981). Motivational and functional helplessness: The moderating effect of state versus action orientation. Journal of Personality and Social Psychology, 40, 155–170

Kuhl, J. (1994). Action versus state orientation: Psychometric properties of the Action Control Scale (ACS-90). *Volition and personality: Action versus state orientation*, *47*(56), 47-59.

Kuhl, J. (2000). A functional-design approach to motivation and self-regulation: The dynamics of personality systems interactions. In *Handbook of self-regulation* (pp. 111-169). Academic Press. https://doi.org/10.1016/B978-012109890-2/50034-2

Kuhl, J. (2001). *Motivation und persönlichkeit: Interaktionen psychischer systeme*. Hogrefe.

Kuhl, J. (2018). Individual differences in self-regulation. In *Motivation and Action* (pp. 529–577). Springer.

Kuhl, J., & Beckmann, J. (Eds.). (1994). *Volition and Personality: Action and state Orientation*. Hogrefe..

Kuhl, J., & Kaschel, R. (2004). Entfremdung als Krankheitsursache: Selbstregulation von Affekten und integrative Kompetenz [Alienation as a determinant of symptom formation: Self-regulation of affect and integrative competence]. *Psychologische Rundschau, 55*(2), 61–71. https://doi.org/10.1026/0033-3042.55.2.61

Kuhl, J., & Kazén, M. (1999). Volitional facilitation of difficult intentions: Joint activation of intention memory and positive affect removes Stroop interference. *Journal of Experimental Psychology: General*, *128*(3), 382-399. https://doi.org/10.1037/0096-3445.128.3.382

Kuhl, J., & Keller, H. (2008). Affect-regulation, self-development and parenting: A functional-design approach to cross-cultural differences. In R. Sorrentino & S. Yamaguchi (Eds.), *The Handbook of Motivation and Cognition across Cultures* (pp. 19-47). New York, NY: Elsevier.

Kuhl, J., & Quirin, M. (2011). Seven steps toward freedom and two ways to lose it: Overcoming limitations of intentionality through self-confrontational coping with stress. *Social Psychology, 42*(1), 74–84. https://doi.org/10.1027/1864-9335/a000045

Kuhl, J., Quirin, M., & Koole, S. L. (2021). The functional architecture of human motivation: Personality Systems Interactions theory. *Advances in Motivation Science*, 1–62. https://doi.org/10.1016/bs.adms.2020.06.001

Kuhl, J., & Scheffer, D. (1999). *Der Operante Multi-Motiv-Test (OMT): Manual. [The operant multi-motive-test (OMT): Manual*]

Landman, A., Nieuwenhuys, A., & Oudejans, R. R. (2016). Decision-related action orientation predicts police officers' shooting performance under pressure. *Anxiety, stress, & coping, 29*(5), 570-579. https://doi.org/10.1080/10615806.2015.1070834

Liesenfeld, K. (2018). The supportive role of fathers for childrens' development of the authentic self: A view through the PSI lens. In N. Baumann, M. Kazén, M. Quirin, & S. L. Koole (Eds.), *Why people do the things they do: Building on Julius Kuhl's contributions to the psychology of motivation and volition* (pp. 375–392). Hogrefe.

MacIntyre, P. D., & Blackie, R. A. (2012). Action control, motivated strategies, and integrative motivation as predictors of language learning affect and the intention to continue learning French. System, 40(4), 533-543. https://doi.org/10.1016/j.system.2012.10.014

McClelland, D. C. (1970). The Two Faces of Power. *Journal of International Affairs*, *24*(1), 29–47.

Milyavskaya, M., Berkman, E. T., and De Ridder, D. T. D. (2019). The many faces of self-control: tacit assumptions and recommendations to deal with them. *Motiv. Sci. 5*, 79–85. doi: 10.1037/mot0000108

Muraven, M., Baumeister, R. F., & Tice, D. M. (1999). Longitudinal improvement of self-regulation through practice: building self-control strength through repeated exercise. *The Journal of social psychology*, *139*(4), 446–457. https://doi.org/10.1080/00224549909598404

Nielsen-Prohl, J., Saliger, J., Güldenberg, V., Breier, G., & Karbe, H. (2013). Stress-stimulated volitional coping competencies and depression in multiple sclerosis. *Journal of*

Psychosomatic Research, *74*(3), 221-226. https://doi.org/10.1016/j.jpsychores.2012.11.003

Norman, P., Sheeran, P., & Orbell, S. (2003). Does state versus action orientation moderate the intention-behavior relationship? *Journal of Applied Social Psychology, 33,* 536-553. https://doi.org/10.1111/j.1559-1816.2003.tb01911.x

Oaten, M., & Cheng, K. (2006). Longitudinal gains in self-regulation from regular physical exercise. *British journal of health psychology, 11*(Pt 4), 717–733. https://doi.org/10.1348/135910706X96481

Oginska-Bulik, N. (2005). Self-regulatory resources as predictors of eating behavior change in overweight women participating in a weight-reduction program. *Polish Psychological Bulletin, 36(*1), 35-42.

Palfai, T. P., McNally, A. M., & Roy, M. (2002). Volition and alcohol-risk reduction: The role of action orientation in the reduction of alcohol-related harm among college student drinkers. *Addictive Behaviors, 27*(2), 309-317.

Penningroth, S. L. (2011). When does the intention-superiority effect occur? Activation patterns before and after task completion, and moderating variables. *Journal of Cognitive Psychology, 23*(1), 140–156.

Poeller, S., Waldenmeier, K., Baumann, N. & Mandryk, R. L. (2021). Prepare for trouble and make it double: The power motive predicts Pokémon choices based on apparent strength. *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems, Virtual: ACM*. https://doi.org/10.1145/3411764.3445084

Quirin, M., Jais, M., Di Domenico, S. I., Kuhl, J., & Ryan, R. M. (2021). Effortless willpower? The integrative self and self-determined goal pursuit. *Frontiers in Psychology*, *12*. https://doi.org/10.3389/fpsyg.2021.653458

Quirin, M., & Kuhl, J. (2018). The Self-Access Form: Development and validation in the context of personality functioning and health. *Journal of Individual Differences, 39*(1), 1–17. https://doi.org/10.1027/1614-0001/a000244

Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American psychologist, 55*(1), 68. https://doi.org/10.1037/0003-066X.55.1.68

Ryan, R. M., & Deci, E. L. (2017). *Self-determination theory: Basic psychological needs in motivation, development, and wellness.* The Guilford Press. https://doi.org/10.1521/978.14625/28806

Schifter, D. E., & Ajzen, I. (1985). Intention, perceived control, and weight loss: an application of the theory of planned behavior. *Journal of personality and social psychology, 49*(3), 843. https://doi.org/10.1037//0022-3514.49.3.843

Schlinkert, C., & Koole, S. L. (2018). Dealing with life demands: Action-state orientation moderates the relation between demanding conditions and drops in body vitality. *Motivation Science, 4*(2), 118. https://doi.org/10.1037/mot0000078

Sheeran, P., & Webb, T. L. (2016). The intention–behavior gap. *Social and personality psychology compass, 10*(9), 503-518. https://doi.org/10.1111/spc3.12265

Sheldon, K. M., & Elliot, A. J. (1999). Goal striving, need satisfaction, and longitudinal well-being: the self-concordance model. *Journal of personality and social psychology, 76*(3), 482. https://doi.org/10.1037//0022-3514.76.3.482

Stiensmeier-Pelster, J., & Schürmann, M. (1994). Antecedents and consequences of action versus state orientation: Theoretical and empirical remarks. *Volition and personality: Action versus state orientation,* 329-340.

Stiensmeier-Pelster, J., Schürmann, M., John, M., & Stulik, A. (1991). Umfang der Informationsverarbeitung bei Entscheidungen: Der Einfluss von Handlungsorientierung bei unterschiedlich dringlichen und wichtigen Entscheidungen. *Zeitschrift für experimentelle und angewandte Psychologie, 38*(1), 94-112.

Vohs, K. D., Schmeichel, B. J., Lohmann, S., Gronau, Q. F., Finley, A. J., Ainsworth, S. E., Alquist, J. L., Baker, M. D., Brizi, A., Bunyi, A., Butschek, G. J., Campbell, C., Capaldi, J., Cau, C., Chambers, H., Chatzisarantis, N. L. D., Christensen, W. J., Clay, S. L., Curtis, J., De Cristofaro, V., … Albarracín, D. (2021). A Multisite Preregistered Paradigmatic Test of the Ego-Depletion Effect. *Psychological science, 32(*10), 1566–1581. https://doi.org/10.1177/0956797621989733

Waldenmeier, K., & Baumann, N. (2025). Who climbs Mount Everest? Individual differences in achieving difficult goals. *Motivation and Emotion, 49,* 138–149. https://doi.org/10.1007/s11031-024-10106-w

Waldenmeier, K., Friederichs, K. M., Kuhl, J., & Baumann, N. (2023). (Un)Locking self-motivation: Action versus state orientation moderates the effect of demanding conditions on self-regulatory performance. *Journal of Research in Personality*, *104*, 104361. https://doi.org/10.1016/j.jrp.2023.104361 (Erratum published 2025 for corrected figure: https://doi.org/10.1016/j.jrp.2025.104581)

Waldenmeier, K., Poeller, S., Dechant, M. J., Baumann, N. & Mandryk, R. L. (2024). Cheat codes as external support for players navigating fear of failure and self-regulation

challenges in digital games. *In Proceedings of the CHI Conference on Human Factors in Computing Systems (CHI '24)*, *May 11–16, 2024, Honolulu, HI, USA. ACM*, New York, NY, USA, 13 pages. https://doi.org/10.1145/3613904.3642603

Wanberg, C. R., Zhu, J., & van Hooft, E. A. J. (2010). The job search grind: Perceived progress, self-reactions, and self-regulation of search effort. *Academy of Management Journal, 53*(4), 788–807. https://doi.org/10.5465/amj.2010.52814599

Ward-Ciesielski, E. F., Winer, E. S., Drapeau, C. W., & Nadorff, M. R. (2018). Examining components of emotion regulation in relation to sleep problems and suicide risk. *Journal of affective disorders*, 241, 41–48. https://doi.org/10.1016/j.jad.2018.07.065

Zhang, H., Chan, D.K.-S, & Guan, Y. (2013). Plans are more helpful when one perseveres: The moderating role of persistence in the relationship between implementation intentions and goal progress. *Basic and Applied Social Psychology, 35*, 231-240. https://doi.org/10.1080/01973533.2013.764298

.

Appendix

Supplementary of Chapter 2

Table A1. *Additional Measures in English and German Versions*

Time Point 1
• A revised version of the Volitional Components Inventory (VCI; Kuhl & Fuhrmann, 1998): two subscales assessing threatening and demanding life circumstances with 4 items per scale. • Motive-related action orientation scale (Motive-ACS; Kuhl & Kazén, 2017): 32 items assessing action- versus state-oriented responses in specific motive contexts (affiliation, achievement, power, autonomy). Kuhl, J., & Kazén, M. (2017). Motive-related action orientation scale. Unpublished questionnaire. University of Osnabrück, Osnabrück, Germany.
Goal Difficulty Scale
1. I think that I will have difficulties implementing my goal./ Ich glaube, dass mir die Umsetzung meines Anliegens schwer fallen wird
2. …because I don‘t know how to approach the implementation of my goal./…weil ich nicht weiß, wie ich die Umsetzung meines Anliegens angehen soll.
3. …because too many other things need to be done in parallel./…weil parallel zu viele andere Dinge erledigt werden müssen.
4. …because I have little desire to work on the implementation of my goal./…weil ich wenig Lust habe, an der Umsetzung meines Anliegens zu arbeiten
5. …because I have too many worries regarding my goal./…weil ich mein Anliegen betreffend zu viele Sorgen habe.
6. I consider it likely to encounter some obstacles./ Ich halte es für wahrscheinlich auf einige Hindernisse zu stoßen
7. I consider it very likely to implement my goal./ Ich halte es für sehr wahrscheinlich, mein Anliegen tatsächlich umzusetzen (R)
Additional Goal Characteristics
1. I think my goal is important./ Ich halte mein Anliegen für wichtig.
2. I feel very connected to my goal./ Ich fühle mich meinem Anliegen persönlich sehr verbunden.
Time Point 2
Goal Characteristics
1. When I think about the implementation of my goal, I feel joy./ Wenn ich an die Umsetzung meines Anliegens denke empfinde ich Freude.
2. When I think about the implementation of my goal, I feel relief./ Wenn ich an die Umsetzung meines Anliegens denke empfinde ich Erleichterung.
3. When I think about the implementation of my goal, I feel pride./ Wenn ich an die Umsetzung meines Anliegens denke empfinde ich Stolz.
4. When I think about the implementation of my goal, I feel sadness./ Wenn ich an die Umsetzung meines Anliegens denke empfinde ich Trauer.

5. When I think about the implementation of my goal, I feel anger./ Wenn ich an die Umsetzung meines Anliegens denke empfinde ich Ärger.

6. When I think about the implementation of my goal, I feel guilt./ Wenn ich an die Umsetzung meines Anliegens denke empfinde ich Schuld.

Goal Difficulty

1. The implementation of my goal was difficult./ Die Umsetzung meines Anliegens fiel mir schwer, ,

2. …because I didn't know how to approach the implementation of my goal./ …weil ich nicht wusste, wie ich die Umsetzung meines Anliegens angehen sollte.

3. …because too many other things had to be done in parallel./ …weil parallel zu viele andere Dinge erledigt werden mussten.

4. …because I had little desire to work on the implementation of my goal./…weil ich wenig Lust hatte, an der Umsetzung meines Anliegens zu arbeiten

5. …because I had too many worries regarding my goal./ …weil ich mein Anliegen betreffend zu viele Sorgen hatte.

6. …because I lost sight of my goal during the implementation./ …weil ich mein Anliegen aus den Augen verloren hatte.

7. …because I encountered obstacles during the implementation of my goal./…weil ich während der Umsetzung meines Anliegens auf Hindernisse gestoßen bin.

8. My goal is/was difficult to implement and requires/required a lot of effort./ Mein Anliegen ist/war schwer umsetzbar und erfordert/e viel Aufwand.

Additional Goal Characteristics

1. I have often unsuccessfully tried to implement my goal./ Ich habe schon häufig erfolglos versucht mein Anliegen umzusetzen.

2. I think my goal is important./ Ich halte mein Anliegen für wichtig.

3. I feel very connected to my goal./ Ich fühle mich meinem Anliegen persönlich sehr verbunden.

4.„What do you understand by a goal?" with four response options to choose from (life goals and/or everyday tasks or something else). / Was verstehen Sie unter einem "Anliegen"? mit 4 Antwortmöglichkeiten (langfristige Lebensziele und/oder alltägliche Aufgaben oder etwas anderes).

5. I had difficulties setting six goals./ Mir fiel es schwer, 6 Anliegen zu benennen.

6. I am satisfied with the selection of my goal./ Ich bin mit der Auswahl meiner Anliegen vollkommen zufrieden.

Note. Participants rated the items on a Likert scale ranging from 1 (*"not at all"*) to 4 *("very much"*).

Affidavit

I, Karla Waldenmeier, hereby confirm that I have authored the present thesis

"Unlocking Personal Power: Exploring Individual Differences in Self-Regulation through Action versus State Orientation"

independently and without unauthorized assistance. All sources and materials used, whether quoted or paraphrased, have been properly acknowledged. I further declare that this thesis has not been submitted, either in whole or in part, for any other academic degree or examination at any institution, in Germany or abroad, nor has it been used to obtain or attempt to obtain such a degree.

Hiermit erkläre ich, Karla Waldenmeier, an Eides statt, dass ich die vorliegende Dissertation

„Unlocking Personal Power: Exploring Individual Differences in Self-Regulation through Action versus State Orientation"

eigenständig und nur unter Verwendung der angegebenen Hilfsmittel verfasst habe. Alle Stellen, die wörtlich oder dem Sinne nach aus anderen Quellen übernommen wurden, sind als solche kenntlich gemacht. Ferner versichere ich, dass ich diese Arbeit weder ganz noch in Teilen bereits für eine andere wissenschaftliche Prüfung eingereicht und mit derselben Abhandlung weder einen Doktorgrad erworben noch zu erwerben versucht habe – weder im In- noch im Ausland.

....

Ort, Datum Unterschrift