Powerful and Thoughtful:

How Social Power Affects Reflection during Goal Pursuit

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Diplom-Psychologin Annika Scholl

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Chapter 1: General Introduction

Social relations are often structured in a way that some are able to decide what should be done, while others follow through and let themselves be guided. In other words, social relations are characterized by social power, implying asymmetric control over others' outcomes. This is the case between individuals (e.g., parents and children), within groups (e.g., leaders and team members), or between groups (e.g., urban majorities and minorities) and whole nations. Along the way, social power represents a generative force to reduce conflict (Smith & Galinsky, 2010) and to direct and coordinate effort towards shared goals (Barbalet, 1985). In order to do so, a central part of having social power is the demand for prompt action. For instance, corporate managers must make investments in a timely manner and politicians swiftly implement measures to solve urban riots and prevent casualties. In these situations, quick action without much deliberation beforehand is crucial. However, incidents such as the late financial crisis or backfiring governmental sanctions with large scale implications highlight the need of those high in power to prepare their actions with more forethought, either to prevent such failures from coming about in the first place or in order to be better prepared in the future.

Social power provides those who possess it both with freedom to secure own outcomes and to contribute to the common good (Fiske & Berdahl, 2007). The experience of social power thereby meaningfully alters individuals' behavior while pursuing their goals and interacting with those lower in power (for recent reviews see Overbeck, 2010; Smith & Galinsky, 2010). Resulting from an increasing interest in social power in social psychology research over the last decades, there is substantial evidence that social power promotes goal-directed action and more effective behavior regulation (e.g., Galinsky, Gruenfeld, & Magee, 2003; Guinote, 2007c), at the same time presuming that social power diminishes reflection during goal pursuit (cf., Galinsky et al., 2003). This proposition parallels the perspective of social targets that possessing social power implies action (i.e., "doing"), not deliberation (i.e., "thinking"; Deschamps, 1982; Magee, 2009).

However, reflection as a way to carefully prepare subsequent goal-directed action can be necessary for goal accomplishment, especially in the face of failure (cf., Epstude & Roese, 2008; Markman & McMullen, 2003). Along the way, reflection provides the potential to learn and prevent the repetition of mistakes, which is critical for those in power carrying responsibility for the sake of others, such as their physical safety or financial state (cf.,

Daudelin, 1996; De Hoogh & Den Hartog, 2008; Mumford, Zaccaro, Harding, Jacobs, & Fleishman, 2000). In addition to enhancing goal-directed action, social power could at times also promote reflection, and more specifically, in the case of prior failure emphasizing the need to adapt one's actions in order to attain a goal. As the impact of social power on reflection has not been investigated so far, the current dissertation aims at addressing this gap.

By examining how social power affects reflection, this dissertation seeks to demonstrate that social power not only promotes the use of *action*-related means, but when required also fosters strategies implying periods of reflective thought to regulate behavior and successfully attain a goal. Thereby, the present research aims at extending previous findings on power holders' enhanced behavioral flexibility (cf., Guinote, Judd, & Brauer, 2002; Guinote, 2007a, 2008) to strategies related to apparent *in*action and deliberation. The purpose of the current research is thus to examine the impact of social power on individual reflection during goal pursuit, both when outcomes are still unknown and in the event of failure.

In doing so, this dissertation is the first to bring together social psychological research on the effects of social power as well as research on pre- and counterfactual thinking – the best studied form of reflection on goal-directed actions – while pursuing goals. Accordingly, the present chapter includes three parts. The first part, named *Social power and behavior during goal pursuit*, presents a summary of research on social power including a definition of social power, a review of the impact of social power on behavior, and methodological approaches previously used in power research. The first part closes with a conclusion and deficits of social power research the current dissertation seeks to address. The second part of this chapter, titled *Reflection as action preparation*, presents an overview of research on reflection, mostly represented in research in the form of prefactual and counterfactual thinking, and their role in behavior regulation during goal pursuit. Similarly, this section ends with an outline of the deficits of research on pre- and counterfactual thinking. Finally, the third part of this chapter introduces *The current research*, comprising the research question of this dissertation and an overview of the following chapters.

Social power and goal pursuit

As social power is ubiquitous in social interactions and oftentimes fought over, people usually feel they recognize power when they see it. Nonetheless, the concept of social power has been difficult to define (for an overview see Fiske & Berdahl, 2007; Overbeck & Park, 2001). Traditionally, social power was conceptualized as actual (Dahl, 1957; Thibaut &

Kelley, 1959) or potential (Cartwright, 1965; Copeland, 1994; French & Raven, 1959; Weber, 1947) *influence* that power holders have over powerless individuals' *behavior*. According to this view, a person has power over another individual if s/he (potentially) guides this individual's behavior. Implying that the power holder both holds the intention to affect others' behavior and is effective in doing so, this definition relies upon the behavioral consequences of social power. This definition can thus be problematic, as the powerful at times decide not to exert influence over the powerless or the powerless can choose not to comply with power holders' influence (Fiske & Berdahl, 2007).

Consequently, more recent definitions treat social power as asymmetric *control* over resources or another person's *outcomes* (Dépret & Fiske, 1993; Emerson, 1962; Fiske & Berdahl, 2007; Keltner, Gruenfeld, & Anderson, 2003). This definition is based on powerful individuals' factual control over valued resources, be it of physical (e.g., food), economic (e.g., financial rewards), or social nature (e.g., social acceptance, exclusion, respect) that they can administer to or withhold from the powerless (cf., Keltner et al., 2003). Social power therefore still affords the potential to exert influence over others, but is independent from actual effects on powerless individuals' behavior. Put differently, having control over others' outcomes connotes social power. This is the case even if the powerful do not to realize their potential influence or if the powerless refuse to reply with according behavior. This definition thus solves the problem of social power being inferred only from the actual impact on others' behavior (cf., Fiske & Berdahl, 2007).

Considering social power as asymmetric outcome control implies that power is a *relative* construct (Emerson, 1962; Fiske & Berdahl, 2007; French & Raven, 1959). Rather than comprising an individual property, power thus characterizes a specific relationship between two (or more) interaction partners. Having power over another person's outcomes makes an individual powerful in that specific relationship. However, the same individual may face different situations or be part of relationships where others are even more powerful (Fiske & Berdahl, 2007). Social power over others thus differs from *personal* power, with the latter implying control over own outcomes (e.g., based on knowledge or money) and the ability to act with agency for one's goals (cf., Overbeck & Park, 2001). Note that for reasons of readability, the terms social power and power will be used interchangeably in the following, representing *social* power as defined by Fiske and Berdahl (2007).

Individuals may occupy positions of power based on their access to different sorts of resources (e.g., their expertise, rewards, or information; French & Raven, 1959), or their prototypicality and identification with a team (e.g., Hogg, 2001; Hogg & van Knippenberg,

2003; Platow & van Knippenberg, 2001). Social power can be explicit and afforded formally (e.g., occupying a management position), but it can also be attributed rather informally (e.g., being a selected team leader). Along the way, the bases of power can be stable (e.g., an unlimited powerful position) and legitimate (e.g., based on skills) or rather unstable across time (e.g., a temporary position) and illegitimate (e.g., based on luck).

As such, social power is closely related to leadership (Magee, Gruenfeld, Keltner, & Galinsky, 2005) and leadership roles are frequently understood as roles that imply social power (DeWall, Baumeister, Mead, & Vohs, 2010). As leadership describes the process of persuading followers and getting them to pursue one's vision for the group (e.g., Hogg, 2001), social power can both provide leaders with the means to accomplish their roles and be a result of effective leadership behavior (cf., Magee et al., 2005). Therefore, social power differs from status (i.e., respect and prominence) in a way that high power may or may not come hand-in-hand with high status (e.g., a corrupt politician or a respected leader, respectively; cf., Keltner et al., 2003) and that individuals can also have high status without being powerful (Fast, Halevy, & Galinsky, in press; Fragale, Overbeck, & Neale, 2011; Scheepers, Ellemers, & Sassenberg, in press).

How social power impacts on behavior

Social power fundamentally alters the way people feel, think, and act (for a recent summary see Overbeck, 2010; Smith & Galinsky, 2010). Early studies in social psychology mainly considered the impact of power on behavior among those who lack it, indicating that the powerless consider themselves as means to power holders' ends (e.g., Milgram, 1969). In contrast, later social psychology research focused more exclusively on the behavior of the powerful *actors*, and more specifically, on how individuals high (versus low) in power regulate their behavior towards others and towards their own goals. As the current dissertation examines how social power affects reflection on one's actions during goal pursuit, the following paragraphs present a selective overview of research investigating the influence of social power on individual behavior while pursuing (personal or shared) goals.

Social power provides access to resources that power holders can use either to oppress others for their own ends, or to guide them towards shared goals. Powerful actors are thus confronted with a tension between being *independent* and free to pursue personal goals and being *responsible* for others' outcomes and the attainment of shared goals (e.g., Fiske & Berdahl, 2007; Overbeck & Park, 2001; Sassenberg, Ellemers, & Scheepers, 2011). Being

independent from and responsible for others in turn impacts on the way individuals regulate their behavior (cf., Fiske & Berdahl, 2007). In the following, three major theoretical approaches will be outlined making different propositions about the goals individuals high and low in power pursue and, more specifically, the behavioral strategies the powerful and powerless apply while pursuing their goals.

Social power facilitates self-serving behavior

Coming along with independence from others, early power research treated power as a corrupting force (Lord Acton, 1865) tempting individuals to take over the position of those higher up in power, to mistreat the powerless, and to exclusively consider their own interests (Kipnis, 1972, 1976; Lenski, 1966; Ng, 1980). Supporting this proposition, Kipnis' (1972) seminal work indicated that interaction partners given power over their counterparts aimed at exerting influence over the powerless, acknowledged others' contribution less, and viewed them as objects of manipulation. Adding to this line of research, power has been shown to promote stereotyping (Fiske, 1993; Fiske & Dépret, 1996; Goodwin, Gubin, Fiske, & Yzerbyt, 2000; for a review see Vescio, Gervais, Heiphetz, Bloodhart, & Nelson, 2009), discrimination (Kipnis, 1976; Sachdev & Bourhis, 1985, 1991), sexual harassment among sexually aggressive men (Bargh, Raymond, Pryor, & Strack, 1995), and attribution of mistakes to others (Hegtvedt, Thompson, & Cook, 1993).

Social power was thus assumed to promote the use of purely *self-serving* strategies in line with *own* latent desires at the expense of the powerless. As a major empirical advantage, this line of research studied the impact of power in real or simulated power settings where some individuals are given power over others' outcomes in a role-playing exercise, thus providing high external validity of the findings. However, this approach largely considered power as a repressive force (e.g., resulting in mistreatment of the powerless; Kipnis, 1972), not taking potential productive aspects for the functioning of social structures into account (cf., Simon & Oakes, 2006). Against a background of contradictory findings and an attempt to integrate power and leadership research, researchers thus argued in favour of a reappraisal of this notion (Keltner et al., 2003; Reicher, Haslam, & Hopkins, 2005). For instance, the powerful at times also individuate others more than the powerless (Overbeck & Park, 2001) and share more resources with others (Galinsky et al., 2003). The notion of power enhancing purely self-serving behavior cannot account for these findings. It was thus refined in two theories that will be outlined in the following. Both these theoretical approaches presume social power to direct attention to one's goals and affect behavior towards others, but derive

slightly different conclusions about the impact of power on the strategies used for goal accomplishment.

Social power facilitates approach and action

In the approach inhibition theory of power, Keltner and colleagues (2003) precluded that social power impacts on behavior by differentially affecting the behavioral approach and inhibition system. The behavioral approach system promotes positive affect and a focus on potential rewards to be obtained. In contrast, the behavioral inhibition system induces negative affect and evokes a focus on potential threats or punishments in the environment (Carver & White, 1994; Gray, 1981, 1982). As power holders are independent from others and face fewer constraints than the powerless, the authors reasoned that social power activates the behavioral approach system, resulting in a focus on obtaining rewards and readiness to act. Likewise, the more constrained and difficult environments that the powerless live in activate the behavioral inhibition system, thereby resulting in more inhibited behavior in line with expectations or social norms when being powerless (Keltner et al., 2003).

In line with this reasoning, a large body of empirical findings demonstrated that power promotes *approach*- or *action*-related behavior (e.g., Anderson & Berdahl, 2002; Anderson & Galinsky, 2006; Fast, Gruenfeld, Sivanathan, & Galinsky, 2009) by facilitating basic approach-related tendencies (Maner, Kaschak, & Jones, 2010; Smith & Bargh, 2008) and generating a general sense of control over outcomes (Fast et al., 2009). As the most prominent implication of the activated approach system, social power promotes a propensity towards (observable) *action* rather than inaction. For instance, powerful individuals act more against obstacles (Galinsky et al., 2003), interrupt others and talk more in social interactions (Hall, Coats, & Smith LeBeau, 2005; Schmid Mast, 2002), are more likely to consume cookies when these are a rare resource (Ward & Keltner, 1998), and are more ready to make first offers in negotiation than the powerless (Magee, Galinsky, & Gruenfeld, 2007). Additionally, power holders are more likely to act upon obstacles by means of confronting low performers or offering training to them (Ferguson, Ormiston, & Moon, 2010).

In sum, these findings indicate that social power enhances the use of a *specific* kind of strategies, namely approach- or action-related means, throughout different contexts (Galinsky et al., 2003), whereas lacking power impairs executive task performance (Smith, Jostmann, Galinsky, & van Dijk, 2008). This has been supported by research on social power focusing predominantly on behavioral responses that speed up goal-directed action.

Social power facilitates flexibility and effectiveness

Likewise, the situated focus theory of power (Guinote, 2007a, 2010b) posits that social power and the resulting independence from others affects behavior by increasing individuals' sense of control (Guinote, 2010b), but adding a view on flexibility and functionality with regard to goal pursuit and the strategies used. Power affords freedom from constraints, thereby enabling individuals to focus more exclusively on their goals as well as situational circumstances and information relevant to those. As a result, across situations, individuals high in power can adapt their behavior more variably to the task at hand and more effectively regulate their behavior during goal pursuit (cf., Guinote, 2007c). In contrast, powerless individuals living in more difficult environments and being more constrained in their actions focus on all (relevant as well as distracting) information available to enhance control and predictability of their outcomes, for instance, in order to detect negative evaluations by the powerful. Similar to the approach inhibition theory, power is thus assumed to promote a focus on goals. However, the strategies applied throughout goal pursuit are assumed to be more flexible (i.e., dependent on either individuals' current states or the situation) and more effective when being in power (versus powerless; Guinote, 2007a, 2007c).

Empirical findings support this notion with regard to both effectiveness and flexibility of behavior. Power holders indeed focus more directly on activated goals (Slabu & Guinote, 2010) than the powerless. Along the way, when given similar tasks as the powerless, the powerful distinguish more effectively between goal-relevant and irrelevant information (Guinote, 2007b). In addition, social power evokes functional physiological responses (Carney, Cuddy, & Yap, 2010), enabling those high in power to more effectively mobilize energy during goal pursuit than those low in power (Scheepers, de Witt, Ellemers, & Sassenberg, in press). As a consequence, social power promotes more variable behavior and attention (Guinote et al., 2002; Overbeck & Park, 2006) in line with affordances of the given *situation* (Guinote, 2008). For example, individuals high in power at times increase performance only on tasks they deem worthy for leaders (versus unworthy; DeWall et al., 2010) and are less influenced by salient examples when creativity is required (Galinsky, Magee, Gruenfeld, Whitson, & Liljenquist, 2008). Moreover, power holders rely more on their *internal* states when judging situations (Guinote, 2010a; Weick & Guinote, 2008). They express their true attitudes more openly, also when opposing others (Galinsky et al., 2008), present themselves more authentically than the powerless (Kraus, Chen, & Keltner, 2011),

and adapt their readiness to take risks and exert effort in line with their motivational states more (Maner, Gailliot, Butz, & Peruche, 2007; Schmid Mast, Hall, & Schmid, 2010).

Power holders' flexible behavior has advantages for themselves, as it increases the likelihood for successful goal attainment (Guinote, 2007c). It also impacts on their behavior towards *others*. On the one hand, the powerful objectify others more as means to own ends when required to attain their goals (Gruenfeld, Inesi, Magee, & Galinsky, 2008), demonstrate more aggressive or demeaning behavior towards the powerless when feeling threatened (Fast & Chen, 2009; Fast et al., in press), demonstrate less compassion to others (van Kleef et al., 2008), and rely more on stereotypes when relevant in a task than the powerless (Vescio, Snyder, & Butz, 2003). On the other hand, however, power holders also exhibit more responsible behavior when they are prosocially oriented (Chen, Lee-Chai, & Bargh, 2001; Côté et al., 2011) and show more empathy in line with their leadership styles (Schmid Mast, Jonas, & Hall, 2009; but see Galinsky, Magee, Inesi, & Gruenfeld, 2006). Furthermore, individuals high in power are more ready to forgive their counterparts after a negative interpersonal experience (e.g., a personal insult) than the powerless and to continue pursuing goals together, especially when the relationship is highly relevant to them (Karremans & Smith, 2010).

In sum, power holders thus regulate their behavior more effectively during goal pursuit than the powerless (Guinote, 2007c), depending on what is required to attain a goal in a situation, and pay more attention to others (only) when it serves their goals. In contrast to the approach inhibition theory (Keltner et al., 2003), this theoretical approach focuses less on the use of a *specific* kind of goal-directed strategies (e.g., approach- or action-related tendencies). Instead, it emphasizes the *flexibility* of means individuals use in order to effectively attain a goal, which could potentially also imply means not directly related to approach or action.

Methodological developments

Taken together, a large body of research renders support for both the approach inhibition theory and the situated focus theory of power. Notably, research inspired by these new theoretical developments focused less on power in natural settings or role-playing exercises (for exceptions see Gonzaga, Keltner, & Ward, 2008; Guinote, et al., 2002; Schmid Mast & Hall, 2003; van Kleef et al., 2008). Instead, this body of research excels in methods maximizing experimental control, such as assignment to high or low power roles that are not enacted later on (e.g., DeWall et al., 2010; Galinsky, et al., 2003; Guinote, 2007a),

experiential priming as recall of past powerful or powerless experiences (Galinsky, et al., 2003), or the mere exposure to words (Chen et al., 2001; Schmid Mast et al., 2009; Smith & Trope, 2006) or body postures related to high versus low power (Bohns & Wiltermuth, in press; Carney et al., 2010; Huang, Galinsky, Gruenfeld, & Guillory, 2010). These procedures build upon the notion that activating the mere concept of social power (e.g., via priming) activates the behavioral tendencies and concepts associated with power, thereby resulting in similar effects as the actually possession (or lack) of social power (cf., Galinsky et al., 2003).

As a major advantage, this empirical approach underlines *internal* validity, supporting the causal nature of findings. It also accentuates the far-reaching influence of social power *beyond* situations, demonstrating that the experience of power in one context affects behavior and social perception in unrelated contexts (e.g., Galinsky, et al., 2003; Guinote, 2007c; Schmid Mast et al., 2009; for a review see Smith & Galinsky, 2010). On the downside, these experiments in large parts rely on data from undergraduate students who have had little prior experience with social power. Hence, they fail to take into account that power in real life is oftentimes possessed for a longer period of time and implies social interaction with those low in power (e.g., Overbeck, 2010), thus questioning the generalizability of the findings to actual power contexts (cf., Guinote & Phillips, 2010; Keltner, et al., 2003). This issue can be resolved, for instance, by (also) studying supervisors and subordinates in real power contexts (e.g., Guinote & Phillips, 2010) or in simulated organizational settings (e.g., Bruins, Ellemers, & De Gilder, 1999; Overbeck & Park, 2001). However, research in this domain is still scarce.

Social power and goal-directed behavior: Conclusion and deficits

To conclude, prior research yielded some consistent patterns on how social power impacts on behavior (Overbeck, 2010). Social power elicits a strong orientation to rewards and opportunities (Keltner et al., 2003), especially with regard to goal attainment (Guinote, 2007c). Thus, the powerful are more sensitive to their focal goals and respond more flexibly and effectively to opportunities for goal attainment (Guinote et al., 2002; Guinote, 2007c). Additionally, power holders show a proclivity towards action rather than inaction and careful deliberation (Galinsky et al., 2003; Guinote, 2007c), leading to the association of power with an orientation towards "getting things done" (cf., Overbeck, 2010; Magee, 2009). However, note that – though especially the situated focus theory predicts a use of more *variable* goal-directed strategies – prior research largely investigated behavioral tendencies related to *action* or approach, that is, strategies diminishing delays and accelerating goal-directed action (e.g.,

Anderson & Berdahl, 2002; Anderson & Galinsky, 2006; Galinsky et al., 2003, 2008; Gruenfeld et al., 2008; Guinote et al., 2002; Guinote, 2007b, 2007c; Magee et al., 2007; Maner et al., 2010; Maner & Mead, 2010; Smith & Bargh, 2008; Smith et al., 2008).

This focus on goal-directed action is based on the notion that goal attainment implies observable phases of action execution that reduces the distance between an actual and a desired state (i.e., a goal), is associated with moving forward (Natanzon & Ferguson, in press), and requires decisiveness and readiness to act (Gollwitzer, 1996; Guinote, 2007c; Lerner & Tetlock, 1999). However, whereas action without much deliberation may be useful in many circumstances, effective goal pursuit also connotes times where individuals are *not overtly acting*, but thoughtfully prepare their behavior beforehand (cf., Beilock & Lyons, 2009; Ericsson & Lehmann, 1996; Gurtner, Tschan, Semmer, & Nägele, 2007). This is the case, for instance, in complex environments where individuals need to adapt their behavior to changing circumstances (Pulakos, Arad, Donovan, & Plamondon, 2000; Weick, Sutcliffe, & Obstfeld, 1999) and especially if prior actions have failed to result in the desired outcome (Epstude & Roese, 2008; Markman & McMullen, 2003). Hence, to revise one's strategies, learn from the past, and prepare for the future, individuals frequently simulate potential actions and consequences to face later on or take a backward glance towards the past before taking action again. This process of *reflection* on alternative actions and outcomes represents an at times necessary way to effectively regulate behavior (cf., Epstude & Roese, 2008; Roese, 1997).

Against the background of multiple findings supporting the benefits of reflection for subsequent goal attainment (e.g., Gurtner et al., 2007; Kray, Galinsky, & Markman, 2009; Markman, McMullen, & Elizaga, 2008; Nasco & Marsh, 1999; Roese, 1994; 1997; for a review see Epstude & Roese, 2008), one can argue that reflection as a means to prepare goal-directed action is especially important when holding *power* and making decisions that meaningfully impact on others. This claim is in line with leadership research (e.g., Mumford, Friedrich, Caughron, & Byrne, 2007; Mumford et al., 2000), considering critical reflection on one's behavior and the positive or negative consequences a fundamental aspect of successful leadership (Crossan, Dusya, & Nanjad, 2008; De Hoogh & Den Hartog, 2008). However, this research focused on the positive implications of such leadership on those without power. The question how and when individuals high (versus low) in power do engage in reflection and, hence, the impact of social power has not been investigated yet.

The current dissertation seeks to address this gap by examining how social power affects reflection, more specifically, pre- and counterfactual thinking. In doing so, the present

research aims at gaining insight whether power holders' enhanced flexibility in goal-directed strategies also extends to means that *not* directly imply prompt action, but instead connote thoughtful preparation in phases of apparent *in*action, especially when such careful action preparation is required. Thereby, the current dissertation seeks to contribute to an understanding how the powerful and powerless reflect on their behavior and learn from failure while pursuing goals. In addition, in light of the lack of research focusing on social power in more *realistic* settings, the current dissertation particularly aims at examining this question within natural and simulated organizational contexts to maximize the external validity of the findings.

Reflection as action preparation

Individuals frequently imagine what is about to come in the future or what might have been if something had been different in the past. Reflection in this way is defined as simulating alternatives to expected or past situations (Byrne, 1997; Roese, 1997; Sanna, 1996). It is a pervasive human tendency that individuals engage in daily life in (Summerville & Roese, 2008) from early age on (e.g., Beck, Robinson, Carroll, & Apperly, 2006), across nations and cultures (e.g., Gilovich, Wang, Regan, & Nishina, 2003), individually or collectively (Gurtner et al., 2007), and with a focus on minor events up to major life experiences (Kray, George, Liljenquist, Galinsky, Tetlock, & Roese, 2010). Reflection can serve behavior regulation by supporting inferences between events and actions (Byrne, 1997; Epstude & Roese, 2008; Smallman & Roese, 2009) and outlining ways to improve goal-directed strategies and performance (e.g., Epstude & Roese, 2008; Gurtner et al., 2007; Markman & McMullen, 2003; Roese, 1994), and it can also regulate affective reactions. For instance, reflection can induce regret about missed opportunities (Kahneman & Miller, 1986; Zeelenberg & Pieters, 2007) or gratitude for achievements (Koo, Algoe, Wilson, & Gilbert, 2008).

Reflection as a way to regulate behavior during goal pursuit mostly occurs at two points in time (cf., Epstude & Roese, 2008; Sanna, 1996, 1998). First, reflection takes place prior to an event before any outcomes are known. This kind of reflection is termed *prefactual* thinking. It implies a mental simulation of potential future outcomes by thinking ahead, taking a 'forward glance', and comparing imagined to expected outcomes (e.g., "If I gather all information required, I should be able to solve this task."). Second, individuals frequently reflect after learning about first outcomes, especially in the case of prior failure. At this point

in time, individuals engage in *counterfactual* thinking as revisiting past events, taking a 'backward glance', and juxtaposing actual outcomes to an imagined alternative (e.g., "If I had gathered all information required, I would have been able to solve the task."). In the following, the two types of reflection will be introduced in more detail.

Prefactual thinking when outcomes are unknown – An option to prepare

When facing an upcoming task to solve or decision to make, individuals frequently envision the steps or strategies to use and mentally rehearse future actions and situations (Sanna, 1996, 1998; Watkins, 2008). This prefactual thinking can serve as preparation for possible positive or negative outcomes and represents an option to weigh alternative pathways to each (Morsella, Ben-Zeev, Lanska, & Bargh, 2010; Pham & Taylor, 1999; Sanna, 1996, 1998). Regarding potential *preconditions*, individuals generate prefactual thoughts before engaging in a task depending on their outcome expectations (del Valle & Mateos, 2008; Sanna, 1996, 1998) or the situation. For instance, defensive pessimists, that is, individuals with usually low outcome expectations entering situations being prepared for the worst (Norem & Illingworth, 1993) prefer to engage in prefactual thinking before solving a task (compared to optimists; Sanna, 1996, 1998). In addition, individuals especially invest time in reflection on their behavior towards others before approaching them when strategically striving for impression management (Duthler, 2006; Walter, 2007).

As a *consequence*, prefactual thinking can affect behavior. Reflecting on potential negative scenarios can motivate to increase effort (e.g., "If I failed my class, I would need to repeat it") and illustrate ways in order to prevent these outcomes to come about, such as when aiming at persuading others (e.g., "I should inform her about these facts, then she may be more convinced"; cf., Sherman, Crawford, McConnell, Knowles, & Linn, 2004). Likewise, simulating potential positive outcomes outlines how to obtain them and serves to harness anxiety (cf., Morsella et al., 2010; Sanna, 1996, 1998). Moreover, prefactuals prior to taking action can affect decision making. For instance, when being insecure about purchasing an object, imagining what would happen without the object (e.g., "What if I had an accident and had no insurance?") can enhance the likelihood to purchase it (Zhu, Tu, Lin, & Tu, 2009). Similarly, imagining about how badly one would feel after selling an object reduces the tendency to do so (Miller, Taylor, Roese, & Olson, 1995).

Furthermore, for some individuals, prefactual thoughts can improve performance. Defensive pessimists' performance profits from prefactual thinking, particularly when

potential better outcomes are simulated, whereas optimists do not show such performance improvements after prefactual thinking (Sanna, 1996). Such thoughts about the future especially affect behavior when contrasting the present with the potential future (versus centering only on either the present or the desired future; cf., Oettingen, Mayer, Thorpe, Janetzke, & Lorenz, 2005). Finally, prefactual thoughts can be more or less realistic with regard to future outcomes (for an overview see Sanna, Schwarz, & Kennedy, 2009).

Taken together, individuals at times think about upcoming situations by taking a 'forward glance' and simulating potential alternatives to the expected future. Thus, prefactual thinking takes place *before* any outcomes are known, therefore representing an option to prepare subsequent behavior at a stage where no concrete grounds are given about actual future success or failure (e.g., of planned strategies to be implemented). Consequently, prefactual thoughts as thinking ahead can serve to prepare subsequent action and prevent taking a rushed step, but at the potential cost of delaying goal-directed action (Armor & Taylor, 2003). In the absence of such concrete indicators, individuals thus especially generate prefactuals when being in some way concerned about potential future outcomes.

Surprisingly, though researchers agree that imagining future outcomes is a ubiquitous human tendency, research on predictors and outcomes as well as theoretical approaches to prefactual thinking are still scarce (cf., McConnell et al., 2000). In investigating social power as a potential predictor, the current research thus aims at gaining insight into conditions when individuals engage in prefactual thinking. As social power reduces individuals' concern about outcomes (cf., Fiske, 1993; Guinote, 2007b; Keltner et al., 2003) and promotes a readiness to act (Galinsky et al., 2003; Guinote, 2007c), it may influence prefactual thinking during goal pursuit.

Counterfactual thinking when outcomes are known – A need to prepare

Reflection also occurs in response to clear indicators about the effectiveness of prior strategies, especially when facing prior failure to attain a goal. Reflection at this point by generating counterfactuals on alternatives to the past yields useful insights and constitutes a necessary mechanism to regulate ongoing and future performance (Epstude & Roese, 2008; Markman & McMullen, 2003; Roese, 1997). In contrast to prefactual thinking, counterfactual thinking has been addressed more extensively both theoretically and empirically in prior research, as will be outlined in the following.

Epstude and Roese (2008) proposed a theoretical framework how counterfactuals contribute to goal attainment (for an overview see Figure 1.1). The described process is similar to a negative feedback loop (Carver & Scheier, 1998), starting with a *negative outcome* (e.g., a problem or failure, such as a badly solved task) and/or negative affect signaling that prior events, strategies, or actions have been unsuccessful to reach a goal (Epstude & Roese, 2008). This notion is also in line with other approaches that especially failure or lack of progress motivates individuals to search for ways of successful goal accomplishment (e.g., Brunstein & Gollwitzer, 1996; Koo & Fishbach, 2010). In reaction to the negative outcome, *counterfactuals* on how this outcome could have turned out differently are generated (e.g., "If I had gathered more information beforehand, I would have performed better."), linking (potential) actions and outcomes. Dwelling on the past in this way reinforces what (not) to do again and arms individuals with strategies to employ in similar future situations (cf., Markman, Gavanski, Sherman, & McMullen, 1993). Consequently, counterfactuals facilitate the deduction of behavioral *intentions* as a process of learning how to approach the future (e.g., "I will prepare better for the next task."). Behavioral intentions are in turn assumed to promote behavior addressing the negative outcome and to enhance future goal attainment by boosting subsequent *performance* (Epstude & Roese, 2008).

| Negative outcome | → | Counterfactuals | → | Intentions | → | Behavior |
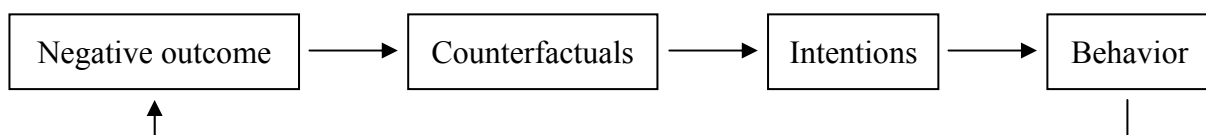
Figure 1.1. *How counterfactuals influence behavior (adapted from Epstude & Roese, 2008)*

Empirical findings render support for these steps. With regard to the *preconditions* of counterfactual thinking, multiple findings indicate that counterfactuals especially follow negative (rather than positive or neutral) outcomes (e.g., Roese & Hur, 1997; Roese & Olson, 1997; Sanna & Turley-Ames, 2000) or mood states (Sanna, Turley-Ames, & Meier, 1999). In addition, counterfactual thoughts after prior failure are especially generated when individuals perceive some *control* over the outcome (versus when an outcome is determined by chance; Roese & Olson, 1995). As previously outlined, social power is linked to individuals' sense of control (Fast et al., 2009; Inesi, Botti, Dubois, Rucker, & Galinsky, 2011; Scheepers, Ellemers, et al., in press); thus, this finding on perceived control and counterfactuals is of

particular relevance for the current research investigating how social power impacts on counterfactual thinking and will later be discussed in more detail.

Concerning the potential *outcomes*, counterfactuals in turn indeed promote behavioral intentions linked to the specific failure situation (Morris & Moore, 2000; Roese, 1994; Smallman & Roese, 2009). Importantly, however, not all counterfactuals are effective in this way. Functional for deducing behavioral intentions are especially thoughts on imagined *better* outcomes (i.e., upwards thoughts) that mentally *add* elements absent in the past (i.e., are additive) and focus on individuals' *own* behavior (i.e., are self-focused; such as "If only *I* had studied *more*, I would have achieved a *better* outcome"). These thoughts directly outline possibilities for self-improvement and future goal accomplishment (Epstude & Roese, 2008) and comprise the thoughts individuals most commonly generate after failure (Davis, Lehman, Wortman, & Silver, 1995; Nasco & Marsh, 1999; Roese & Hur, 1997; Roese & Olson, 1993a, 1993b, 1997; Summerville & Roese, 2008). In contrast, counterfactuals about imagined *worse* outcomes (i.e., that are downwards) that mentally *delete* elements present in the past (i.e., are subtractive) and focus on *others'* behavior or situational circumstances (e.g., "At least, *the exam* was relatively easy, *otherwise* the outcome may have been even *worse*") are less functional for goal attainment. Instead, downwards counterfactuals are assumed to contribute to affect regulation, highlighting the actual outcome in comparison to even worse alternatives and indicating how to keep the status quo from becoming worse (Epstude & Roese, 2008).

Whether individuals respond to failure with attempts either to improve behavior or to regulate affect (i.e., look on the bright side) largely depends on whether the situation provides the *chance* for future action (Epstude & Roese, 2008). Hence, individuals generate more upwards counterfactuals when events are, for instance, repeatable (versus when no repeatability is given; Markman et al., 1993). In contrast, in case of inevitable failure, upwards counterfactuals are suppressed (Tykocinski & Steinberg, 2005) and downwards counterfactual thinking as a means to regulate affective reactions, similar to cognitive reevaluations such as hindsight bias (Roese & Olson, 1996), become more likely (cf., Epstude & Roese, 2008). Moreover, in addition to the direction (upwards/downwards), structure (additive /subtractive), and reference focus (self/other/situation), counterfactuals high in *accuracy* (i.e., have realistic implications) are especially useful to guide future behavior. For instance, individuals pursuing self-improvement motives generate more functional counterfactuals (Sanna, Chang, & Meier, 2001), whereas counterfactuals can also be biased with the aim of self-protection (McCrea, 2007; Roese & Olson, 1993a).

Finally, also regarding the outcomes of counterfactual thinking and representing the last step in the presented model, counterfactuals on how negative outcomes could have been improved enhance subsequent *performance* (Kray et al., 2009; Markman et al., 2008; Roese, 1994, 1997). Conversely, a deficit of counterfactual thinking (e.g., associated with schizophrenia; Hooker, Roese, & Park, 2000) is linked to underachievement, reduced problem solving, and social dysfunction (Hooker et al., 2000; Roese, Park, Gibson, & Smallman, 2008), rendering additional support for the functionality of counterfactual thinking. Notably, pointing to potential limits of counterfactual thinking, research indicates that repeated counterfactuals can, similar to recurring ruminative thoughts (Nolen-Hoeksema, Parker, & Larson, 1994; Scott & McIntosh, 1999), peak in worry, anxiety, and depression (Markman & Miller, 2006). Thus, both a deficit and an excess of counterfactuals can be problematic (cf., Epstude & Roese, 2008).

To conclude, individuals especially generate counterfactuals after negative outcomes, that is, when facing concrete indicators that actions or events have been insufficient to reach a desired state (e.g., a goal), and when perceiving some control over the situation. Counterfactual thoughts, especially when being formulated with a focus on improving own behavior, facilitate behavioral intentions and thereby promote behavior regulation and future goal attainment. Prior research supports these assumptions, so far with a main focus on investigating the discrete steps within the model separately.

Prefactual and counterfactual thinking: Conclusion and deficits

To conclude, individuals striving to attain goals frequently envision the strategies to use prior to taking goal-directed action. This can imply prefactual thinking at the initial stage of pursuing goals (i.e., before actual outcomes are known) as well as counterfactual thinking (i.e., after learning about actual outcomes) prior to taking action, with only the latter being affected by individuals' perceived control over an outcome. Despite the prevalence of pre- and counterfactual thinking across different situations and the evidence for the positive outcomes of counterfactual thinking for performance and social functioning, prior research mostly focused on these thoughts during *individual* goal pursuit, such as academic achievement. Hence, pre- and counterfactual thinking have so far largely escaped attention in research on social interactions (for exceptions see De Cremer & van Dijk, 2010; Galinsky & Kray, 2004; Goerke, Möller, Schulz-Hardt, Napiersky, & Frey, 2004; for research on the

victims of crime see Catellani & Milesi, 2001), especially with regard to pre- and counterfactual thinking within social interactions characterized by social power.

Importantly, a single study addressed reflection in the domain of power and leadership, indicating that leaders do engage in pre- and counterfactual thinking in reaction to negative outcomes obtained by their powerless counterparts (Goerke et al., 2004). However, this study exclusively focused on *high* power individuals and assessed pre- and counterfactuals as a reaction to *another* person's weak performance. Hence, it did neither investigate the impact of social power nor pre- and counterfactual thinking with regard to (potential or actual) failure of own goal-directed strategies, which is the focus of the current dissertation.

Additionally, findings from Gurtner and colleagues (2007) in the related domain of team performance emphasized the success of reflection on the past (i.e., similar to counterfactuals) to improve performance in hierarchically structured teams. Importantly, post-hoc analyses of their results provided a first indication that especially team *leaders'* (compared to team members') thinking about alternatives to the past contributed to team performance improvement, highlighting the importance of understanding how individuals high and low in power reflect on their behavior during goal pursuit (Gurtner et al., 2007).

To conclude, from prior research, it remains unclear how features of the *social structure* among individuals pursuing goals in interpersonal contexts might impact on pre- and counterfactual thinking. As outlined above, social power represents such a structural feature characterizing multiple social relations. Hence, by investigating social power as a predictor of pre- and counterfactual thought, the current dissertation seeks to contribute to an understanding how social power shapes individuals' reflection on their behavior during goal striving.

The current dissertation

The current dissertation investigates how social power affects reflection during goal pursuit, more specifically, prefactual thinking before learning about any outcomes as well as counterfactual thinking in the special case of failure. As previously outlined, prefactual thinking centers on potential outcomes without a clear indication for the need to regulate one's behavior (i.e., connotes an *option* to prepare and adapt behavior), which individuals especially engage in when being in some way concerned about the outcomes of their actions (e.g., Duthler, 2006; Walther, 2007). Social power implying independence from others

diminishes individuals' concern on potential outcomes (cf., Fiske, 1993) and evokes a readiness to take goal-directed action at the initial stage of goal pursuit (Galinsky et al., 2003; Guinote, 2007c). In sum, these findings indicate that, when *no* indication is given that their behavior may not be sufficient to attain a goal, power holders might make *less* use of options to generate prefactual thoughts about future outcomes than the powerless, but instead focus on initiating prompt action in order not to miss opportunities for goal attainment.

However, this effect of social power might turn out differently in the face of prior failure, that is, a situation *actually* emphasizing that previous behavior has been insufficient for goal accomplishment and strategies may need to be revised. Importantly, individuals' *control* perceptions predict counterfactual (but not prefactual) thinking, as indicated by previous research on individual goal pursuit (Markman, Gavanski, Sherman, & McMullen, 1995; Roese & Olson, 1995). As social power induces a general sense of control (even over outcomes out of one's actual reach; Fast et al., 2009), one could assume the powerful to engage in more counterfactual thinking on their behavior after failure than the powerless because they sense more control (i.e., opportunities that they could actually have done something differently to improve the outcome). This assumption that social power may enhance self-focused counterfactuals is also in line with the situated focus theory (Guinote, 2007a, 2010b) and the empirical findings supporting it. Power holders use more *flexible* and more *effective* means in line with a situation than the powerless (Guinote et al., 2002; Guinote, 2007c, 2008). Thus, in case of prior failure, power holders' higher flexibility in applying goal-directed means may imply more self-focused counterfactual thinking as an effective way of gaining insights on how to attain a goal in the future.

However, the hypothesis that social power promotes self-focused counterfactuals (as representing phases of careful deliberation and apparent inaction) to some extent conflicts with the approach inhibition theory predicting faster action and *reduced* inaction as a result of elevated power (Galinsky et al., 2003; Keltner et al., 2003). Taken together, the theories and findings on social power outlined above thus comprise a conflict between, on the one hand, perceived control (which can be heightened by social power) enhancing counterfactual thinking, and, on the other hand, social power leading to action rather than inaction. Hence, the two empirical parts of this dissertation aim at addressing this issue, thereby seeking to investigate *when* social power might diminish thinking on alternative outcomes (i.e., prefactual thinking), but also when social power might enhance it (i.e., self-focused counterfactual thinking) and potentially result in better learning from failure.

These research questions are addressed in the following two chapters. *Chapter 2* focuses on the impact of social power on reflection as prefactual thinking, that is, as an option to prepare goal-directed behavior as long as outcomes are unknown. Building upon prior findings, Chapter 2 tests the hypothesis that social power diminishes prefactual thinking on upcoming situations before engaging in goal-directed action. Three studies test this proposition, manipulating power experimentally in terms of high and low power role assignments and experiential priming. The first study investigates individuals' thoughts during e-mail communication, thereby providing behavioral indicators and self-report measures for prefactual thinking about upcoming situations. The following two experiments directly show how individuals high and low in power generate prefactuals with regard to an individual and shared upcoming task. This chapter thus demonstrates that individuals high (versus low) in power reflect less on alternative actions and outcomes before any outcomes are known, but instead focus more on promptly taking action.

Chapter 3 seeks to demonstrate that social power promotes reflection in terms of counterfactual thinking, assuming that, in the special case of prior failure (i.e., when goal attainment may actually fail), individuals high in power will reflect more on how they could have contributed to a better outcome than the powerless and thereby better learn what to do differently in the future. This chapter first introduces a field study examining how individuals in natural high and low power positions generate counterfactuals about a prior failure, thus investigating social power under conditions of high external validity. Following the first study, two experiments implementing a simulated organizational setting are presented. These studies test the hypothesis under controlled conditions and provide insight into the mediating mechanism (i.e., sense of control) driving the effect of social power on self-focused counterfactual thinking. Finally, a last study addresses the impact of power under even more experimental control by using power priming. This chapter outlines that social power enhances counterfactual thinking about one's own actions after failure, both under constant experimental conditions and in various natural power settings, and points to the benefits of counterfactual thoughts for deriving behavioral intentions for future goal attainment.

Finally, *Chapter 4* includes the *General Discussion* of the empirical evidence presented in Chapters 2 and 3. Here, the findings are summarized and strengths and limitations are discussed. This chapter closes with implications of the current findings for research on social power and research on pre- and counterfactual thinking, and presents implications for future research as well as potential practical interventions to enhance reflection and learning from failure in interpersonal settings.

Please note that the empirical Chapters 2 and 3 are structured in a way that allows for them to be read independently of each other. As the predictions derived therein build upon similar theoretical assumptions and the studies were conducted simultaneously, these two chapters may show some theoretical overlap. Additionally, I would like to stress that Chapters 2 and 3 refer to "we" instead of "I" with regard to the authors, as the research reported within these chapters was conducted in collaboration.

Chapter 2: Power and prefactual thinking – An option to prepare

I never think of the future - it comes soon enough.
-- Albert Einstein

Imagine a student and a professor preparing a meeting to exchange information on a project. A common expectation in situations like this is that powerless individuals (e.g., the student) will be more concerned about potential outcomes of this meeting, for instance, making a good impression on the professor or avoiding misunderstandings. Hence, the student might deliberate more extensively on how to frame and exchange information prior to the meeting. In contrast, powerful individuals (e.g., the professor) will probably not devote as much time on reflection on how to approach the student in the meeting and what the likely outcomes may be. Instead, s/he will focus on attending the meeting and quickly obtaining the information needed.

When facing the need to request information from others, anticipating a task to solve, or precariously preparing a decision to be made, individuals frequently simulate potential actions and outcomes to expect (Sanna, 1996, 1998). Thereby, they may weigh potential strategies to attain their goal, play through potential alternative pathways, and anticipate positive or negative consequences before engaging in a course of action. In other words, individuals at times reflect on upcoming situations before an event actually occurs (Sanna, 1996, 1998; Walther, 1996, 2007), which can help to prepare for the likely outcomes (Pham & Taylor, 1999; Sanna, 1996). Likewise, reflection prior to engaging in social interactions can enable individuals to anticipate potential misunderstandings (Keysar & Henley, 2002; Walther, 1996).

However, as the opening example illustrates, individuals across organizational hierarchies are likely to differ in their motivation to thoroughly reflect on upcoming situations and thereby prepare for potential outcomes. More specifically, individuals' tendency to consider consequences of their behavior and others' evaluations before taking action might depend on their social power (cf., Fiske, 1993; Galinsky et al., 2003; Keltner et al., 2003). On the one hand, a common assumption is that those high in power reflect less, but instead are more oriented towards taking action than less powerful people (e.g., Magee, 2009). On the other hand, however, to lead the powerless successfully towards shared goals and prevent failure with potentially far-reaching implications, especially the powerful might need to be

aware of the consequences of their actions beforehand (Crossan et al., 2008; De Hoogh & Den Hartog, 2008). As there is no empirical evidence to date how those high and low in power actually reflect on their behavior in light of potential future outcomes, the current research seeks to address this gap.

Social power and goal-directed behavior

Social power is defined as having control over other individuals' valued outcomes (Fiske & Berdahl, 2007), which can be of material (e.g., food, money) or social (e.g., affection, praise) nature. Due to their asymmetric control over resources, power holders are independent from others and have greater freedom to act (Emerson, 1962; Fiske & Berdahl, 2007; Keltner et al., 2003), whereas the powerless depend on power holders' resources and are more restricted by social constraints. Keltner and colleagues (2003) thus argued that having power thus promotes approach tendencies and a focus on potential rewards, whereas being powerless and depending on others activates inhibition tendencies and a focus on potential threats or punishments.

Empirical findings support this notion, indicating that individuals high in power show more approach-related behavior than the powerless (e.g., Anderson & Berdahl, 2002; Smith & Bargh, 2008). Furthermore, powerful individuals more exclusively focus attention on their focal goals (Guinote, 2007b; Slabu & Guinote, 2010) and are more ready to promptly initiate action during goal pursuit (Galinsky et al., 2003; Guinote, 2007c). As a consequence, power holders are more effective in pursuing their goals (e.g., Guinote, 2007c). In contrast, powerless individuals not only pay attention to the task at hand, but also carefully attend to other cues and to power holders in order to enhance predictability of their outcomes or potential drawbacks (cf., Duthler, 2006; Guinote, 2007c). Hence, the powerless prefer to more extensively plan their behavior before initiating action (Guinote, 2007c; Weick & Guinote, 2010) and show stronger affective reactions to potential negative outcomes than power holders (Inesi, 2010). Interestingly, individuals do not need to actually have high (versus low) power for these effects of power on behavior to emerge (Smith & Galinsky, 2010); instead, the mere activation of high (versus low) power via priming or anticipated power roles activates behavioral tendencies associated with power and, thus, is sufficient to promote more approach- or action-oriented behavior in other contexts (Galinsky et al., 2003; Maner et al., 2010; for a review see Smith & Galinsky, 2010).

In sum, social power enhances individuals' general proclivity to *act* (i.e., approach; Galinsky et al., 2003; Keltner et al., 2003). But what the powerless do in their prolonged phases of inaction, that is, while power holders have already engaged in a course of action? Researchers have argued that the tendency to act when being powerful might be paralleled by a diminished tendency to *reflect* on potential strategies and outcomes before taking action (cf., Galinsky et al., 2003). In other words, the powerless may deliberate more extensively on the strategies to use or outcomes they might face beforehand than the powerful. However, how social power actually impacts on individuals' reflection as a strategy to prepare for subsequent action and outcomes, which is the focus of the current research, has not been investigated yet.

Social power and prefactual thinking

Reflection about an upcoming situation involves mentally constructing possible future scenarios, potential actions (not) to take, and anticipating the resulting outcomes. Thinking about upcoming situations in this way helps to be mentally prepared for both potential positive and negative outcomes and to harness anxiety about potential failure (cf., Norem & Illingworth, 1993). In addition, reflection as thinking ahead provides individuals with the option to prepare future goal-directed action (Morsella et al., 2010; Pham & Taylor, 1999; Sanna, 1996, 1998), to anticipate outcomes and thereby reach a decision (Miller et al., 1995; Zhu et al., 2009), and to interact with others with more forethought (cf., Duthler, 2006; Sherman et al., 2004; Walther, 1996). Reflection in this way thus represents an *option* to prepare subsequent goal-directed behavior individuals can make use of.

Individuals particularly make use of options to think ahead when they are concerned about potential outcomes or the consequences of their behavior. For instance, reflection about an upcoming situation especially takes place when being pessimistic and thus having low expectations about subsequent outcomes (compared to optimistic; Sanna, 1996), when pursuing strategic social goals, such as trying to make a positive impression on others (in addition to the focal goal of, for example, obtaining information from another person; Walther, 2007), or when communicating high imposition requests to others and having the chance to reflect (Duthler, 2006). However, less is known about how features of the social relation impacting on the concern about outcomes, such as social power, affect individuals' reflection.

Due to their independence and freedom from constraints, power holders can afford to swiftly take action (Galinsky et al., 2003; Guinote, 2007c) without much forethought about potential outcomes or drawbacks. Thus, they are less motivated to consider the consequences of their actions (cf., Fiske, 1993). In contrast, the powerless depending on power holders' evaluations and resources are more socially constrained in their behavior (Anderson & Berdahl, 2002) and take more strongly into account how they are being perceived by the powerful (Lammers, Gordijn, & Otten, 2008). Moreover, though reflection serves to prepare future action, reflection as taking time to consider strategies and consequences prior to engaging in a course of action may delay goal-directed action (cf., Armor & Taylor, 2003; Galinsky et al., 2003) and rather implies phases of inaction and careful deliberation (cf., Beilock & Lyons, 2009).

Therefore, as powerful individuals are more approach-oriented (Keltner et al., 2003), more focused on their focal goals (Guinote, 2007b), and more ready to initiate action in order to attain their goals (Galinsky, et al., 2003; Guinote, 2007c), whereas the powerless are more inhibited and more carefully take all information available into account, we assume that individuals will engage in more reflection on upcoming situations when being powerless (compared to powerful). Thus, we expect social power to diminish individuals' use of options to reflect on unknown outcomes before taking action.

The current research

The hypothesis that social power diminishes reflection about upcoming situations was addressed in three studies applying different empirical approaches. Reflection as mental simulation before an event actually occurs and outcomes are known has been investigated in social psychology in terms of prefactual thinking (e.g., Sanna, 1996, 1998), where individuals' thoughts about an event are directly assessed. Similarly, this process of reflection when the option is given has been examined in computer-mediated communication (Walther, 1996), assuming that compared to face-to-face media, asynchronous media such as electronic mail (e-mail) especially support reflection on one's behavior while preparing goal-directed action. Here, reflection is conceptualized as the time individuals spend on deliberation on what to write, for instance while composing an e-mail request to a communication partner (Walther, 1996, 2007), thus providing data on individuals' reflection behavior. To make use of the methodological advantages of each empirical approach, the current research integrated both in investigating how individuals high and low in power exploit options for reflection.

Hence, Study 2.1 tested the hypothesis that social power diminishes reflection in an e-mail communication setting. This study assessed how high and low power individuals use options for reflection both via self-report and via deliberation times as behavioral indicators (cf., Walther, 1996, 2007). Study 2.2 sought to extend findings from Study 2.1 by focusing more directly on the thoughts individuals actually generated regarding an upcoming task. Thus, this study directly assessed reflection via thought listing and assessed the time participants spent on generating thoughts.

Both Studies 2.1 and 2.2 experimentally manipulated power by assigning participants to high or low power roles, thereby testing the causal impact of social power on individual reflection. Additionally, to enhance the external validity of the findings, these studies implemented a simulated work setting where individuals exchanged e-mails with one another (Study 2.1) and worked on tasks with highly organizational character (Study 2.2). Finally, Study 2.3 replicated the findings from the previous studies with experiential power priming, thereby supporting the generalizability of the findings to other settings and manipulations.

Study 2.1

This study aimed at investigating the impact of social power on reflection under highly controlled experimental conditions and, at the same time, maximizing the realistic character of the laboratory setting. In this experiment, we assessed reflection by means of self-report and deliberation times, thus investigating how social power in terms of high and low power roles affects reflection in an unrelated context while composing e-mail requests to other (fictitious) individuals.

Method

Design and participants

An experiment with two conditions (low versus high power) was conducted. Forty-nine undergraduate students (38 female, 11 male, M_{age} = 23.65 years, SD = 2.57, age range: 18-31) participated in the experiment as part of a larger study package, consisting of this experiment and a subsequent other study. Participants received 8 Euro (approximately $11) for compensation for the complete study session.

Procedure

Upon arrival in the laboratory, participants were seated in semi-private cubicles. Up to six individuals took part in a session. The experiment was presented as two unrelated studies.

The ostensible first study served to prime social power and the second study assessed reflection during e-mail communication. Participants received all instructions on a computer screen.

The power manipulation followed the procedure from Guinote (2007b). Participants were randomly assigned to a powerful (manager) or powerless (employee) role. Social power was manipulated as control over the interaction partner's outcomes. First, participants learned that they would solve a creativity task in dyads of one manager and one employee with a partner from a second lab room. They filled in an ostensible leadership questionnaire and then received bogus feedback about their role assignment. Participants were informed that some people (i.e., the employees) are especially capable of following instructions and solving tasks, whereas others (i.e., the managers) are good at giving instructions and telling others what to do. Thus, the task of the employee was to generate creative solutions to problems, which were then to be judged by the manager. Participants learned that employees received 2 Euro and managers 3 Euro for this study, but the manager could decide to let the employee earn up to 3 Euro as well, depending on the manager's evaluations of these solutions. To complete the power manipulation, the manipulation check was assessed.

Afterwards, participants followed up on screen how an ostensible connection to the second lab was established and were informed that their partner was currently still involved in another study, but would be available later. Therefore, they were asked to continue with a separate second study while waiting for their partner, and to finish the creativity task afterwards (Galinsky, et al., 2003; Guinote, 2007b; for similar procedures see also Guinote, 2007c).

As 'separate second study', participants composed four e-mails while reflection was measured. The instructions asked participants to imagine working in a large company. Participants' task was to compose e-mails to four fictitious communication partners within the company whose relative position was not specified. Most importantly, the receivers of the e-mails were thus *identical* for all participants. Participants composed one e-mail requesting (a) a room reservation from someone who had booked the room, (b) a flipchart for a meeting from the owner, (c) a book from someone who had lent it from the institutional library, and (d) assistance on a software error, respectively. The order of the four e-mail requests was counterbalanced across participants. While composing their requests, the computer recorded the total time participants spent composing e-mails, the content of sent e-mails, and times spent on reflection. After sending each e-mail, self-report measures on reflection were assessed. Finally, participants were thanked, debriefed, and compensated.

Measures

Manipulation check. After learning about their role assignment in the alleged creativity task, participants indicated how much in charge they would be and how much influence they would have during the creativity task on a seven-point Likert scale ranging from '1 = *not at all*' to '7 = *very much*', $r(49) = .72, p < .001$.

Measures from e-mail communication. For each e-mail, the total composition time (i.e., from opening a new e-mail by clicking a 'new e-mail' button in the e-mail editor to sending it by clicking the 'send' button) and the content length (i.e., number of characters comprised in the sent e-mail) was recorded. As dependent measures for reflection during e-mail composition, the following variables were calculated. A *reflection* during e-mail communication index was assessed by dividing the time spent on deliberation before starting to type e-mail text (i.e., pressing the first key) by the total composition time. Similarly, based on the time spent on actually typing during e-mail composition (i.e., action), we calculated a *no-reflection* index. For this purpose, we divided the time participants actually typed text (i.e., keys pressed at least every two seconds) by the total composition time. Higher numbers on this index thus indicate that during message composition, participants spent less time on reflection. These two indices do not add up to the value 1, as the total composition time included not only the time spent on deliberation before starting to type and on (not) typing text, but also the time spent on not typing before finally sending the e-mail.

Self-reported reflection during e-mail composition was assessed after sending each e-mail with two items ("While composing this e-mail request, I thought about what I could frame differently.", and "While composing this e-mail request, I checked how I could express myself better.") on a seven-point Likert scale ranging from '1 = *completely disagree*' to '7 = *completely agree*'. These items were embedded within filler items and were highly correlated, $r(49) = .85$ to $.91$, all $ps < .001$ for the four e-mails.

Results

Preliminary analyses

Participants in the low power condition expected to have less power ($M = 3.35, SD = .92$) than participants in the high power condition ($M = 5.35, SD = .99$), $t(47) = 7.29, p < .001, d = 2.00$. The power manipulation was thus successful.

Regarding data from the e-mail logs, no effect of power condition on the total composition time was found (low power: $M = 262.61$ seconds, $SD = 121.5$; high power: $M = 247.66$ seconds, $SD = 108.76$), $t(47) = .46, p = .652, d = .13$. Moreover, participants' e-mails

did not differ in length between the low ($M = 465.85$ characters, $SD = 154.59$) and high power condition ($M = 511.72$ characters, $SD = 153.70$), $t(47) = 1.04$, $p = .304$, $d = .30$. Thus, participants in both conditions spent approximately the same total time on composing their e-mails and sent e-mails with a comparable length.

Reflection during e-mail communication

We hypothesized that social power diminishes reflection during e-mail communication. To test this prediction, a 2 (Power: low versus high) × 3 (Reflection: self-reported reflection versus reflection index versus no-reflection index) mixed model analysis of variance with repeated measurement on the last factor was conducted. Therefore, the three reflection measures were z-standardized; for reasons of readability, however, the non-standardized means are reported below. Results yielded a significant main effect for Reflection, $F(2, 46) = 34.61$, $p < .001$, $\eta_p^2 = .60$. This main effect was qualified by a significant Power × Reflection interaction, $F(2, 46) = 4.02$, $p = .025$, $\eta_p^2 = .15$. Simple comparisons for *self-reported reflection* showed a trend in line with our prediction, indicating that participants primed with high power reported less reflection while composing their messages ($M = 5.18$, $SD = 1.43$) than participants primed with low power ($M = 5.73$, $SD = .64$), $F(1, 47) = 2.84$, $p = .099$, $\eta_p^2 = .06$. The behavioral data clearly supported our hypothesis (see Table 2.1). Simple comparisons demonstrated that participants in the high power condition spent relatively less time on *reflecting* on their behavior during e-mail communication ($M = 0.065$, $SD = .03$) than participants in the low power condition ($M = 0.090$, $SD = .05$), $F(1, 48) = 5.31$, $p = .026$, $\eta_p^2 = .10$. Conversely, participants in the high power condition had higher scores on the *no-reflection* index during e-mail composition ($M = 0.899$, $SD = .03$) than participants in the low power condition ($M = 0.876$, $SD = .05$), $F(1, 48) = 4.06$, $p = .050$, $\eta_p^2 = .08$.[1]

Thus, the findings demonstrate that high power participants invested relatively less time in reflection, both before getting started and while composing their e-mails than low power participants. This pattern was mirrored in the self-report measure for reflection, showing that high power individuals also tended to report less reflection while composing their messages than participants in the low power condition.

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[1] Note that accordingly, high power participants spent relatively more time on typing, whereas low power participants spent relatively more time on reflection on their behavior (i.e., *not* typing). Despite this effect of power condition, participants' e-mails in both conditions had a similar content length, which may have resulted from the fact that typing also included deleting and overwriting text passages.

Table 2.1

Reflection and no-reflection indices as a function of power (Study 2.1, N = 49).

	Reflection Index		*No Reflection Index*	
	M	*SD*	*M*	*SD*
Low power	0.090	.05	0.876	.05
High power	0.065	.03	0.899	.03

Discussion

As high power evokes a general propensity towards less inhibited, more action-oriented behavior (Keltner et al., 2003) beyond a given power context (Galinsky et al., 2003; Smith & Galinsky, 2010), we predicted that individuals reflect less during e-mail communication when being powerful than when being powerless. This prediction was tested during e-mail communication, building upon the assumption that due to its asynchronous nature, e-mail provides the option to reflect on one's communication behavior (Walther, 1996). Findings supported the hypothesis, demonstrating that high power (compared to low power) lowered reflection, even though the communication context was unrelated to individuals' (expected) social power.

As a major advantage of this study, we used behavioral indicators (i.e., reflection times) in addition to the self-report measures for reflection in a realistic simulated organizational context. However, note that these behavioral indicators assessed individual reflection as a measure of *in*action (i.e., time spent on *not* typing text). Hence, the reflection times do not provide clear insight into the actual thoughts generated during these periods of deliberation. To address this issue, the second experiment directly assessed individuals' thoughts on an upcoming task.

Study 2.2

This study had two aims. First, to enhance the generalizability of the findings from Study 2.1, we sought to provide evidence that social power diminishes reflection not only during e-mail communication, but also when approaching other tasks in an organizational setting. Second, to get a closer look at whether individuals low in power actually reflect more on potential actions and outcomes than the powerful (i.e., generate *prefactual thoughts*), we

directly measured the thoughts individuals generated. Thus, in this study, the impact on the number of prefactual thoughts individuals generated before engaging in a task was assessed (cf., Sanna, 1996, 1998). This study used the same power manipulation as Study 2.1.

Method

Design and participants

Forty-five undergraduate students participated in an experiment with two conditions (low versus high power) on "Creativity and Perception". Two participants were excluded because they expressed strong suspicion that they had not been assigned a real partner for the task. Thus, data from forty-three participants (34 female, 7 male, 2 participants failed to provide their gender, $M_{age} = 24.31$ years, $SD = 2.78$, age range: 20-33) was analyzed.

Procedure

Participants were invited to take part in a study comprising an experiment on creativity and a study on social perception (which was unrelated to the current research). Participants first completed the same power manipulation as in Study 2.1 (cf., Guinote, 2007b), where they were told that they would be solving a creativity task together with another participant as one manager (high power role) and one assistant (low power role). After the power manipulation, participants were again asked to complete an allegedly unrelated pretest for a different study while waiting for their interaction partner, which in fact comprised the dependent measure of reflection.

For this ostensible pretest, participants received a description of a stock investment task they were about to solve (cf., Bruins et al., 1999; Markman & Tetlock, 2000). Participants learned that this task included two rounds of investments where participants would inspect information on six different companies (including details about each firm, results such as revenue and net income from the last year, and a prognosis), decide on which three stocks to invest in, and afterwards receive feedback about the real development of their investments. After reading the description and before engaging in this task, participants' reflection about the upcoming task was assessed following instructions from Sanna (1996). They read that in situations like these, individuals sometimes have thoughts such as "what if..." or "if only..." and imagine how to approach the situation or how the situation might turn out better or worse than what they actually expect to happen. Participants were asked to list all thoughts about the investment task that came up to their minds on a blank page provided (cf., Sanna, 1996). Thus, they had the option to (first) reflect and then start with the actual task. The thoughts participants listed as well as the time they spent on generating thoughts

was recorded by the computer. Subsequently, participants were informed that the investment task and the joint creativity task would not take place. They were debriefed, thanked, and compensated.

Measures

As a manipulation check, the same two items as in Study 2.1 were used, $r(43) = .75$, $p < .001$. Answers were again combined into a single manipulation check measure. Two blind raters coded participants' listed thoughts for reflection on potential actions and outcomes regarding the investment task, including phrases such as "if only…", "what if…", "I could…" etc. ($\kappa = .75$; 94% agreement rate); disagreements were resolved by the author of this dissertation (for a similar procedure see Sanna, 1996, 1998). Participants listed thoughts such as "Hopefully, I will be able to solve the task and make a good decision.", "What if I make a bad decision?", and "If I manage to choose successful stocks, I will be able to make some profit."

Results

Manipulation check

A *t*-test revealed that participants in the low power condition reported less power ($M = 3.23$, $SD = 1.09$) than participants in the high power condition ($M = 5.69$, $SD = .83$), $t(41) = 8.32$, $p < .001$, $d = 2.46$. Thus, the power manipulation was successfully implemented.

Effects of power on reflection

We predicted that powerful individuals reflect less before initiating action than individuals low in power. Results indicated that individuals in the high power condition indeed generated less thoughts regarding the upcoming task ($M = 1.71$, $SD = .72$) than individuals in the low power condition ($M = 2.55$, $SD = 1.47$), $t(41) = 2.34$, $p = .024$, $d = .73$. In line with the hypothesis, power thus reduced individuals' reflection before initiating action. Additionally, the time participants spent on generating prefactual thoughts before starting the task was recorded. Findings yielded a significant effect of power condition, $t(41) = 2.91$, $p = .006$, $d = .89$, demonstrating that low power participants also spent more time on reflecting ($M = 109.93$ seconds, $SD = 52.40$) than high power participants ($M = 72.15$ seconds, $SD = 28.84$).

Discussion

The findings from this study therefore replicated results from Study 2.1, showing that social power diminished reflection about an upcoming task both with regard to the number of thoughts generated and the time spent on reflection. Moreover, the findings provide direct

insight into the thoughts individuals actually generated when facing an upcoming situation, indicating that individuals indeed more extensively engaged in mental simulation of potential actions and outcomes before engaging in a task when being low compared to high in power. Additionally, whereas Study 2.1 comprised an interpersonal task (i.e., an ostensible e-mail communication with others), this study replicated the findings with an *individual* task participants expected to solve alone, again within a simulated organizational setting. Thus, social power (as a feature of social relations) influenced prefactual thinking not only in interpersonal situations, but also in contexts where no interaction partners (to which the experience of high or low power could be transferred) were involved.

Both Studies 2.1 and 2.2 employed a power manipulation via role. Role assignments provide a frequently used, strong manipulation of social power (e.g., Galinsky et al., 2003, Guinote et al., 2002; Overbeck & Park, 2001), as participants expect to actually engage in a joint task within their roles. However, though the assignment was explicitly introduced as an *un*related part of the study, participants may still have connected their roles for the (announced) first task to the second task where reflection was assessed. To rule out this possibility, the next experiment used experiential power priming.

Furthermore, the previous studies implemented an organizational task setting, supporting the external validity of the findings for real work contexts. On the downside, this setting confronted participants with tasks they had little prior experience with (especially regarding the investment task in Study 2.2), thus questioning the generalizability of the findings. To rule out the possibility that these findings were restricted to unfamiliar tasks, Study 2.3 focused on a well known classroom context.

Study 2.3

Study 2.3 sought to replicate the findings from the first two studies by measuring the thoughts individuals generated about an upcoming interpersonal event in a familiar university context. To manipulate social power, we used a well-established power priming from Galinsky et al. (2003) requiring participants to recall a personal past experience related to social power.

Method

Design and participants

Participants took part in an experiment with two conditions (low versus high power) within a larger study package on communication in groups. Twenty-four undergraduate

students (19 female, 3 male, 2 did not indicate their gender, M_{age} = 22.64 years, SD = 2.11, age range: 19-26) participated in exchange for 10 € (approximately $ 15) for the complete study package.

Procedure

Participants first participated in an unrelated study and then completed a paper-pencil questionnaire, comprising the power manipulation and the reflection measure. The questionnaire was announced as comprising pre-test materials for two unrelated studies to make sure that participants did not connect the manipulation to the reflection measure. First, participants completed the power priming using instructions by Galinsky et al. (2003). Participants were randomly assigned to the two power conditions. In the high power condition, participants recalled an incident where they had power over somebody, that is, could control another individual's outcomes or evaluate others. Participants in the low power condition recalled an incident where someone else had power over them and had controlled their outcomes or evaluated them. Participants were provided with a blank page and composed an essay about this experience, what had happened, and how they had felt (cf., Galinsky et al., 2003). Though prior research indicates that this manipulation does not affect mood states (e.g., Galinsky et al., 2003; Smith & Trope, 2006), we assessed participants' current mood after completing the power priming.

Then, reflection was assessed. Therefore, a classroom scenario from Roese and Olson (1993a) was adapted. Participants were asked to imagine that they needed to complete a group assignment with a fellow student for a class. To avoid potential sex biases, the other student's gender was neutral and named "Micha" (a German name that can stand for a female or male student). The scenario described the stage where participants were just about to begin working on their group assignment, comprised an equal number of potential positive and negative events, and left the outcome unknown (cf., Roese & Olson, 1993a):

> You have been given an assignment in one of your classes. It is a group project and you have been paired up with another student, Micha, who will work on the assignment with you. The project is due in three weeks. You get together in advance to distribute tasks between each other: You will focus on book chapters and Micha focuses on journal articles. Unfortunately, the first week will be wasted because Micha cannot meet with you again to make plans (because of an operation of a family member). In the course of your background reading, you are planning to look for books that summarize your topic well. Micha will spend the second week learning how to use a computer program that checks for grammar and creates a reference

list, which will improve the style and readability of your project. During the last week before it is due, you yourself will be spending very little time on it because you have to prepare for an exam in another course. You both are planning to hand in the project on the assigned due date. You will receive the project and your grades back several weeks later.

After reading the scenario, participants were asked to list all thoughts that came up to their minds about the classroom situation on a blank page provided, using the same instructions as in Study 2.2 (cf., Sanna, 1996). As this study comprised a paper-pencil questionnaire, reflection times were not recorded. To rule out that the power priming affected individuals' outcome expectations about being successful on this group assignment, which in turn could have affected individual reflection (similar to defensive pessimism versus optimism; Sanna, 1996, 1998), we assessed participants' expectations regarding the outcome of the assignment. Finally, participants were thanked, debriefed, and compensated.

Measures

Participants' mood after the power manipulation was assessed with four items, asking participants to indicate on a seven-point Likert scale (ranging from '1 = *not at all'*, to 7 = '*completely'*) how satisfied (reverse coded), ashamed, angry, and happy (reverse coded) they felt at this very moment. Answers were averaged in an overall score indicating negative mood ($\alpha = .65$). To measure expectations about the outcome of the scenario, participants indicated on a seven-point Likert scale (ranging from '1 = *completely disagree'*, to '7 = *completely agree'*) whether they were confident to obtain a positive outcome regarding their shared assignment.

Participants' listed thoughts were again coded by two blind raters for reflection on potential actions and outcomes, applying the same procedure as in Study 2.2 ($\kappa = .70$; 93 % agreement rate; cf., Sanna, 1996). Example thoughts participants listed are "I will try to work as much as possible in the first two weeks, otherwise I might not be able to prepare my exam afterwards.", "Will we receive a good grade?", and "I hope I will be able to manage my part."

Results and discussion

Preliminary analyses

We first checked that the power priming did not affect participants' mood or outcome expectations. Indeed, results indicated that participants in the low power condition did not experience more negative mood ($M = 2.83$, $SD = 1.11$) than participants in the high power condition ($M = 2.36$, $SD = .84$), $t(22) = 1.18$, $p = .250$, $d = .48$. Likewise, low power

participants did not have lower outcome expectations (M = 5.30, SD = 1.06) than high power participants (M = 5.71, SD = .91), $t(22)$ = 1.03, p = .316, d = .42. Thus, the power manipulation did not heighten participants' mood or outcome expectations.

Effects of power on reflection

We hypothesized that power diminishes reflection on an upcoming task. In line with this prediction, high power participants generated less thoughts about the upcoming situation (M = 1.64, SD = 1.50) than low power participants (M = 4.00, SD = 1.16), $t(22)$ = 4.16, p < .001, d = 1.22. Therefore, the results again supported the assumption that when being powerful, individuals reflect less on potential actions to take and outcomes to expect in an interpersonal situation than when being powerless.[2]

Table 2.2

Prefactual thoughts as a function of power (Study 2.2, N =43; Study 2.3, N = 24).

	Prefactuals (Study 2.2)		Prefactuals (Study 2.3)	
	M	*SD*	*M*	*SD*
Low power	2.55	1.47	4.00	1.16
High power	1.71	.72	1.64	1.50

Hence, this study replicates findings from the previous studies (see Table 2.2) with a different power manipulation. This manipulation was even more clearly unrelated to the upcoming situation participants reflected on, indicating that social power affects reflection on upcoming situations and unknown outcomes even when these are completely unrelated to

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[2] In addition to the *total number* of thoughts, it was coded whether thoughts referred to participants' *own* future behavior (i.e., had a self-focused reference) or other circumstances; though this was not the focus of this study, this procedure is similar to the coding used for counterfactual thoughts (i.e., thoughts after an event has already happened) with the assumption that especially thoughts about one's *own* behavior help to prepare future goal-directed action. There was a main effect of power on self-focused prefactuals, indicating that low power participants generated more *self*-focused thoughts (M = 1.50, SD = 1.27) than high power participants (M = .50, SD = .76), $t(22)$ = 2.42, p = .024, d = .96; conversely, power did not affect other-focused thoughts, $t(22)$ = .47, p = .641, d = .20 ($M_{low\ power}$ = .90, SD = .88; $M_{high\ power}$ = .71, SD = .99; a mixed model analysis of variance including self- and other-focused prefactuals as within subjects factor yielded similar results).
Likewise, the thoughts were coded with regard to their direction, that is, whether participants simulated potential *better* outcomes than expected (upwards thoughts) or potential *worse* outcomes (downwards thoughts). In both Studies 2.2 and 2.3, low power participants (tended to) generate more upwards thoughts (Ms = 2.17 and 3.00, SDs = 1.30 and 1.41) than high power participants (Ms = 1.59 and .79, SDs = .96 and .97), $t_{Study\ 2.2}$ (43) = 1.70, p = .096, d = .51 and $t_{Study\ 2.3}$ (22) = 4.55, p < .001, d = 1.83, indicating that low power participants may have been more concerned about potential *negative* outcomes than high power participants and, thus, focused more on simulating *better* outcomes.

individuals' social power. In contrast to the previous studies, the current experiment also examined reflection with regard to a *familiar* university situation. As focusing on this university context yielded similar findings as Studies 2.1 and 2.2 in a simulated organizational setting, social power diminished reflection across different (individual and interpersonal) contexts.

Notably, the present research indicates across three studies that social power diminishes reflection and promotes a focus on prompt action. However, the findings so far do not indicate how these effects impact on subsequent behavior (i.e., individuals' effectiveness to attain a goal). In line with previous research indicating that social power promotes more effective goal striving (Guinote, 2007c; for an overview see Guinote, 2007a), one would assume that power holders' tendency to reflect less beforehand, but focus more on taking action does not impair, but instead may even enhance subsequent goal attainment. Though this was not the focus of the current research, Study 2.1 provided an opportunity to test this idea. Here, we sought to explore the relation of social power, reflection, and individuals' effectiveness in behavior in additional analyses.

Additional analyses of Study 2.1

To provide a first indication that the tendency of those high (versus low) in power to engage in less reflection and focus more on initiating action does not come along with less effective goal striving, we investigated the content of participants' e-mail messages from Study 2.1. Therefore, the politeness and persuasiveness of the composed requests were examined to capture the social and the goal-related dimension of the e-mail messages, respectively; persuasiveness thus served as an indicator for participants' effectiveness in communicating their requests. Two raters blind to hypotheses and experimental condition rated the messages on two seven-point Likert scales (ranging from '1 = *not at all polite /persuasive*' to '7 = *very polite/persuasive*').

Social power did not affect politeness, $t(46) = .32$, $p = .753$, $d = .09$ ($M_{\text{low power}} = 5.46$, $SD = .85$; $M_{\text{high power}} = 5.39$, $SD = .66$) or persuasiveness, $t(46) = 1.51$, $p = .138$, $d = .43$ ($M_{\text{low power}} = 5.44$, $SD = .90$; $M_{\text{high power}} = 5.76$, $SD = .56$). If anything, there was a slight trend that less reflection among the powerful (versus powerless) appeared not to harm the persuasiveness of the e-mail messages. When controlling for politeness as the social dimension of the messages, social power even significantly enhanced persuasiveness of the e-mail request, $F(1, 45) = 4.75$, $p = .035$, $\eta_p^2 = .10$. In line with earlier research on social power and more effective goal striving (Guinote, 2007c), this finding thus indicates that (when

controlling for politeness) those high in power communicated their requests more effectively than those low in power.

Based on these results, we tested for potential indirect effects of social power affecting the persuasiveness of requests via the times spent on reflection or typing (i.e., the no-reflection index). For this purpose, we applied the procedure developed by Preacher and Hayes (2008) and calculated bootstrap confidence intervals based on 5000 bootstrap samples. In this procedure, a significant indirect effect can be assumed if the computed confidence interval does not include zero. Results provided evidence for a significant indirect effect of social power on persuasiveness through higher values on the no-reflection index when being in power ($B = .05$, $SE = .04$, CI $\alpha = .05$ [.001; 155]). Thus, social power tended to enhance values on the no-reflection index ($B = .01$, $SE = .01$, $p = .055$), which in turn tended to promote the persuasiveness of the messages ($B = 4.38$, $SE = 2.56$, $p = .094$). No such indirect effect was obtained when controlling for the politeness again ($B = .02$, $SE = .03$, CI $\alpha = .05$ [-.034; 094]); similarly, no other indirect effects of power with the no-reflection index and politeness or with the reflection index and either politeness or persuasiveness occurred.

In sum, the findings thus yield a first indication that power holders' tendency to engage in less reflection and focus more on taking action does not to come with decrements in effectiveness (here, composing a persuasive request that might get granted). In contrast, the findings indicated that power holders may be more effective and thus better able to attain their goals (cf., Gruenfeld et al., 2008; Guinote, 2007c). Notably, as participants high and low in power spent a similar length of total time on composing their requests (see Study 2.1), the results indicate that social power promoted a more effective use of time invested during goal striving. It should be noted, however, that these analyses were based on a study that was not initially and primarily conducted to test this prediction. Future studies should thus investigate this research question more directly.

General discussion of Chapter 2

Social power alters behavior, such as when individuals approach a situation, anticipate solving an assignment, or prepare decisions to be made. As power holders are generally less inhibited in initiating action (Galinsky et al., 2003; Keltner et al., 2003), focus more exclusively on goal attainment than the powerless (Guinote, 2007b, 2007c), and take less into account how they are being perceived by others (Lammers, Gordijn, et al., 2008), we expected that individuals high (versus low) in power engage in less reflection on subsequent

actions and potential outcomes when the option is given. This hypothesis was supported in a set of three studies. Findings consistently showed that reflection about an upcoming situation is diminished when the concept of high (versus low) power is activated.

To support the generalizability of the reported effects, the studies comprised various measures of individual reflection, including self-report, thought listing, as well as behavioral indicators, assessing reflection within a communication, a classroom, and a decision making context. In addition, the findings were obtained with regard to reflection on both interpersonal and individual tasks. Moreover, as a major strength, we used multiple manipulations of social power, thus supporting the causality of the effects of power. Assignments to high and low power roles, such as in Studies 2.1 and 2.2, provide the advantage of a strong and highly controlled power manipulation creating *similar* high and low power situations across all participants with a realistic organizational character. This manipulation, however, comes with the downside that undergraduate participants are put in previously *in*experienced power positions (Guinote & Phillips, 2010; Keltner et al., 2003) or may possibly connect their power roles to subsequent (ostensibly unrelated) tasks. In contrast, the experiential priming from Study 2.3 included a *personal* power experience and was even more clearly *un*related to the thought listing situation, but also accepts more potential variance in the past experiences participants recalled. Hence, the combination of manipulations allowed us to exploit the advantages of both types of manipulations and to rule out possible alternative explanations for the findings.

The results have implications for power research. Extending prior findings, the current research indicates that the general *action* orientation social power comes with (cf., Galinsky et al., 2003; Guinote, 2007c) is paralleled by a reduced tendency to *reflect* on one's behavior about upcoming situations and outcomes. In line with recent discussions (Smith & Galinsky, 2010), social power thus affected reflection in situations that were unrelated to individuals' power, indicating that the expectation (Studies 2.1 and 2.2) or experience (Study 2.3) of high versus low power are sufficient to produce this effect on individual reflection when facing an upcoming situation. Thus, being powerful (versus powerless) both facilitates prompt goal-directed action and diminishes reflection on potential consequences or side effects beyond the given power context. As we did not address the mechanisms in our studies, future research should investigate whether this effect is part of power holders' action orientation (Galinsky et al., 2003) and/or attention focus on focal goals (Guinote, 2007b).

More importantly, the results raise the question of functionality of the observed effects. The ability to act quickly is usually considered an efficient, goal-directed behavior, as

decisiveness and absence of doubt reduce the likelihood that individuals miss crucial opportunities for goal attainment (cf., Galinsky et al., 2003; Guinote, 2007c; Moskowitz, Skurnik, & Galinsky, 1999). Thus, power holders' tendency to make less use of options for reflection is, in general, likely to promote more effective goal attainment. The additional findings from Study 2.1 render first support for this notion, indicating that power holders' reduced reflection and increased focus on taking action might not imply a reduced likelihood to attain a goal, but instead may come along with even more effective behavior (here more persuasive communication). As previously outlined, future research should address this question more directly.

These benefits of prompt action notwithstanding, one can also imagine situations that *require* thorough deliberation beforehand, such as when carefully weighing alternatives and consequences before making a decision is beneficial in producing more accurate results (e.g., Gruenfeld & Hollingshead, 1993). This could also be the case when individuals have already faced prior failure and need to actively change their strategies to reach a goal in the future (cf., Epstude & Roese, 2008; Markman & McMullen, 2003). In these situations, a tendency to reflect less on subsequent behavior, but simply take action (again) instead, could prove as a disadvantage and bring about strong detriments for the individual as well as others.

Taken together, future research should investigate more explicitly whether power holders' readiness to act without much reflection beforehand does facilitate subsequent goal attainment as well as potential moderators of this effect. On the one hand, findings from Weick and Guinote (2010) indicate that power holders sometimes *disregard* secondary goal-related information, therefore failing to adequately plan and attain their goals on time. Hence, power holders may at times also show more dysfunctional behavior than the powerless by being overconfident and reflecting too little on tasks that require thorough deliberation (cf., Magee et al., 2005).

On the other hand, power holders more effectively and flexibly adapt their goal-directed behavior in line with the situation at hand than the powerless (cf., Gruenfeld et al., 2008; Guinote et al., 2002; Guinote, 2007c; Overbeck & Park, 2001). Hence, the powerful might be better able to *recognize* situations in which reflection before taking action is essential compared to their powerless counterparts. Thus, whereas powerless individuals may generally reflect more to prepare their actions, thereby delaying goal attainment when prompt action is required (cf., Galinsky et al., 2003; Guinote, 2007c), the powerful might engage in thorough reflection *only when required* in a situation, such as in the case of prior failure to reach a goal. Indeed, individuals especially engage in mental simulation of alternatives to *past*

events (i.e., generate counterfactual thoughts) when they find out that their previous behavior has been unsuccessful (e.g., Roese & Hur, 1997; Roese & Olson, 1997; Sanna & Turley-Ames, 2000), thereby learning how to attain their goals in the future (Morris & Moore, 2000; Smallman & Roese, 2009; for a review see Epstude & Roese, 2008). Put differently, one could imagine that power holders especially engage in reflection on their actions – potentially even to a greater extent than the powerless – when they face a need to change their actions after a failure in order to successfully attain a goal in the future. Future research should investigate this research question (see Chapter 3).

To conclude, social power affects the way individuals exploit options to think about upcoming situations and anticipate the likely outcomes they are about to face, such as when approaching other individuals for information or facing tasks to solve individually or in collaboration with others. While social power enhances individuals' proneness to act quickly without much deliberation, it also diminishes the tendency to reflect on the potential consequences of one's behavior before getting started on a course of action. Thus, it is especially those low in power that look before they leap, are careful before every step, and think twice before they act. This tendency to think ahead when being powerless might in some cases serve behavior preparation, but at the potential cost of delaying goal-directed action. In contrast, the tendency to reflect less when being in power might serve effective goal attainment as long as individuals face no demands to carefully reflect upon and prepare their behavior.

Chapter 3: Power and counterfactual thinking after failure – A need to prepare

Follow […] action with quiet reflection.
From the quiet reflection will come even more effective action.
-- Peter F. Drucker

Imagine a leader and a subordinate preparing a project proposal together. Both put a lot of effort into it, but ultimately the proposal is rejected. After events like this, individuals frequently generate counterfactual thoughts such as "What if I had prepared the information in more detail?" or "If only he had put more time into the project". Thereby, they juxtapose reality to an imagined and mostly better hypothetical state (Byrne, 1997; Roese, 1997). Such counterfactuals especially come to mind when *negative* (rather than neutral or positive) outcomes have been obtained, thus clearly indicating that prior actions have been *insufficient* for goal attainment (e.g., Roese & Hur, 1997; Roese & Olson, 1997; Sanna & Turley-Ames, 2000).

Reflecting in this and other ways about negative experiences provides a lot of learning potential (Daudelin, 1996). In a recent review on counterfactual thinking, Epstude and Roese (2008) conclude that by imagining what they could have done differently to improve the outcome, individuals gain valuable insights on how to regulate future actions (see also Markman & McMullen, 2003; Roese, 1997). Research provides evidence for this assumption. Generating counterfactuals facilitates behavioral intentions for the future (Morris & Moore, 2000; Smallman & Roese, 2009) and boosts subsequent performance, both on individual (Markman et al., 2008; Roese, 1994, 1997) and interpersonal tasks (i.e., negotiation; Kray et al., 2009). Counterfactual thinking thus represents a necessary means to regulate behavior and attain a goal after failure (cf., Epstude & Roese, 2008).

But who will generate more counterfactuals before taking action again (as in the opening example), the power holder or the less powerful individual? Social power is associated with the propensity to promptly take action rather than carefully reflect while pursuing goals (Galinsky et al., 2003; Guinote, 2007c; Magee, 2009; see also Chapter 2). However, in the current research, we reason that *prior failure* constitutes a condition where especially those high in power are motivated to reflect and thereby learn how to attain a goal in the future. Thus, the present research investigated how social power impacts on

counterfactual thinking about one's own (and cooperation partners') behavior after failure as a means to facilitate future goal attainment.

Social power and goal-directed behavior

Social power is defined as the capacity to control other individuals' outcomes (Fiske & Berdahl, 2007; Keltner et al., 2003). Hence, power renders individuals independent from rewards or punishments by others and provides freedom to act (Emerson, 1962; Fiske & Dépret, 1996; Keltner et al., 2003). Keltner and colleagues (2003) in their approach inhibition theory of power argued that power thus activates approach-related tendencies and leads to a focus on rewards, whereas being powerless activates inhibition-related tendencies and evokes a focus on potential threats or punishments (Keltner et al., 2003). Adding to this theorizing, Guinote (2007a, 2010b) argued in the situated focus theory that, as power holders need to pay less attention to threats and face less social constraints than the powerless (see also Schmid Mast et al., 2009), they can afford to focus more exclusively on their focal goals and make use of more flexible means to attain their goals.

Multiple findings support these predictions on power and goal-directed behavior. Power holders indeed exhibit more uninhibited action than the powerless (e.g., Galinsky et al., 2003; Ferguson et al., 2010), better distinguish between goal-relevant and irrelevant information (Guinote, 2007b; Smith & Trope, 2006), and demonstrate more variable and persistent behavior during goal pursuit (Guinote et al., 2002; Guinote, 2007c). Being in power thus facilitates behavior in a way consistent to whichever goal is being pursued (Gruenfeld et al., 2008; Guinote, 2007c, 2008; Overbeck & Park, 2001).

However, prior power research mainly focused on situations where individuals in general were *able to attain* their goals – provided that they sufficiently applied the goal-directed strategy in question. For example, individuals were able to select the suitable job applicant by carefully inspecting high and low instrumental targets (Gruenfeld et al., 2008), to individuate interaction partners by correctly memorizing individual information about them (Overbeck & Park, 2001), or to infer thoughts and feelings from other individuals on videotapes by closely paying attention to them (Schmid Mast et al., 2009). Despite power holders' enhanced goal focus, however, they will still occasionally *fail* to achieve desired outcomes during goal pursuit, that is, face a failure. In such situations, generating counterfactual thoughts about how one could have improved the outcome represents an effective way of learning how to adapt subsequent actions and attain a goal in the future (Epstude & Roese, 2008; Markman & McMullen, 2003). The question how social power

impacts on counterfactual thinking has, however, not been addressed so far. The present research seeks to fill this gap.

Social power and counterfactual thinking

As social power represents a feature of social relations (Fiske & Berdahl, 2007; Overbeck, 2010), powerful and powerless individuals frequently pursue goals (and may experience failure along the way) in social interactions with each other. Thus, when individuals high and low in power reflect on alternatives to a failure, counterfactual thoughts can have different *reference foci*: Individuals may focus their thoughts on their own behavior (e.g., "*I* could have given her that information earlier."), other individuals (e.g., "*He* could have asked for that information if he needed it."), or miscellaneous circumstances, such as the situation (e.g., "If only we had had more *time*."; cf., Epstude & Roese, 2008; Goerke et al., 2004).[3]

In particular those counterfactual thoughts focusing on the *self* rather than on other factors are assumed to facilitate behavioral intentions for future goal attainment, because insights about one's own behavior focus more strongly on self-enhancement and can be directly implemented by the individual in the future (cf., Epstude & Roese, 2008). Research by De Cremer and van Dijk (2010) supports the usefulness of self- in contrast to other-focused counterfactuals in interpersonal settings, in the sense that self-focused counterfactuals help to avoid an open conflict: When instructed to generate self-focused counterfactual thoughts, negotiators in public good dilemmas blamed fellow group members less for a failure and were less inclined to leave their group than when being instructed to generate other-focused counterfactuals about their partners' behavior. Based on this research, we propose that only self-focused, but not other-focused counterfactual thinking contributes to behavior regulation and subsequent goal attainment (cf. Epstude & Roese, 2008).

Besides the reference focus, the structure (additive versus subtractive) and the direction (upwards versus downwards) of counterfactuals can be considered, with additive (i.e., imagining what should have *done*) and upwards thoughts (i.e., imaging potential *better* outcomes) instead of subtractive (i.e., imagining what one should *not* have done) or downwards thoughts (i.e., imagining potential *worse* outcomes) facilitating intentions and subsequent performance (e.g., Kray et al., 2009; Roese, 1994). However, these types of counterfactuals have been previously studied in individual goal pursuit and represent the

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[3] Goerke et al. (2004) investigated the effect of strong to weak subordinate performance on power holders' self-focused counterfactuals, which might appear as related to the current research. However, neither the impact of *power* nor the case of shared failure *not* clearly caused by one's interaction partner was examined.

thoughts that individuals usually generate in face an individual failure (e.g., Markman et al., 1993; Roese & Olson, 1993b). Thus, the current research focuses on the *reference focus* of counterfactual thoughts, implying that they are mostly upwards and additive after failure; nonetheless, the direction and structure were taken into account in the empirical part of this research

But do power holders or the powerless engage more in self-focused counterfactuals after a failure? One the one hand, due to their independence from others, power holders might easily get away with not thinking about their behavior after failure and simply taking action again. On the other hand, however, power holders' enhanced goal focus (Guinote, 2007a, 2010b) and their asymmetric control over resources might induce a sense of control over outcomes and evoke feelings of responsibility for ensuring goal attainment, both of which have been linked to counterfactual thinking. Thus, in the following, we will discuss how power might influence counterfactual thinking on own actions after failure.

How power affects self-focused counterfactual thinking

Power holders by definition have control over resources, meaning that they have more diverse means on their hands than their powerless counterparts, which is likely to evoke a *subjective* sense of control over outcomes. Hence, social power may promote the experience of opportunities to influence outcomes and thereby guide individual behavior (Fast et al., 2009; Guinote, 2010b; Inesi et al., 2011; Scheepers, Ellemers, et al., in press). Indeed, Fast et al. (2009) demonstrated that power elevates the subjective sense of control, even to an illusory extent exceeding the *actual* higher control power comes with (e.g., control over the development of the economy). In other words, power induced a general sense of being able to control outcomes, including both outcomes one has actual control over and those going beyond, thus showing that actual and subjective control need to be distinguished in power research.

Sensing more control (i.e., that one *can* contribute to an outcome) during goal striving might in turn facilitate self-focused counterfactual thoughts on how one *could have* changed an outcome after failure. Research on counterfactual thinking after individual failure supports this notion (Markman et al., 1995; Roese & Olson, 1995). For example, in a scenario study by Roese and Olson (1995), individuals simulated alternatives to a failure a fictitious protagonist had encountered. Results revealed that (generally) more counterfactuals were generated if the protagonist had deliberately contributed to this negative outcome (high control) than if it was achieved by accident (low control). Note that previous research, including this study,

exclusively investigated perceived control and counterfactuals in the domain of *individual* goal attainment (e.g., when a student received a bad grade) instead of failure involving social interactions with others (e.g., when individuals jointly make a bad decision).

When applying these prior findings to failure in social contexts, one can conclude that after failure, power holders might generate more counterfactual thoughts on how they could have improved an outcome because they sense more control (i.e., opportunities that they actually could have done something differently). We thus propose that social power promotes self-focused counterfactuals by heightening the subjective sense of control over outcomes.

However, social power not only comprises control, but can also imply responsibility for outcomes during goal striving (cf., Chen et al., 2001; Sassenberg et al., 2011; Torelli & Shavitt, 2010; Zhong, Magee, Maddux, & Galinsky, 2006). The powerful frequently occupy positions of power because they have proven themselves to be competent. In addition, they act more autonomously than others during goal striving, but their performance is also more identifiable to others, all of which can induce feelings of responsibility (cf., DeWall et al., 2010; Hackman & Oldham, 1975; Overbeck & Park, 2001). Hence, those high in power might feel more strongly that they should make use of the resources they control and thereby contribute to goal attainment than the powerless. Certainly, feelings of responsibility and control are related, as they both can be triggered by power holders' asymmetric resource control. However, whereas experiencing a sense of control implies perceiving multiple *ways* how one *can* contribute to goal attainment, experiencing responsibility represents an experienced inner *obligation* or commitment that one *should* do so (De Hoogh & Den Hartog, 2008; Winter, 1992).

It could be assumed that the more responsible individuals feel for ensuring goal attainment, the more self-focused counterfactuals they generate when facing failure to do so. However, prior research does not support this prediction, but instead provides support for the sense of control as the mechanism how power enhances self-focused counterfactual thinking. First, Morris and Moore (2000) demonstrated that being held responsible by others can even diminish counterfactuals after individual failure. Notably, the authors examined *external* responsibility (i.e., accountability as the need to justify one's actions to others). Nonetheless, their findings point out potential limitations of feelings of responsibility contributing to counterfactual thinking. Second, findings from Rothermund, Bak, and Brandstädter (2005) highlight the crucial role of perceived *control* in promoting a self-critical (versus self-enhancing) evaluation of own behavior after failure. In their studies, individuals only evaluated negative personal characteristics self-critically (versus self-protectively) if they

perceived control over them. Finally, recent findings from Inesi and colleagues (2011) indicate that restoring individuals' control (e.g., by enhancing personal choice) compensates for the effects of low power, thus providing further evidence that the effects of social power on behavior are driven by the sense of control power comes with (Inesi et al., 2011).

Taken together, these findings suggest that after failure, social power leads to more self-focused (but not more other-focused) counterfactual thinking. Based on the findings outlined above, we expect this effect to be explained by the heightened sense of control resulting from high power, but not by feelings of responsibility. Therefore, we predict that power holders will generate more self-focused counterfactuals than individuals with lesser power (Hypothesis 1). Moreover, individuals with elevated power will experience higher control over outcomes than those low in power, which in turn will enhance self-focused counterfactual thinking (Hypothesis 2).

Self-focused counterfactual thinking as a goal-directed strategy

Notably, generating counterfactual thoughts about how one could have changed the outcome implies taking time to reflect on one's past behavior before engaging in the next course of action. Engaging in self-focused counterfactual thinking after failure thus implies phases of *in*action and careful deliberation (Armor & Taylor, 2003; Beilock & Lyons, 2009). As power holders are more ready to initiate action (Guinote, 2007c) without much deliberation on their behavior beforehand (cf., Galinsky et al., 2003; see also Chapter 2), our prediction that power enhances self-focused counterfactual thinking might at first sight seem to conflict with earlier findings.

First, however, research up to today mainly focused on behavior in the absence of a prior failure (e.g., Chapter 2; see above). Thus, whereas Chapter 2 focused on prefactual thinking, the current research focuses on counterfactual thinking after failure, which occurs both in response to concrete grounds that one's behavior needs to be adapted in order to attain a goal (cf., Epstude & Roese, 2008) and (in contrast to prefactual thoughts) depends on individuals' perceptions of control over outcomes (cf., Markman et al., 1995; Roese & Olson, 1995).

Second, research indicates that power holders use more *variable* means (Guinote, et al., 2002; Guinote, 2007a, 2010b) and adapt their behavior more effectively to situational affordances (Guinote, 2008; Overbeck & Park, 2001). Despite the fact that counterfactual thinking comprises phases of (apparent) inaction, it thus represents a necessary mechanism to *effectively* regulate behavior after failure (Epstude & Roese, 2008; Markman & McMullen,

2003), a process that usually supported when being in power (Guinote, 2007c). Hence, our hypotheses imply that in the special case of prior failure (as is the focus of the current research), power holders generate more self-focused counterfactuals than the powerless as an effective way to learn how to attain a goal in the future.

Recent findings from Karremans and Smith (2010) on social power and *rumination* about negative outcomes render first support for this prediction. In contrast to counterfactual thinking, rumination (i.e., uncontrollable thoughts circling around the negative experience) results in passivity after a failure and thereby conflicts with future goal attainment (Nolen-Hoeksema et al., 1994; Scott & McIntosh, 1999). Thus, the authors found that social power lessened ruminative thoughts and in turn promoted subsequent goal-directed action after a negative interpersonal experience (Karremans & Smith, 2010). Importantly, rumination describes a *dys*functional response to failure, whereas counterfactual thinking represents its functional counterpart. Hence, Karremans and Smith's research indicates that social power reduces thoughts that *conflict* with goal attainment after a failure, whereas our hypotheses predict that power likewise enhances thoughts that *facilitate* future goal-directed behavior. Thus, our hypotheses are in line with the assumption that power promotes more effective behavior regulation during goal pursuit (Guinote, 2007a, 2007c, 2010b).

The current research

The current research investigated how social power affects self- and other-focused counterfactual thinking after a failure. Additionally, the potential mediating roles of sense of control and perceived responsibility for outcomes were examined. Studies 3.1 and 3.2 tested the prediction that social power fosters self-focused, but not other-focused counterfactuals about negative outcomes in goal pursuit (Hypothesis 1) in a field and laboratory experiment, respectively. Study 3.3 tested the mediating role of sense of control between power and self-focused counterfactuals experimentally (Hypothesis 2) and ruled out feelings of responsibility as alternative mediator. In both Studies 3.2 and 3.3, power was manipulated via role assignment on the task individuals failed at. Thus, Study 3.4 replicated the results from the previous studies using power priming. In sum, to maximize the generalizability of findings, social power was either examined in natural contexts or implemented in a simulated organizational setting.

Besides the main focus on how power affects self-focused counterfactual thinking, we also researched the supposition that self-focused, but not other-focused counterfactual thinking facilitates behavioral intentions for the future, so as to have a rough indication for the

effectiveness of this type of counterfactuals for learning from failure (cf., Epstude & Roese, 2008). Thus, Studies 3.1, 3.3, and 3.4 also examined whether self-focused, but not other-focused counterfactuals relate to intentions for potential changes in one's future behavior.

Notably, our research is based on the assumption that counterfactual thinking goes beyond *causal attribution*, that is, attributions of accountability for letting a failure happen in the first place (Goerke et al., 2004; Mandel & Lehman, 1996). Though one could argue that generating self-focused counterfactuals (e.g., "I could have done something to prevent the failure") implies accepting some degree of internal attribution ("It was partly my fault"), causal attributions and counterfactual thoughts can be separated both theoretically and empirically. Causal attributions are concerned with the search for *actual causes* of negative outcomes (i.e., causality), whereas counterfactuals capture the search for *potential conditions* for outcome changes (i.e., preventability; Mandel & Lehman, 1996). Thus, when generating counterfactuals (versus causal attributions), the antecedents in focus are variable (versus stable) and individuals think about how a negative outcome could have been changed (versus why it occurred; cf., Goerke et al., 2004). Put differently, actual causes for an event do not necessarily represent preventable antecedents. Findings from Mandel and Lehman (1996) demonstrated that the causal attributions and counterfactual thoughts individuals generate about a situation indeed focus on different events. Thus, when individuals generate counterfactuals about how an outcome could have turned out differently (e.g., "I/He should have provided more information, then the decision would have been better."), they do not necessarily mutate the perceived cause of the outcome (e.g., "He/I made the wrong decision."; cf., Mandel & Lehman, 1996). To provide evidence for the distinct nature of the two concepts, we thus controlled for potential internal attribution effects in our research.

Study 3.1

In this study, we examined how power affects self-focused counterfactual thinking (Hypothesis 1). To ensure high external validity, Study 3.1 was conducted in naturally occurring power relations with supervisors and subordinates in organizational settings.

Method

Design and participants

A field survey with two conditions (low versus high power) was conducted. One-hundred and eight employees (79 female, 24 male, 7 participants did not indicate their gender, $M_{age} = 36.7$, $SD = 10.74$, range 21-60) completed an online questionnaire in exchange for

taking part in a lottery of five 20 € ($ 27) vouchers. Participants worked on average 35.6 hours (SD = 10.55) per week by employment contract and reported a mean job experience of 13.2 years (SD = 9.40). Twenty-six (23.6%) participants had a leadership position. Leaders had on average 26 subordinates (SD = 52.9). Average tenure within the current institution was 6.67 years (SD = 7.73). Participants were employed in a variety of domains, such as social services and welfare (22%), the industry (21%), education (8%), administration and human resource management (8%), science (7%), computing and information technology (7%), the public health sector (5%), finances (2%), and other occupational fields.[4]

Procedure

Participants were invited to take part in an online survey about "Communication at the workplace" that took about 10 minutes. After consenting to accede, participants were asked whether they had a leadership position. Then, they were instructed to recall one episode at work involving a social interaction where they had either high or low power and that had failed, that is, left them dissatisfied with the outcome. Participants in a leadership position were instructed to recall a failure in goal pursuit together with an employee subordinate to them (i.e., where they had *high* power). Participants who did not have a leadership position were asked to recall a failure with a supervisor superior to them (i.e., where they had *low* power).

Afterwards, participants in both conditions answered three control questions assessing characteristics of the situation recalled. To measure counterfactual thinking, participants were then asked to list as many thoughts about how this recalled interaction could have turned out differently as came to their mind. The instruction was adapted from earlier work on counterfactual thinking (Markman, Lindberg, Kray, & Galinsky, 2007; Roese, Hur, & Pennington, 1999). Instructions were as follows in italics for *low power* [in brackets for high power]:

> After negative experiences, people sometimes imagine how things might have turned out differently and would have led to another outcome. For example, after a car accident, someone might think "If the other driver had not driven that fast, the accident would not have taken place." Or, one might think "If only I had taken another route home, I would have not been involved in the accident." One could also think "At least I had my security belt on, otherwise I could have been seriously injured." or "At least, the other driver had a good insurance."
>
> Please recall this specific negative experience with *your supervisor* [your subordinate] in detail now and think about what could have been different in this situation and would have led

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[4] In all studies reported, no effects of or interactions with gender occurred. Thus, in the following, gender is not further discussed as a predictor.

to another interaction outcome. In the space below, please list your thoughts in short sentences. Please leave out any details that could identify you.

Afterwards, participants were asked to list the consequences of this specific interaction in another blank space. This served as a measure for behavioral intentions. Control variables, such as internal attribution of the failure, interdependence to the interaction partner, and demographic variables were assessed before participants could indicate an email address to take part in the lottery. Finally, participants were debriefed and thanked for participation.

Measures

Power. We checked whether participants had followed the instructions for recalling by asking them to indicate on two separate seven-point Likert scales how much power they had compared to their interaction partner and whether their own standing in hierarchy was lower or higher than their interaction partner's (ranging from 1 = *lower power than my interaction partner* to 7 = *higher power than my interaction partner*), $r(103) = .84$, $p < .001$.[5]

Counterfactual thoughts. The listed thoughts were coded by two independent raters (blind to hypotheses and condition) for self- versus other-focused counterfactuals. First, the total number of counterfactual thoughts was recorded. Thoughts were considered counterfactuals if they mentioned any changes in the antecedents and outcomes of the recalled interaction (e.g., by using terms such as "at least", "if only", "should have", "could have", etc.; cf., Roese & Olson, 1995). Then, the reference focus (self-focused, other-focused, or rest-category) of each counterfactual was coded, based on who or what the changed antecedents in the counterfactual thought referred to. Raters were instructed to classify counterfactuals referring to the participants themselves as self-focused (e.g., "*I* should have voiced my opinion in more detail.", "*I* could have asked for clarification of his instructions."), those that referred to the interaction partner as other-focused (e.g., "*He* should have paid more attention to what I was saying.", "If only *she* had given me more information."), and to put those that did not refer to either or both of them to the rest-category (e.g., "*We* would have needed more time."; for a similar procedure see Goerke et al., 2004; Roese & Olson, 1993a). Interrater agreement was good (Cohen's κ = .88; 96% agreement rate for categorizing counterfactuals; κ = .77; 84% agreement rate for the reference focus). Disagreements in

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[5] Seven participants in Study 3.1 provided only partial data on the last two pages of the survey. Thus, *N*s and degrees of freedom reported are lower for the manipulation check and control measures.

coding of counterfactuals were resolved by discussion with the author of the dissertation (cf., Roese et al., 1999; Roese & Olson, 1993a).[6]

Behavioral intentions. Participants' reported consequences were also coded by two blind raters for behavioral intentions for the future. Raters were instructed to only code consequences that implied participants' plans to do something differently in the future as behavioral intentions (e.g., "In the future, I will ask again in case I haven't understood a request."; $\kappa = .66$; 92% agreement rate). Similar to the procedure regarding counterfactuals, disagreements in coding of intentions were also resolved by discussion.

Control measures. *Three characteristics* of the recalled interaction were assessed to control for potential differences in the situations participants generated counterfactuals about. The items were scored on seven-point Likert scales (ranging from 1 = *totally disagree* to 7 = *totally agree*) measuring (a) dissatisfaction with the outcome of the recalled interaction, (b) importance of the recalled interaction for their work, and (c) frequency of similar negative events at work with one item each.

Moreover, *interdependence* with the interaction partner was assessed. Interdependence indicates how much a person's goal striving depends on somebody else and most likely varied across organizations. Hence, some participants in the sample might be more interdependent with their interaction partner than others, regardless of their own power position. As interdependence could have an additional effect on counterfactual thinking besides power, we controlled for it in all analyses. It was measured by five items (adapted from Van der Vegt, Emans, & Van De Vliert, 2001; Cronbach's $\alpha = .69$). A sample item was "I have to obtain information and advice from *this supervisor* [this subordinate] in order to complete my work". *Internal attribution* of the failure was assessed with one item where participants indicated if they thought they had contributed to the failure themselves. Interdependence and internal attribution were assessed using a seven-point Likert scale (ranging from 1 = *completely disagree* to 7 = *completely agree*).

Results

Check of power instructions

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[6] Counterfactuals for all four studies were also coded for the *direction* (upwards versus downwards) and the *structure* (additive versus subtractive) of the thoughts. Across all studies, participants' counterfactuals about the failure were almost exclusively upwards ($M = 94.4$ %) and additive ($M = 83.3$ %; for similar findings, see Markman et al., 1993; Roese & Olson, 1993b). Thus, as frequencies in some categories (e.g., other-focused – subtractive) would have been too low, we did not report crossed categories (for a similar procedure see, e.g., De Cremer & van Dijk, 2010; Goerke et al., 2004; Kray et al., 2010). However, including only self-focused – upwards – additive counterfactuals as dependent measures in the analyses resulted in similar findings.

We first tested whether participants had actually recalled an episode in which they had low versus high power. Results demonstrated that participants asked to recall a low power episode reported having less power in the specific situation ($M = 2.12$, $SD = 1.33$) than participants recalling a high power episode ($M = 6.40$, $SD = .85$), $t(101) = 13.73$, $p < .001$, $d = 3.83$. Thus, participants had followed the instructions to recall an episode of either low or high power.

Preliminary analyses

On average, participants reported mid-level interdependence with their interaction partner ($M = 3.21$, $SD = .88$). The mean interdependence did not differ between participants recalling a low versus high power episode ($M_{low\ power} = 3.25$, $SD = .90$; $M_{high\ power} = 3.07$, $SD = .78$), $t(102) = .84$, $p = .401$, $d = .21$. Furthermore, no differences regarding the importance of the recalled interaction or frequency of similar events between the conditions were obtained (both $|ts| < .62$). However, participants in the low power condition tended to report slightly higher dissatisfaction with the recalled interaction ($M = 5.67$, $SD = 1.71$) than participants in the high power condition ($M = 4.96$, $SD = 1.97$), $t(106) = 1.77$, $p = .079$, $d = .38$. Hence, we included dissatisfaction with the recalled interaction as a covariate.

As participants could not be randomly assigned to power conditions, we also checked whether participants recalling a high power episode differed in demographic characteristics from individuals recalling a low power episode. There were no significant differences regarding age, job experience (both $|ts| < .51$), or gender, $\chi^2(1) = .15$, $N = 103$, $p = .697$. Thus, the subsamples of subordinates and leaders matched in age (subordinates: $M_{age} = 36.4$, $SD = 11.01$, range 21-60; leaders: $M_{age} = 37.8$, $SD = 9.70$, range 26-58), job experience (subordinates: $M_{job\ experience} = 13.3$, $SD = 9.71$, range 0.5-35; leaders: $M_{job\ experience} = 12.8$, $SD = 8.24$, range 2-30), and gender (subordinates: 75.0% female, leaders: 61.5% female; for a similar procedure see Weick & Guinote, 2008). Including demographics as covariates into the analyses did not change the results; thus, they were excluded from the analyses reported.

Counterfactual thinking

We expected participants high in power to show more self-focused, but not more other-focused counterfactual thinking than participants low in power (Hypothesis 1). To test Hypothesis 1, an analysis of covariance (ANCOVA) was conducted, including power (low versus high) as independent variable, self-focused counterfactuals as dependent variable, and dissatisfaction with the recalled situation as covariate. In addition, we controlled for the number of other-focused counterfactuals when using self-focused counterfactuals as the dependent variable and vice versa. This was done because the total amount of self- and other-

focused counterfactuals reflects various theoretical concepts that are not of interest to the current research, such as participants' overall motivation to generate counterfactuals or the number of ideas for alternative antecedents.

As predicted, there was a main effect of power condition, $F(1, 97) = 7.64$, $p = .007$, $\eta_p^2 = .07$. In line with the hypothesis, individuals generated more self-focused counterfactuals when having high power ($M = .87$, $SD = .87$) than when having low power ($M = .33$, $SD = .66$). Conversely, the analogous ANCOVA with other-focused counterfactuals as dependent variable indicated that high power ($M = .22$, $SD = .67$) and low power individuals ($M = .69$, $SD = .87$) did not significantly differ in the amount of other-focused counterfactuals generated, $F(1, 97) = 1.32$, $p = .254$, $\eta_p^2 = .01$, see Table 3.1. [7]

To rule out the alternative explanation that this effect of power is due to an overlap between internal attribution and self-focused counterfactual thinking about the event, we also conducted the analysis including internal attribution as a covariate, which did not change the results, $F(1, 93) = 9.65$, $p = .003$, $\eta_p^2 = .09$. In sum, these results support Hypothesis 1.

Table 3.1

Self- and other-focused counterfactuals as a function of power (Study 3.1, N =108).

	Self-focused counterfactuals		Other-focused counterfactuals	
	M	*SD*	*M*	*SD*
Low power	.33	.66	.69	.87
High power	.87	.87	.22	.67

Behavioral intentions

As an additional assumption, we expected self-focused, but not other-focused counterfactual thinking to facilitate behavioral intentions for the future. Thus, a regression analysis was conducted with self- and other-focused counterfactual thinking as the predictors and number of behavioral intentions as criterion. As before, dissatisfaction with the situation was again included as control variable. In line with the predictions, self-focused counterfactuals co-occurred with more behavioral intentions ($\beta = .29$, $p = .012$), whereas other-focused counterfactual thinking was unrelated to behavioral intentions ($\beta = .03$, $p = .810$), $\Delta R^2 = .08$, $F(1,81) = 6.61$, $p = .012$. Again, the relationship between self-focused

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[7] Across all studies reported, data analyses including a 2 (Power: low versus high) × 2 (Type of counterfactual: self- versus other-focused) mixed model analysis of variance with repeated measurement on the last factor yielded similar results.

counterfactuals and behavioral intentions remained significant when controlling for internal attribution (β = .27, p = .014), ΔR^2 = .07, $F(1,79)$ = 6.34, p = .014. Thus, in line with the predictions, the more self-focused counterfactuals individuals generated, the more intentions for the future were deduced. No such effect was obtained for other-focused counterfactuals.

This relationship between self-focused counterfactuals and behavioral intentions together with the relationship between power and self-focused counterfactuals suggests that there might be an indirect effect of power via self-focused counterfactual thinking on behavioral intentions. To test for this indirect effect, we applied the procedure developed by Preacher and Hayes (2008) and calculated bootstrap confidence intervals based on 5000 bootstrap samples. In this procedure, if the computed confidence interval does not include zero, the effect is considered to be substantially different from zero and a significant indirect effect can be concluded. Results revealed an indirect effect of power on behavioral intentions through self-focused counterfactual thinking (B = .09, SE = .07, CI α = .05 [.008; .307]). Hence, self-focused counterfactuals served as the linking mechanism between individuals' power and behavioral intentions for the future.

Discussion

In sum, the results supported Hypothesis 1. Participants generated more counterfactuals about how they themselves could have improved a failed interaction when they had high compared to low power. Self-focused counterfactuals, in turn, were related to more behavioral intentions for future goal pursuit. As a major strength of this study, high and low power individuals were investigated in a *natural* work setting. Additionally, individuals generated counterfactual thoughts about *actually* experienced failures in their work life, which warrants high external validity and supports the generalizability of findings to various power and failure settings in organizational contexts.

However, counterfactuals were not assessed directly after the failure in this study, which might have led to memory biases when generating counterfactuals and behavioral intentions. In addition, social power was not experimentally manipulated but investigated in terms of actual leadership positions, which may have been a cause for the unexpected effect on other-focused counterfactual thinking. Thus, the correlational nature of our data does not allow for conclusions about causality, though the results were obtained while controlling for individual differences (other than their actual power) between high and low power participants. Study 3.2 was designed to address these weaknesses in a controlled laboratory environment.

Study 3.2

To avoid the retrospective nature of the design in Study 3.1, Study 3.2 implemented a situation with a negative outcome obtained together with another individual in the laboratory. Moreover, power was experimentally manipulated using a simulated organizational setting and simulated interaction between high and low power individuals to allow for better conclusions about the causal effect of power on self-focused counterfactuals.

Method

Design and participants

An experiment with two conditions (low versus high power) was conducted in which participants took part in an ostensible dyadic e-mail interaction. One-hundred and nine undergraduate students participated in this study. Data from four participants was excluded because two people expressed suspicion about the power manipulation or the existence of the ostensible interaction partner and two failed to follow the instructions. In sum, data from 105 participants (64 female, 41 male, M_{age} = 23.35 years, SD = 2.88, age range: 19-31) was analyzed. Participants received 8 Euros (approximately $11) as compensation.

Procedure

Participants were recruited for an experiment on E-mail communication. Upon arrival in the laboratory, participants were seated individually within semi-private cubicles. Sessions were run with up to six participants. All instructions were given on a computer screen. After consenting to accede, participants were told that they were randomly assigned to an interaction partner from another lab and followed up on the screen how this (ostensible) online connection was established. First, power was manipulated. Second, participants solved an investment task together with their ostensible interaction partner (extending the task used in Study 2.2). Third, participants received standardized negative feedback on their joint investments. Then, dependent and control measures were taken. Finally, participants were probed for suspicion, debriefed, and thanked for participation. For reasons of readability, as follows first the overall investment task is described. Afterwards, the power manipulation (which partly relies on the investment task) is presented in more detail.

Investment task. Participants were informed that one member of each dyad would act as the manager (high power condition) of an investment company and the other as the manager's assistant (low power condition). Regarding the joint task, they were told that they would make two rounds of stock investments in their dyad. However, the second task did not take place and was only announced in order to assess counterfactual thinking while the

participants expected a continued interaction within the dyad. The actual investment task was adapted from Markman and Tetlock (2000). Participants received information about six different stocks. The stock information contained a short description of each company, results from the last year (i.e., revenue, net income, net profit margin, and average growth rate) and a prognosis for the following six months. The material was designed in a way that it suggested reasons for, as well as against, investing in each company. Participants were asked to select three stocks that seemed most promising to them. They exchanged information via e-mail with their interaction partner and then came to a joint decision on the three stocks the company would invest in.

After their decision, feedback on the investments was provided. Feedback in both power conditions was standardized in regard to two aspects. First, to create a negative interaction outcome, all participants were told one investment was a success and two investments were a failure. Second, to match the number of failed decisions of both the manager and the assistant, the feedback indicated that participants themselves, as well as their interaction partner, had each chosen one successful and two unsuccessful stocks, respectively. Participants received separate feedback about each chosen stock via graphs depicting the respective development over the following year.[8] The x-axis of the graphs plotted the 12 months of the following year, the y-axis indicated the stock price. Participants were informed about the success or failure of each investment with a short statement above the graph (for a similar procedure see Markman & Tetlock, 2000). Afterwards, a final graph gave an overview about the development of all six stocks that had been available. It was clearly visible that, in total, three stocks were a success (one of them was selected by the interaction partners and the other two were unselected) and the other three were a failure (two of them selected by the interaction partners and the other one unselected).

Power manipulation. The power manipulation via role assignment was adapted from Bruins et al. (1999; see also Galinsky et al., 2003, Experiment 1; Gruenfeld et al., 2008, Experiment 3; Guinote et al., 2002, Study 1; Overbeck & Park, 2001; Schmid Mast et al., 2009, Study 1). Participants were first asked to fill in a short 'leadership questionnaire', presumably assessing their qualities for the manager and the assistant position. This questionnaire consisted of 14 items assessing locus of control (Krampen, 1979) and four self-generated items measuring participants' experience with stock investments. Then, the computer presumably compared their answers to the interaction partner's and participants

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[8] The experiment was conducted in 2009. Due to the market crisis and the majority of stocks indicating losses at that time, the information participants received about the stocks depicted the development from 2006 to 2007 and the feedback simulated the presumable actual development in the following 12 months (2007 to 2008).

were informed about their role assignment. This assignment served as the power manipulation and was in fact randomized. The roles were designed in a way that the levels of power were realized as differences in outcome control, where high power participants had control over the final decision and low power participants lacked such decision control (for a similar procedure, see Bruins et al, 1999). Participants read a short role description on screen. Instructions for the *low power* condition were as follows:

> Your task as the manager's assistant is to carefully examine the available stocks and make a preliminary decision for the manager. You will then send your *recommendations* via e-mail to the manager. Your recommendations provide a useful basis for the manager and serve to prepare his final decision as well as possible. The manager's task is to make a *final decision* in which stocks the company actually invests. The manager is able to accept or reject your recommendations and is entitled to invest in other stocks instead.
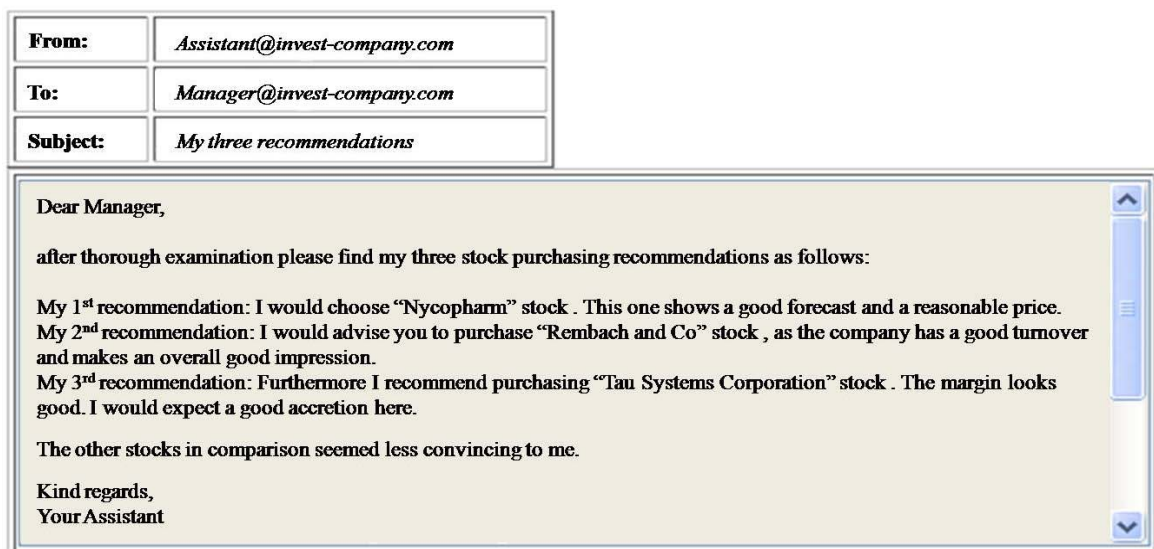
Participants in the *high power* condition read the following instructions:

> Your task as the manager of the investment company is to make a *final decision* in which stocks your company actually invests. Your assistant's task is to support you and, thereby, to carefully examine information about the available stocks, make a preliminary decision, and send his *recommendations* via e-mail to you. The assistant's recommendations provide a useful basis for you and serve to prepare your decision as well as possible. You are able to accept or reject the assistant's recommendations and you are entitled to invest in other stocks instead.

In line with these instructions, participants in the *low power* condition then checked information about the stocks and made their preliminary decision. They marked their three selected stocks on screen and composed an e-mail to the manager giving reasons for their recommendations. While waiting for the reply, they answered some filler questions and were then automatically forwarded to the manager's e-mail. The manager's reply was preprogrammed and participants were told the manager had accepted two of their recommendations and rejected one of them (see Figure 3.1). After reading the reply, participants received feedback about their three investments. Participants in the low power condition learned that the one recommendation the manager had rejected would have been a success, but that the stock the manager had chosen instead was a success as well. They were further informed that the two accepted recommendations were both a failure.

Participants in the *high power* position were first asked to wait for the e-mail with the assistant's recommendations and answered some filler questions in the meantime. They were then automatically forwarded to the assistant's standardized e-mail containing three

recommendations (see Figure 3.2). They were instructed to read the e-mail and, if they wanted to, were able to look at the stock information themselves. Afterwards, they made the final investment decision by marking on screen which recommendations they wanted to accept or reject. High power participants were entitled to accept up to all three recommendations. For each rejected recommendation, they indicated which stock they chose alternatively. Participants then composed a reply informing the assistant about their final decision. After sending the e-mail, they received feedback about their three investments. Feedback for high power participants depended on the respective decision they had made, that is, how many recommendations they had accepted. This was done to make sure that the feedback was parallel to that received in the low power condition. High power participants, thus, also learned that one joint investment was successful and two were not, and that each partner had chosen one successful and two unsuccessful stocks (see Figure 3.3).

From:	*Assistant@invest-company.com*
To:	*Manager@invest-company.com*
Subject:	*My three recommendations*

Dear Manager,

after thorough examination please find my three stock purchasing recommendations as follows:

My 1st recommendation: I would choose "Nycopharm" stock . This one shows a good forecast and a reasonable price.
My 2nd recommendation: I would advise you to purchase "Rembach and Co" stock , as the company has a good turnover and makes an overall good impression.
My 3rd recommendation: Furthermore I recommend purchasing "Tau Systems Corporation" stock . The margin looks good. I would expect a good accretion here.

The other stocks in comparison seemed less convincing to me.

Kind regards,
Your Assistant

Continue

Figure 3.1. *Standardized e-mail from the assistant to the manager containing the assistant's recommendations (received in the high power condition; Study 3.2, N = 105)*
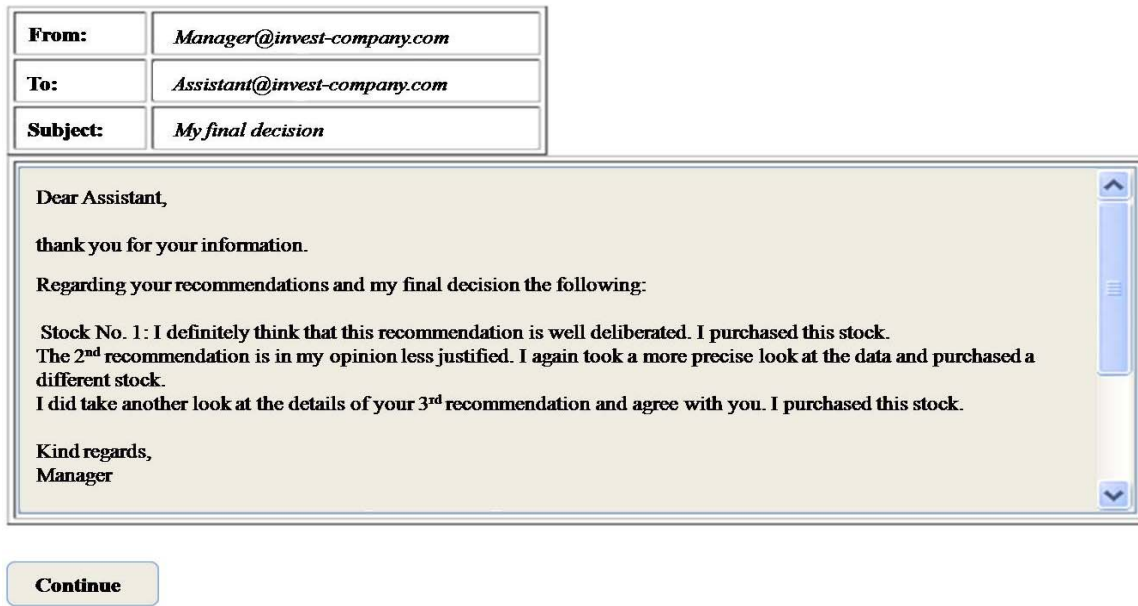
Figure 3.2. *Standardized e-mail from the manager to the assistant (received in the low power condition, Study 3.2, N = 105)*
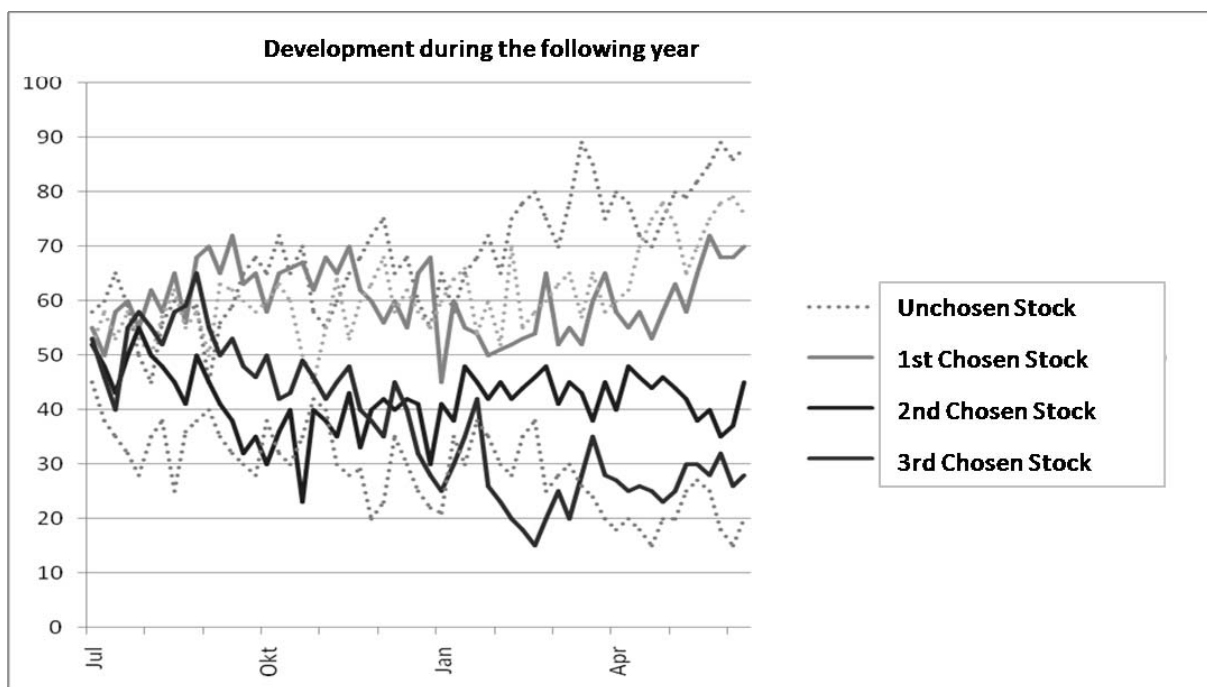

Figure 3.3. *Example for standardized failure feedback (Study 3.2, N = 105)*

Measures

With the exception of the measure for self- and other-focused counterfactuals, all items had to be answered on a seven-point Likert scale (ranging from 1 = *totally disagree* to 7 = *totally agree*). As a manipulation check, two items assessed whether participants felt they

had more *power* in the interaction than their partner and whether they felt they held the leading role during the interaction, $r(105) = .83$, $p < .001$.

Participants' *thought listings* were coded by two blind raters for self-focused (e.g., "I could have taken the prognosis more into account.") versus other-focused counterfactuals (e.g., "Maybe he should not have chosen the first stock.") following the same procedure as in Study 3.1. Interrater agreement was high (Cohen's $\kappa = .80$; 91% agreement rate for the number of counterfactuals; $\kappa = .68$; 76% agreement rate for the reference focus). In addition, the time participants spent on generating counterfactual thoughts was logged as an additional indicator for the assumption that high power participants do not simply take action more quickly after the failure than low power participants, but also take their time to generate counterfactuals. *Internal attribution* was assessed with the same item as in Study 3.1.

Results

Manipulation check

A *t*-test demonstrated that high power participants in the manager role reported higher power in the interaction ($M = 6.06$, $SD = .96$) than low power participants in the assistant role ($M = 2.62$, $SD = 1.23$), $t(103) = 15.98$, $p < .001$, $d = 3.12$. Thus, the power differences were successfully implemented.

Counterfactual thinking

Hypothesis 1 proposed that power leads to more self-focused, but not to more other-focused, counterfactual thinking. This assumption was tested in an ANCOVA following the procedure from Study 3.1. Thus, again other-focused counterfactuals generated served as a covariate. Results yielded a main effect of power condition, $F(1, 102) = 4.90$, $p = .029$, $\eta_p^2 = .05$. Participants high in power indeed generated more self-focused counterfactuals ($M = .53$, $SD = .78$) than participants low in power ($M = .24$, $SD = .51$). As in Study 3.1, this effect remained significant when controlling for internal attribution of the failure, $F(1, 101) = 4.46$, $p = .037$, $\eta_p^2 = .04$. Surprisingly, in this study, individuals high in power also generated less other-focused counterfactuals ($M = .20$, $SD = .40$) than individuals low in power ($M = .53$, $SD = .82$), $F(1,102) = 6.71$, $p = .011$, $\eta_p^2 = .06$ (see Table 3.2).

Furthermore, there was no effect of power on the time individuals spent on generating counterfactuals before moving to the (ostensible) next round of tasks, $t(103) = .83$, $p = .408$, $d = .16$. Thus, participants high in power were not faster in taking action again after the failure ($M = 138.62$ seconds, $SD = 56.67$) than low power participants ($M = 149.81$ seconds, $SD = 79.99$). In sum, results thus showed that, in line with Hypothesis 1, power enhanced self-

focused counterfactual thinking and, in addition, also led to less other-focused counterfactuals. [9]

Table 3.2

Self- and other-focused counterfactuals as a function of power (Study 3.2, N =105).

	Self-focused counterfactuals		Other-focused counterfactuals	
	M	SD	M	SD
Low power	.24	.51	.53	.82
High power	.53	.78	.20	.40

Discussion

In this study, we tested whether power enhances self-focused counterfactual thinking in a controlled laboratory environment. Again, results rendered support for Hypothesis 1 and demonstrated that individuals high in power generated more self-focused counterfactuals than individuals low in power, replicating the findings of Study 3.1. Rendering additional support for the assumption that after failure, individuals high in power do not simply take action again more quickly than the powerless, but also engage in reflection on the past, power did not affect the time spent on generating counterfactual thoughts. By means of the experimental manipulation, Study 3.2 goes beyond Study 3.1 and strengthens the assumption of a causal effect of power on self-focused counterfactuals after failure.

Unexpectedly, power also reduced other-focused counterfactual thinking. We assume this effect to be, at least in part, caused by the feedback participants received concerning the outcomes of their investment decision. The feedback was optimized to be parallel for dyad members high and low in power concerning (1) the outcome of the dyad (one good and two bad investments) and (2) the individual choices (again one good and two bad choices each). However, the feedback accordingly indicated that the low power dyad members actively selected 70% of the bad investments. This suggested to participants that dyad members in the

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[9] In an additional analysis, we investigated the potential moderating role of negative affect with regard to the failed investments. Negative affect was measured by eight mood-state adjectives (cf., Markman & Tetlock, 2000; $\alpha = .77$). Results yielded a significant interaction between negative affect and power condition when predicting self-focused counterfactuals ($\beta = .20$, $p = .047$). Simple slope analyses (Aiken & West, 1991) demonstrated that high power individuals generated more self-focused counterfactuals than low power individuals when experiencing high negative affect ($\beta = .40$, $p = .005$), but not when experiencing low negative affect ($\beta = -.01$, $p = .935$). This effect was replicated in Study 3.3. This moderation validated our assumption that perceived *failure* contributes to the effect that power enhances self-focused counterfactual thinking.

low power role contributed more actively to the joint failure than dyad members in the high power role. Study 3.3 eliminated this issue by balancing the active choices of bad investments between high and low power dyad members (each 50%), while upholding the criterion that the outcome of the dyad was in each case one good and two bad investments. Additionally, in Study 3.3 we tested the hypothesis that power enhances self-focused counterfactuals by leading to an increased sense of control over outcomes (Hypothesis 2), but not by enhancing feelings of responsibility for contributing to goal attainment.

Study 3.3

To replicate the results from Study 3.2, we conducted another experiment. In Study 3.3, participants' feedback was adapted in a way that it was matched to the final decision *outcome*, indicating that each dyad member had actively contributed to one failed investment in the final decision, rather than matching the feedback to the decision making process. Thereby, we expected the effect of power on other-focused counterfactuals to diminish. Additionally, to test the mediating mechanism, Study 3.3 assessed individuals' sense of control and perceived responsibility and tested both potential mediators simultaneously.

Method

Design and participants

An experiment with two conditions (low versus high power) was conducted. In total, 82 undergraduate students participated in this experiment. Two participants were excluded from the analyses because they expressed suspicion about our hypotheses. Thus, data from 80 participants (57 female, 23 male, M_{age} = 24.21 years, SD = 2.92, age range: 19-32) was analyzed. Participants received 8 Euros (approximately $11) for compensation.

Procedure

The procedure was a replication of Study 3.2 with three alterations. First, the feedback participants received about their investments in this study was slightly altered in order to match feedback about the final decision outcome in both conditions. Instead of balancing the number of selected unsuccessful stocks in both the managers' and the assistants' decision making process (second criterion in Study 3.2), we matched feedback in both conditions so that all participants were informed they had *actively* contributed to the final investment in one unsuccessful stock. So, participants in the low power condition were told they had actively recommended one unsuccessful and two successful stocks. They then read that the manager had accepted the unsuccessful stock and one of the two successful stocks. The second

successful stock was rejected and the manager had instead chosen an unsuccessful one. Participants in the high power condition were also informed that they had actively chosen one unsuccessful stock. The other two chosen stocks were described as one being successful and one being unsuccessful.[10] As second alteration, in order to assess participants' behavioral intentions for the next interaction, they were asked to list anything they planned to do differently during the upcoming second task. Finally, participants' sense of control and perceived responsibility for the decision outcome were measured as potential mediators.

Measures

All items were rated on a seven-point Likert scale ranging from '1 = *totally disagree*' to '7 = *totally agree*'. The *power* manipulation check used the same two items as in Study 3.2, $r(80) = .79$, $p < .001$. Participants' listed *thoughts* again were coded by two blind raters for counterfactuals (yes/no) and reference focus (self-focused, other-focused, and rest-category, see Studies 3.1 and 3.2). Interrater agreement was good (Cohen's $\kappa = .69$, 85% agreement rate for the total number of counterfactuals; $\kappa = .81$, 86% agreement rate for the reference focus). Again, we recorded the time spent on generating counterfactuals before moving on with the task. The listed *intentions* for the second task were also coded by two blind raters for behavioral intentions for the future, applying the same procedure as in Study 3.1 ($\kappa = .78$, 90% agreement rate).

Sense of control over the joint outcome was measured using three items (e.g., 'I had control over handling the joint task', 'I could strongly influence the final decision'). Cronbach's alpha was .84. *Perceived responsibility* for the outcome was assessed with two items ('I felt responsible for making a good decision', 'I sensed it was my responsibility to make the right decision'; $r(80) = .57$, $p < .001$). *Internal attribution* was assessed with the same item as in Studies 3.1 and 3.2.

Results

Manipulation check

A *t*-test yielded a significant effect of experimental condition on perceived power: Participants in the low power condition reported lower power in the interaction ($M = 2.65$, $SD = 1.39$) than individuals in the high power condition ($M = 5.46$, $SD = 1.49$), $t(78) = 8.74$, $p < .001$, $d = 1.95$. Hence, the power manipulation was successful.

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[10] Exceptions from this rule had to be made for high power participants that (a) accepted all recommendations ($N = 3$) and that (b) changed all recommendations (and invested in the other three stocks instead; $N = 1$). Excluding these cases from the analyses did not lead to a significant change of results.

Counterfactual thinking

We predicted that high power participants would generate more self-focused counterfactuals than low power participants (Hypothesis 1). An ANCOVA following the same procedure as in Studies 3.1 and 3.2 yielded a main effect of power condition, $F(1, 77) = 4.00$, $p = .049$, $\eta_p^2 = .05$. As predicted, high power participants again generated more self-focused counterfactuals ($M = .51$, $SD = .76$) than low power participants ($M = .20$, $SD = .46$; $p = .022$). This effect remained when including internal attribution as a covariate, $F(1, 76) = 4.40$, $p = .039$, $\eta_p^2 = .06$. Conversely, the analogous ANCOVA on other-focused counterfactuals showed that no effect of power occurred, $F(1, 77) = .79$, $p = .376$, $\eta_p^2 = .01$ ($M_{\text{high power}} = .36$, $SD = .63$; $M_{\text{low power}} = .56$, $SD = .67$; see Table 3.3).

Table 3.3

Self- and other-focused counterfactuals as a function of power (Study 3.3, N = 80).

	Self-focused counterfactuals		*Other-focused counterfactuals*	
	M	*SD*	*M*	*SD*
Low power	.20	.46	.56	.67
High power	.51	.76	.36	.63

Further analyses indicated that, in line with Study 3.2, power did not affect the time individuals spent on generating counterfactuals and, thus, did not promote faster action after the failure, $t(78) = 1.42$, $p = .160$, $d = .56$ ($M_{\text{high power}} = 167.64$ seconds, $SD = 10.47$; $M_{\text{low power}} = 139.61$ seconds, $SD = 69.56$). Thus, in line with Hypothesis 1, power enhanced self-focused counterfactual thinking after failure, but did not affect other-focused counterfactuals.

Mediation analysis

To test whether sense of control (in contrast to perceived responsibility) explains the effect of power on self-focused counterfactuals (Hypothesis 2), we performed a mediation analysis. This analysis followed the procedure developed by Preacher and Hayes (2008) and calculated a bootstrap confidence interval based on 5000 bootstrap samples. Power served as the independent variable, self-focused counterfactual thinking was the dependent variable, sense of control and perceived responsibility represented the two tested mediators, and other-focused counterfactuals were included as a control variable.

When testing the two potential mediators simultaneously, the analysis supported the proposed mediation by sense of control ($B = .35$, $SE = .13$, CI $\alpha = .05$ [.109; .609]), but not by

perceived responsibility ($B = -.08$, $SE = .11$, CI $\alpha = .05$ [-.303; .129]). Results of the mediation analysis are presented in Figure 3.4. The results remained significant when testing sense of control separately as a single mediator ($B = .29$, $SE = .10$, CI $\alpha = .05$ [.105; .508]). Hence, high power fostered sense of control ($B = 2.53$, $SE = .28$, $p < .001$), and sense of control, in turn, positively affected self-focused counterfactual thinking ($B = .14$, $SE = .07$, $p = .042$). In addition, the direct effect of power on self-focused counterfactual thinking ($B = .28$, $SE = .14$, $p = .049$) significantly decreased when the mediator perceived control was included in the analysis ($B = .01$, $SE = .20$, $p = .959$). In contrast, power also enhanced perceived responsibility for the outcome ($B = 1.75$, $SE = .27$, $p < .001$), but perceived responsibility did not predict the number of self-focused counterfactuals individuals generated ($B = -.05$, $SE = .07$, $p = .492$).
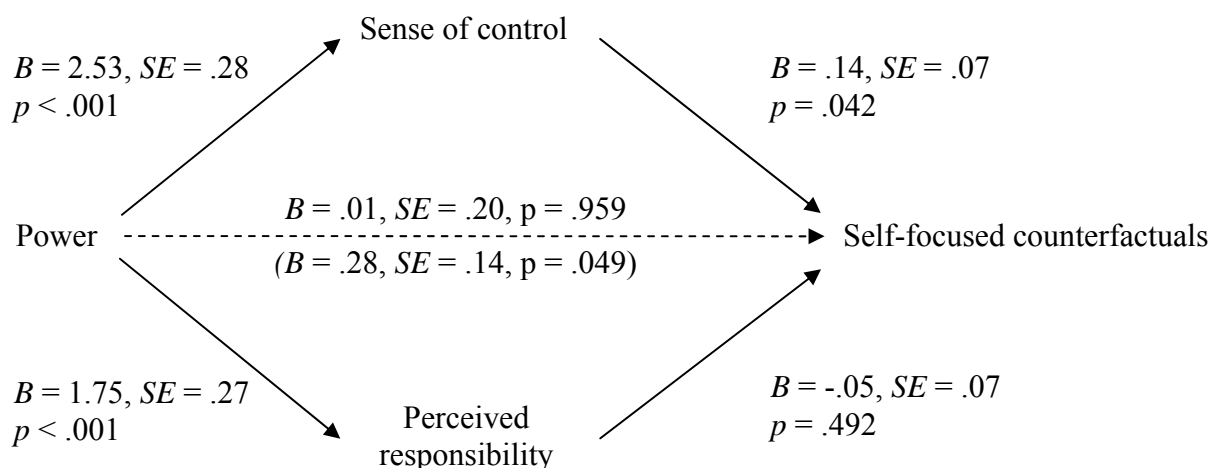
Figure 3.4. *Mediation effect for sense of control and perceived responsibility mediating the effect of power on self-focused counterfactuals (Study 3.3, N = 80)*

Behavioral intentions

Moreover, we proposed that self-focused counterfactuals would facilitate behavioral intentions for the future. As in Study 3.1, this assumption was tested in additional analyses by regressing behavioral intentions on self-focused counterfactuals. Other-focused counterfactuals served as a control variable. Results yielded a positive relationship between self-focused counterfactuals and behavioral intentions ($\beta = .36$, $p = .002$); as assumed, other-focused counterfactuals did not predict behavioral intentions ($\beta = .06$, $p = .588$), $\Delta R^2 = .12$, $F(2, 77) = 5.24$, $p = .007$. The relation with self-focused counterfactuals remained significant when controlling for internal attribution effects ($\beta = .35$, $p = .002$), $\Delta R^2 = .12$, $F(3, 76) = 3.47$,

p = .020. Thus, the more self-focused counterfactuals individuals generated, the more behavioral intentions for future interactions were reported.

In sum, as in Study 3.1, results revealed that power led to more self-focused counterfactuals, and self-focused counterfactuals were positively related to behavioral intentions. Therefore, we tested for indirect effects of power on behavioral intentions via self-focused counterfactual thinking by calculating bootstrap confidence intervals (Preacher & Hayes, 2008) based on 5000 bootstrap samples. The indirect effect was significant (B = .11, SE = .06, CI α = .05 [.014; .263]), indicating that self-focused counterfactual thinking again served as the linking mechanism between individuals' power and their behavioral intentions for the future.

Discussion

This study replicated results from the first two studies and yielded information about the proposed mechanism of how social power enhances self-focused counterfactual thinking. Consistent with Studies 3.1 and 3.2, and in line with Hypothesis 1, individuals high in power generated more counterfactuals focusing on their own behavior than individuals low in power (see also Studies 3.1 and 3.2). This study also replicated additional findings from Study 3.1 and supported our assumption that self-focused, but not other-focused, counterfactuals facilitate behavioral intentions for the future. Therefore, the more self-focused counterfactuals individuals generated about the failed interaction, the more they intended to change their own behavior during future goal pursuit.

Moreover, results from this experiment served to explain the process of how power affects self-focused counterfactual thinking. As predicted, power increased feelings of control over the outcome, which in turn fostered counterfactual thinking about one's own behavior (Hypothesis 2). In contrast, perceived responsibility for the interaction outcome did not explain why the powerful generated more self-focused counterfactuals than the powerless. Put together, these findings indicate that perceiving power as high *control* over outcomes, that is, increased opportunities to change an outcome, is crucial in fostering self-focused counterfactual thinking after failure.

In addition, as the negative feedback that individuals received was distributed equally among managers and assistants (i.e., those high and low in power), the results concerning other-focused counterfactuals shifted such that there was no effect of power on other-focused counterfactuals observed in Study 3.3. Thus, the influence of power on other-focused counterfactuals in Study 3.2 was likely provoked by this specific feature of the manipulation.

However, two aspects of the hitherto presented studies need further discussion. First, Studies 3.2 and 3.3 demonstrated that the effects of power on self-focused counterfactual thinking emerge when individuals perform tasks that are in line with their powerless (i.e., assisting the manager) and powerful roles (i.e., making decisions). These studies thus implemented a task that is very much related to real life power settings, providing strong support for the external validity of the findings. However, due to this task design, Studies 3.2 and 3.3 cannot rule out the possibility that differences in high and low power participants' counterfactuals might have been (partly) driven by the *different tasks* individuals were given. Thus, it would be interesting to test whether the effects of power on self-focused counterfactuals also emerge when power holders and powerless individuals perform the same task. To address this point, a power priming procedure was used.

Second, one could assume that the negative feedback participants received in the studies created a potentially threatening situation, especially for high power individuals which had been assigned to their roles based on the ostensible leadership questionnaire. Though we explicitly created a *stable* (versus unstable) power role assignment across the rounds of investment tasks thereby reducing potential threats to power holders' position (Maner & Mead, 2010), we also assessed how participants perceived the negative feedback in the following study to rule out this possibility.

Study 3.4

In this study, power was primed by first assigning participants to their respective role. Then, however, all participants completed an identical task individually (for a similar procedure see Galinsky, et al., 2003; Guinote, 2007c; Schmid Mast, et al., 2009). Though this procedure did not include social interaction and no shared negative outcome individuals generated counterfactuals about, the power priming allowed to rule out potential alternative explanations resulting from different roles.

Method

Design and participants

An experiment with two conditions (low versus high power) was conducted. Fifty-four undergraduate students participated in this experiment. Two participants were excluded who already knew the investment task and expressed strong suspicion about the fictitious nature of the feedback and power role assignment. Thus, data from fifty-two participants was analyzed

(35 female, 17 male, M_{age} = 25.21 years, SD = 5.22, age range: 19-50). Participants received 8 Euros (approximately \$11) for compensation.

Procedure

The procedure was identical to Studies 3.2 and 3.3, apart from one change: The role assignment in this study served as the power priming: Participants received their role assignment and were then instructed to complete the first investment task alone. Only the (ostensible) second task was announced to be completed in interaction with their partner. Therefore, after being assigned their role, each participant performed the *identical* stock investment task alone. After receiving negative feedback about their performance in this task (adapted from Study 3.3, again two bad and one good investment), they were asked to generate counterfactuals about this negative outcome and list behavioral intentions for the second task, using similar instructions as in Studies 3.2 and 3.3.

Measures

All items were rated on a seven-point Likert scale ranging from '1 = *completely disagree*' to '7 = *completely agree*'. The manipulation check used the same two items as before, $r(52) = .80, p < .001$. Following the procedure of the previous studies, *counterfactuals* and *behavioral intentions* were coded by two blind raters. As in this study participants performed the investment task alone and no social interaction took place, counterfactual thoughts could only focus on participants' own behavior (self-focused) or on other circumstances (rest-category), but not on the other participant's behavior (other-focused). Hence, participants' listed thoughts were coded for counterfactuals (yes/no) and reference focus (self-focused versus rest category; Cohen's κ = .93, 97% agreement rate for the total number of counterfactuals; κ = .89, 97% agreement rate for the reference focus).

Participants' consequences drawn for the second task were coded for behavioral intentions for the future using the same procedure as in Studies 3.1 and 3.3 (κ = .90, 96% agreement rate). *Internal attribution* of the failure was assessed with the same item as in Studies 3.1-3.3. Feedback perception as an indication for whether participants experienced the feedback more negative depending on their power was assessed with one item ("How do you evaluate the results from your investments?") on a scale from '1 = *negative*' to '7 = *positive*'.

Results

Preliminary analyses

An *t*-test yielded a significant effect of power on the manipulation check, $t(50) = 10.75$, $p < .001$, $d = 2.98$. High power participants expected to have more power ($M = 6.02$, $SD = .90$) than low power participants ($M = 2.98$, $SD = 1.13$). Thus, the power manipulation was successfully implemented.

To rule out the possibility that power affected self-focused counterfactuals due to a more negative perception of the feedback when being primed with high (versus low) power, additional analyses were conducted. As expected, power did not affect participants' perception of the feedback received, $t(50) = .36$, $p = .721$, $d = .09$. Thus, high power participants did not perceive the feedback on their investments as more negative ($M = 2.77$, $SD = .99$) than low power participants ($M = 2.88$, $SD = 1.31$).

Moreover, we tested whether the power priming heightened participants' expectations about obtaining a successful outcome in a pretest with a different sample ($N = 88$; assessed with two items on a seven-point Likert scale). Findings indeed indicated no effect of the power priming on outcome expectations, $F(1, 86) = 1.05$, $p = .307$, $\eta_p^2 = .01$ (for similar findings see also Chapter 2, Study 2.2). Therefore, participants had similar expectations about obtaining a positive outcome on the task in the high power ($M = 4.65$, $SD = 1.17$) and low power condition ($M = 4.89$, $SD = 1.00$). In sum, these findings indicate that power neither heightened outcome expectations nor lead to a more negative feedback perception, thereby ruling out alternative explanations for the effects of power on self-focused counterfactual thinking.

Counterfactual thinking

We predicted that power enhances self-focused counterfactual thinking. As no (ostensible) interaction with participants' partner occurred in this study, participants could not generate other-focused counterfactuals to include in the analyses. Hence, in this study, we included the total number of counterfactual thoughts as a covariate for the effect of power on self-focused counterfactuals (again to control for effects of participants' overall motivation to generate counterfactuals and the number of ideas for alternative antecedents). An analysis of covariance (ANCOVA) indicated a significant effect of power on self-focused counterfactuals, $F(1, 49) = 4.18$, $p = .046$, $\eta_p^2 = .08$. The results indicated that participants primed with low power generated less self-focused counterfactuals ($M = .88$, $SD = .1.14$) than participants primed with high power ($M = 1.08$, $SD = .80$). This pattern again did not change when including internal attribution as a covariate, $F(1, 48) = 3.99$, $p = .051$, $\eta_p^2 = .08$. Again,

social power did not promote faster action after the failure, $t(50) = 1.02$, $p = .313$, $d = .28$. Thus, participants spent a similar amount of time on generating thoughts after the failure in the low ($M = 109.36$ seconds, $SD = 62.60$) and high power condition ($M = 127.33$ seconds, $SD = 64.64$).

Behavioral intentions

In line with our theorizing and results from Studies 3.1 and 3.3, we assumed that self-focused counterfactuals positively predict the number of behavioral intentions individuals generated. A regression analysis including the total number of counterfactuals and the total number of consequences as control variables supported this assumption: Self-focused counterfactuals were positively related to behavioral intentions ($\beta = .39$, $p = .023$). In sum, power promoted self-focused counterfactual thinking, which in turn predicted behavioral intentions for the future. Again, these findings indicate that there might be an indirect effect of power on behavioral intentions via self-focused counterfactuals, which we again tested via bootstrapping (see Studies 3.1 and 3.3). The indirect effect of power on behavioral intentions via self-focused counterfactuals was significant ($B = .03$, $SE = .02$, CI $\alpha = .05$ [.001; .085]; Preacher & Hayes, 2008). Therefore, as in Studies 3.1 and 3.3, self-focused counterfactual thinking served as the linking mechanism between individuals' power and behavioral intentions for the future.

Discussion

The results from Study 3.4 replicated results from the previous studies, indicating that power enhances counterfactuals about one's own behavior after failure, which in turn facilitates behavioral intentions for the future. As a major strength, this study addressed potential alternative explanations why powerful participants in Studies 3.2 and 3.3 generated more self-focused counterfactuals than the powerless by priming power as high control over outcomes. As all participants performed the identical investment task and only expected to interact within their assigned roles during the second task round, alternative explanations due to different task structures can be ruled out. Moreover, the findings from this study indicate that simply activating the experience of power (i.e., the mere anticipation of having power and, thus, high control over outcomes in a following task) is sufficient to enhance self-focused counterfactual thoughts: Participants in the high power condition did *not actually have* more power (i.e., control) in the task they performed than in the low power condition, but they still generated more thoughts about alternatives to their own behavior after failure.

General discussion of Chapter 3

After negative outcomes during goal pursuit, individuals often reflect on how a better outcome could have been achieved and thereby learn how to regulate their future actions (cf., Epstude & Roese, 2008). The aim of the present research was to examine whether, after negative outcomes in goal attainment within social contexts, it is the individual *high* or *low* in power that reflects more on his or her behavior. Furthermore, we examined whether the effect of power on self-focused counterfactuals is mediated by feelings of control or perceived responsibility for an interaction outcome. Results from four studies indicated that power enhances counterfactual thinking about one's own behavior after failure. This effect was mediated by feelings of control: Power holders sensed more control over shared outcomes, which subsequently fostered self-focused counterfactual thinking. The results also suggest that power does not promote reflection on interaction partners' behavior. Additional analyses demonstrated that self-focused, but not other-focused counterfactual thinking is related to behavioral intentions, thus lending support for the assumption that counterfactual thinking focusing on the *self* is functional for behavior regulation (cf., Epstude & Roese, 2008) within the domain of social interactions.

The ability to regulate one's behavior during cooperation in order to fulfill organizational goals is a central component of employee performance (Pulakos et al., 2000). The present results indicate that counterfactual thinking can enhance such behavior regulation during joint goal pursuit. As this was not the main focus of the current research and our studies only yield correlational data, future research should aim at establishing causality in this relation to further highlight the effectiveness of self-focused counterfactual thinking for subsequent behavior in social interactions.

To our knowledge, our studies are the first to investigate how social power impacts on counterfactual thinking. In a previous study with managers, Goerke et al. (2004) investigated counterfactual thoughts in the context of power and demonstrated that power holders reflect more or less on their behavior in the past, depending on the subordinate's respective performance level. However, the authors in this study examined conditions under which (only) *power holders* reflect on alternatives to their actions, and thus did not address the impact of power. In contrast, our research focused on how power affects self-focused counterfactuals and on situations where the circumstances leading to a negative outcome are more complex and *not* directly caused by the interaction partner.

Data for the first study was obtained in the context of everyday life with individuals in actual high and low power positions and real interactions at the workplace, thus showing high

external validity. The second and third study further supported the hypotheses in a controlled laboratory environment in an ostensible social interaction context. Study 3.4 again replicated the results using a priming procedure, thereby ruling out potential alternative explanations. Altogether, the set of studies tests the hypothesis with high internal as well as external validity.

As a potential limitation, our studies exclusively focused on counterfactual thinking about *negative* outcomes in goal pursuit, that is, situations where a high deficit is apparent. Individuals might also reflect on positive outcomes in goal pursuit, such as when thinking about positive experiences after work (Binnewies, Sonnentag, & Mojza, 2008; Fritz & Sonnentag, 2006) and telling others about one's success (Gable, Reis, Impett, & Asher, 2004; Langston, 1994), which might enhance individual self-esteem and well-being. However, research has demonstrated that counterfactual thinking is much more likely after failure than after success (e.g., Roese & Hur, 1997; Roese & Olson, 1997; Sanna & Turley-Ames, 2000). Nonetheless, future research should address counterfactual thinking after joint success (e.g., in cases of unexpected positive outcomes in goal pursuit).

Across the four studies, using multiple operationalizations and manipulations of social power, we demonstrated that power enhances self-focused counterfactual thinking after failure. These results are in line with the situated focus theory of power (Guinote, 2007a, 2010b) as they indicate that power facilitates self-focused counterfactual thinking as a way of effective behavior regulation during goal pursuit. Thus, power not only facilitates prompt *action* during goal pursuit (cf., Galinsky et al., 2003), but also enhances individuals' thinking about past behavior before taking the next step of action.

This finding is particularly interesting in respect of the approach inhibition theory of power (Keltner et al., 2003), as critically reflecting on one's past actions represents a behavior comprising phases of (apparent) inaction and deliberation. Our findings indicate that power holders' goal-focus (cf., Guinote, 2007a, 2010b), diverse use in goal-consistent means (cf., Guinote et al., 2002, Guinote, 2007c), and increased perception of opportunities for goal attainment (cf., Gruenfeld et al., 2008) can extend to means implying phases of (apparent) *in*action and deliberative behavior preparation when facing negative outcomes. During goal pursuit, power holders thus (also) show tendencies of *in*action if they are functional for goal attainment.

In all studies, power enhanced self-focused counterfactuals independently of internal attribution, thus demonstrating that this effect of power was not caused by an overlap between self-focused counterfactual thinking (i.e., thoughts about what one could have done

differently) and internal attribution of a negative outcome (i.e., estimating whether it was one's own *fault*). Likewise, the effect of power on self-focused counterfactuals was not driven by feelings of responsibility. Power holders felt more responsible for contributing to a good outcome than powerless individuals. However, adding to prior findings on accountability for mistakes towards others (Morris & Moore, 2000), experiencing responsibility for outcomes did not foster self-focused counterfactual thinking. Thus, in accordance with prior assumptions (e.g., DeWall et al., 2010), social power does evoke feelings of responsibility for outcomes (see also Scheepers, Ellemers, et al., in press), but the results indicate that this effect does not necessarily facilitate goal-directed behavior in the context studied here. Instead, our findings demonstrated the crucial role of sense of control (cf., Inesi et al., 2011) in explaining how power enhanced self-focused counterfactual thinking.

As the effect on self-focused counterfactuals also occurred when individuals were primed with power, the mere experience of power as high control over outcomes was sufficient to produce this effect. Though providing additional evidence for our hypothesis, this finding also raises the question whether power and the sometimes *illusory* sense of control resulting from it (cf., Fast et al., 2009) may at times lead to self-focused counterfactuals about actually uncontrollable negative outcomes, or if, in a goal-directed way, power holders also more easily realize when a goal needs to be abandoned after inevitable failure. This question should be addressed in future research.

To conclude, individuals collaborating across power hierarchies will at times face situations where a (collective) negative outcome occurs and goals remain unaccomplished. The present research investigated how individuals high and low in power contemplate about failure, thereby applying self-focused counterfactual thinking as a functional way of behavior regulation to power research and goal pursuit within social interactions. When facing a failure, especially those with elevated power reflect on their past behavior and thereby appear to gain insights on how to achieve a better outcome in the future. This effect can be explained by a heightened sense of being able to control outcomes, resulting from high power. Thus, when striving for goal attainment and dealing with failure along the way, being powerful has a functional effect on individuals' cognitions that might contribute to subsequent goal attainment.

Chapter 4: General Discussion

The current dissertation addressed the research question how social power impacts on reflection during goal pursuit, more specifically, prefactual thinking before learning about any outcomes as well as counterfactual thinking in the case of failure. Thereby, the dissertation for the first time brought together social psychological research on the impact of social power and research on pre- and counterfactual thinking as a way of reflecting on behavior during goal pursuit.

The first empirical part, *Chapter2*, focused on how social power affects prefactual thinking, that is, when individuals face upcoming situations without knowing any outcomes yet. The findings demonstrated that prior to making decisions and solving tasks, individuals especially reflect on alternatives to potential actions and outcomes when being low (versus high) in power and, hence, focus less on promptly taking action. This pertained to both interpersonal contexts (i.e., posing requests to communication partners as well as beginning a joint project) and individual tasks where no more (or less) powerful interaction partner was involved. Effects were not based on potentially increased outcome expectations or enhanced mood due to the power priming. In sum, this chapter demonstrated that, when outcomes are unknown providing no indication that one's behavior may be insufficient, the powerful reflect less beforehand and focus more on initiating goal-directed action than the powerless. Additional analyses yielded a first indication that this effect of social power does not come with decrements, but may instead imply more effective behavior (i.e., more persuasive communication). Going beyond earlier research associating power with immediate action (Galinsky et al., 2003) as well as social targets' inferences on power and action (Magee, 2009), this chapter demonstrates that power holders indeed engage in less reflection than the powerless with regard to unknown outcomes while pursuing their goals. In addition, the findings accentuate social power as being a precondition of prefactual thinking in social contexts.

In contrast, the second empirical part, *Chapter 3*, demonstrated that social power in turn promotes counterfactual thinking on own behavior in the special case of prior failure, that is, indicators pointing out that prior actions and events did not produce the desired outcome yet. Power holders generated more counterfactuals on how they could have contributed to a better outcome than the powerless when facing failure. In addition, after the failure, social power no longer accelerated subsequent goal-directed action (in contrast to Chapter 2). The powerful generated more self-focused thoughts than the powerless because they experienced

more control, that is, opportunities to change the outcome. This effect was, however, neither driven by feelings of responsibility that one should contribute to goal attainment nor by causal attribution of the failure to the self. Additional findings rendered first support for the functionality of this effect of power, demonstrating that the more self-focused thoughts were generated, the more behavioral intentions were derived for the future. Taken together, this chapter demonstrated that after failure, those with elevated power reflect more on alternatives to their behavior than the powerless thereby facilitating behavioral intentions as a way of learning from the past.

To conclude, this dissertation showed that social power affects the way individuals reflect prior to taking goal-directed action (again). Whereas those high in power make *less* use of options to reflect (i.e., generate less prefactuals) than the powerless as long as consequences of their actions are unknown, they reflect *more* extensively on alternatives to their own behavior (i.e., generate more self-focused counterfactuals) than the powerless when prior failure actually signals the demand to regulate one's actions and, thereby, appear to better learn how to reach a goal in the future. In the following, I will first discuss strengths and limitations of the empirical parts (Chapters 2 and 3), both with regard to the power manipulations implemented and the measures for pre- and counterfactual thinking. Afterwards, implications of the findings for research on social power and research on pre- and counterfactuals thinking will be outlined. Finally, implications for practice will be concluded.

Strengths and limitations

Social power as a predictor

As a major strength with regard to investigating social power, the current research applied a diversity of power manipulations and measures. This was done with the aim of maximizing the external validity of the findings thereby addressing a lack of earlier research on natural power contexts. These manipulations and measures ranged from actual power roles and role assignments to power priming, thus complementing each other to strengthen the inferences made. Some findings were obtained in an organizational setting with natural powerful and powerless individuals (Study 3.1). This context allowed for testing the hypotheses across a multitude of real power situations and failure experiences among a sample possessing several years of job experience in their current positions. Hence, this study directly addressed shortcomings of experimental research where inexperienced individuals are given power only for a short period of time (cf., Keltner et al., 2003; Overbeck, 2010). As a

potential limitation, Chapter 2 did not address the hypothesis in such a natural power setting (but see additional data reported below).

Transferring an analogical context to the lab replicated findings under more standardized power, task, and failure conditions. This comprised realistic simulations of written communication within power roles (Studies 3.2 and 3.3) as well as (only) announced interactions (Studies 2.1, 2.2, and 3.4) and experiential power priming (Study 2.3). The latter studies implemented even more controlled conditions, assessing reflection on identical tasks beyond the given power situation. Taken together, this empirical approach provides evidence for the generalizability of findings to natural power contexts and, at the same time, replicated findings under conditions of high internal validity to test for causality and rule out alternative explanations.

Notably, the studies focused on high versus low social power, not including a control (e.g., equal power) condition. This focus was chosen in line with a large body of power research (e.g., Carney et al., 2010; Guinote, 2007b, 2007c, 2008, 2010a; Huang et al., 2010; Lammers, Galinsky, Gordijn, & Otten, 2008; Overbeck & Park, 2001; Scheepers, de Wit, et al., in press; Scheepers, Ellemers, et al., in press; Schmid Mast & Hall, 2003; Slabu & Guinote, 2010). The scarce research including control conditions without any reference to power or by implementing an equal power setting yielded inconsistent findings, demonstrating that low power can have decreasing effects (e.g., Willis, Guinote, & Rodríguez-Bailón, 2010; Study 2) and that high power can have increasing effects in comparison to a control group (e.g., DeWall et al., 2010; Schmid Mast et al., 2009); however, only few studies find both effects, especially in the same study (cf., Smith & Trope, 2006). In part, these inconsistent findings might be due to the difficulty to generate adequate, neutral control conditions in the first place that are of similar extremity to the low and high power condition (e.g., when using experiential priming; cf. Smith & Trope, 2006) and do not trigger some insecurity or powerlessness (e.g., when leaving control group participants in the dark about their role assignment for some time; DeWall et al., 2010). Hence, an alternative to control groups is to assess the general sense of power (e.g., Anderson, John, & Keltner, 2005) as a continuous predictor to provide support for a linear relationship between social power and the respective behavior (e.g., Anderson & Berdahl, 2002, Study 1; Karremans & Smith, 2010; Weick & Guinote, 2010, Study 4), but with the downside of implying self-report and yielding only correlational findings. As in the present studies (i.e., Chapter 3), social power promoted self-focused counterfactual thinking by enhancing the sense of control, one could presume a continuously increasing amount of self-focused counterfactual thinking with an

increasing amount of social power (and, thus, an enhanced sense of control). Nonetheless, investigating the effects of social power including an adequate control condition (or such a continuous measure) remains a next step for future research.

In addition, three characteristics of the power manipulations used may warrant consideration. First, power is frequently manipulated as *direct* outcome control where the powerful explicitly determine others' resources or evaluate their performance (e.g., Galinsky et al., 2003; Guinote, 2007b). In addition to this direct control, I also used manipulations implying more *in*direct control over others' outcomes by means of controlling final decisions of the dyad (e.g., Bruins et al., 2009; Scheepers, Ellemers, et al., in press). Modelled after real-life contexts, this manipulation does not provide the powerful with absolute control, but enables the powerless to contribute in some parts to the shared decision (e.g., Overbeck, Tiedens, & Brion, 2006). Hence, the effects were also obtained with manipulations distributing control between power holders and the powerless more softly.

Second, though in Chapter 3, the power manipulation and counterfactual measure in the priming study (Study 3.4) were *factually* independent (i.e., all participants reflected on the identical individually performed task), both pertained to the investment context. Thus, participants may have in some way connected their power role to the individual task they performed. If such a connection was made, this would question the generalizability of the findings from Study 3.4 to contexts completely *un*related to one's power. Addressing this concern, substantial evidence from prior research as well as findings from Chapter 2 clearly demonstrate that power has similar effects in both related *and* unrelated contexts (e.g., Gruenfeld et al., 2008; Karremans & Smith, 2010; Weick & Guinote, 2008; for an overview see Smith & Galinsky, 2010). Moreover, the impact of power on reflection in this chapter was driven by the heightened sense of control, an effect of power that has also been demonstrated across contexts and with other power manipulations (Fast et al., 2009). Taken together, this evidence provides no reason to assume that the effect of power on self-focused counterfactual thinking is limited to the given power context. Nonetheless, a fruitful step for future research would be to focus less on external validity (as was the aim of this dissertation), but to replicate the findings under even more controlled priming conditions.

Third, following established experimental procedures, the manipulations using role assignments were allegedly based on individual *skills* on a leadership questionnaire (for a similar procedure see Anderson & Berdahl, 2002; DeWall et al., 2010; Galinsky et al., 2003, 2008; Guinote et al., 2002; Guinote, 2007b, 2007c; Overbeck & Park, 2001). This procedure maximizes credibility of manipulations, as power positions in real life are often occupied due

to superior competence or knowledge (cf., French & Raven, 1959; Overbeck & Park, 2001). On the downside, an assignment based on skills may not only create power, but possibly induce responsibility for outcomes and heighten own expectations about obtaining a success. Thus, the failures individuals experienced (Chapter 3) may have been more surprising or negative for those high (versus low) in power. However, the findings provide evidence against such an effect, as the power manipulations used did not affect outcome expectations (Chapters 2 and 3) or the feedback perception (Chapter 3). Likewise, the effect of power on self-focused counterfactuals after failure (Chapter 3) was not driven by responsibility (i.e., feeling responsible for ensuring success) or internal attribution (i.e., considering the failure one's own fault). Furthermore, those studies *lacking* such an explicit reference to skills (Study 3.1 and 2.3) produced similar effects. Thus, it is unlikely that the effects of social power obtained with role assignments were influenced by this feature of the manipulation.

As an additional strength of the current research, Chapter 3 identified the sense of control as the mediating mechanism, thereby contributing to our understanding of the *process* why social power promoted self-focused counterfactual thoughts after failure. Thus, the current findings go beyond mere main effects in power research (cf., Overbeck & Park, 2001). To distinguish this proposed mechanism from related other potential mechanisms, both the sense of control and feelings of responsibility were examined simultaneously, with the latter representing a concept that has been recently discussed (e.g., DeWall et al., 2010; Overbeck & Park, 2001; Zhong et al., 2006) but so far largely unaddressed in power research (cf., Sassenberg et al., 2011). As both mediators were measured, future research could investigate the mechanisms by orthogonally manipulating power and control. Related to this issue, the attentive reader might have noticed that social power (as factual control over resources) is closely linked to the sense of control. However, social power and (the sense of) control differ in a way that social power generates a more *general* (at times even illusory) sense of control over outcomes, both when individuals do not actually *have* power in a situation and extending to outcomes that can be out of power holders' *factual* reach (Fast et al., 2009). Thus, social power and control need to be distinguished, with social power representing a predictor of individuals' general sense of control over outcomes.

Assessing pre- and counterfactual thinking

Throughout Chapters 2 and 3, reflection as pre- and counterfactual thinking was assessed in individual and interpersonal settings ranging from (simulated) e-mail communication to imagined classroom and real organizational tasks, and pertaining to both

unknown, momentary and more familiar, continuous contexts. Likewise, Chapter 3 comprised standardized failure situations individuals reflected on, holding all features of the failure constant across conditions, as well as multiple real-life failures in the organizational context. The consistency of findings thus yields strong empirical support for the generalizability of findings on pre- and counterfactual thinking across different situations of goal pursuit.

Again, three characteristics of the empirical approach to study pre- and counterfactual thinking may warrant further discussion. First, in line with prior research, pre- and counterfactual thoughts were assessed via thought listing. Therefore, the studies employed established instructions requesting individuals to list all thoughts that came up to their minds *without* giving any hint about a specific direction, structure, or reference focus (e.g., Roese et al., 1999; Sanna, 1996, 1998). Nonetheless, this measure comprised self-report and may raise concerns about potential social desirability effects or whether participants simply followed thought listing instructions. In particular, one could suspect powerful persons to be more attentive to the task (cf., Guinote, 2008), thus listing more thoughts than the powerless as part of the instructions. To address these concerns, the thought listing was either carefully embedded within an elaborate setting (e.g., the investment task) to minimize its appearance as the measure of interest or was completely separated from the power manipulation (i.e., in the priming studies). Furthermore, Chapter 2 included additional measures of reflection by means of behavioral data, yielding similar effects as the thought listing. Finally, providing perhaps the strongest indication against this proposition, findings from Chapter 2 and 3 in sum clearly demonstrate that social power enhanced self-focused counterfactual thinking, but diminished prefactual thinking. If the power manipulation had simply induced participants to follow instructions more carefully and, thus, to list as many thoughts as possible, one would have expected the powerful to generate more counterfactual *and* more prefactual thoughts than the powerless, which was not the case. Put together, the effects of social power were most likely not caused by task instructions or social desirability.

Second, I tested the notion that social power promotes reflection on alternatives only when required – that is, in case of prior failure (see Chapter 3), but not when outcomes are still unknown (see Chapter 2) – in two *separate* sets of studies. In combination, the hypotheses from Chapters 2 and 3 propose that the situation (prefactual/unknown outcomes versus counterfactual/prior failure) moderates the impact of social power on reflection on alternatives. Ideally, one would therefore also test this moderation within *one* study. To address this issue, I performed an additional study with managers and subordinates ($Ns = 81$ and 97) implementing a 2 (low versus high power) × 2 (pre- versus counterfactual) design

(Scholl & Sassenberg, unpublished data). This field study implemented a similar procedure as Study 3.1. Participants either listed thoughts about a past failure at work of high versus low power (counterfactual condition; see Study 3.1) or about an upcoming situation of high versus low power where the outcomes were still unknown (prefactual condition). In line with Chapters 2 and 3, it was predicted that social power diminishes thoughts about own actions in the *prefactual* condition, but promotes such thoughts in the *counterfactual* condition. The findings supported this interaction of social power and thought condition on the number of thoughts generated; this interaction was also replicated in an experimental study (see also Scholl & Sassenberg, unpublished data). Results demonstrated that power holders indeed generated less (prefactual) thoughts on own actions than low power individuals when outcomes were unknown, whereas they generated more (counterfactual) thoughts on own actions than the powerless after failure. These findings thus support the hypotheses of Chapters 2 and 3 within *one* study and replicated findings of Chapter 2 in a field setting. As next steps, additional experiments should strengthen these results even further.[11]

Third and related to this issue, one could argue that the proposed necessity of failure to promote reflection among the powerful may alternatively have been researched by examining counterfactuals after positive (or neutral) versus negative outcomes. However, this comparison was not chosen as a substantial body of research demonstrates that counterfactual thinking especially occurs after *failure*, but considerably less with regard to positive or neutral outcomes (e.g., Roese & Hur, 1997; Roese & Olson, 1997; Sanna & Turley-Ames, 2000). Hence, investigating the impact of social power on counterfactual thinking after positive (versus negative) outcomes would most likely have resulted in a floor effect in the positive outcome condition. This argument notwithstanding, Chapter 3 also assessed negative affect after the failure. The impact of social power on self-focused counterfactuals was indeed moderated by negative affect (see Footnote 9), emphasizing that social power only promoted self-focused counterfactual thinking if the outcome was actually perceived as negative. Thus, this moderation again demonstrated the role of failure for these effects of social power to emerge.

As a strength of the current research, it was investigated how one predictor (i.e., social power) affects both pre- and counterfactual thinking. Thus, the current research is one of few empirical approaches (for exceptions see del Valle & Mateos, 2008; Goerke et al., 2004; Sanna, 1996, 1998) distinguishing these two types of thoughts in more detail, thereby contributing to an understanding how reflection occurs at different points in time during goal

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[11] These two studies were not included as an empirical chapter in this dissertation as they do not sum up to a complete paper yet.

pursuit. In doing so, the findings provide insights not only into the circumstances under which the power*less* reflect more, but also pointed out when the power*ful* deliberate more before taking action. As an additional advantage for research on counterfactual thinking, Chapter 3 investigated both predictors (i.e., social power) and outcomes (i.e., behavioral intentions) of counterfactual thinking. The indirect effects of power on intentions by promoting self-focused counterfactual thinking provide a first indication for the functionality of the impact of social power on self-focused counterfactuals in promoting learning from failure. At the same time, Chapter 3 thus tested more than one discrete step of the functional theory of counterfactual thinking simultaneously within the same study (Epstude & Roese, 2008). However, it should be noted that the studies in Chapter 3 provide merely correlational data at this point. Hence, future research should further investigate these effects to provide evidence for the causality of social power promoting behavioral intentions for the future via more self-focused counterfactuals.

To conclude, in researching the impact of social power on reflection as pre- and counterfactual thinking, this dissertation conflated two domains of research, resulting in potential contributions to both these domains. These contributions will be discussed in more detail now, starting with implications for research on the impact of social power. Afterwards, implications for research on pre- and counterfactual thinking will be outlined. Finally, the discussion will conclude with prospects for future research and with practical implications. In doing so, the present findings will be discussed from different *perspectives*, including those of research on social power and leadership as well as on pre- and counterfactual thinking and team reflection.

Implications for research on social power

The findings from the two empirical chapters add to research on the effect of social power on behavior regulation during goal pursuit, especially with regard to theoretical approaches on social power and related research on leadership.

Social power, action, and reflection

As outlined in Chapter 1, from treating social power as a corrupting force, more recent theoretical developments consider social power as inducing approach-related behavior, readiness to take action (Keltner et al., 2003; see also Galinsky et al., 2003), and more flexible and effective behavior regulation in line with the situation at hand (Guinote, 2007a, 2007c, 2010b). Along the way, a substantial body of research focused on power facilitating behavior

related to prompt *action* (e.g., Anderson & Berdahl, 2002; Anderson & Galinsky, 2006; Galinsky et al., 2003, 2008; Gruenfeld et al., 2008; Guinote et al., 2002; Guinote, 2007c; Magee et al., 2007; Maner et al., 2010; Maner & Mead, 2010; Smith & Bargh, 2008; Smith et al., 2008). Though instantaneous action is frequently required for goal attainment, individuals' actions at times need to be well prepared (e.g., Beilock & Lyons, 2009; Epstude & Roese, 2008; Ericsson & Lehman, 1996; Markman & McMullen, 2003; Schön, 1983), a fact so far neglected in power research.

The current dissertation thus focused on reflection as a way of mentally preparing goal-directed behavior within phases of (apparent) behavioral *in*action (cf., Beilock & Lyons, 2009; Epstude & Roese, 2008). In doing so, the current research sought to solve a conflict between, on the one hand, social power inducing a sense of control (cf., Fast et al., 2009) which is linked to more counterfactual thinking (cf., Roese & Olson, 1995), and, on the other hand, power research predicting a tendency towards action rather than reflection (cf., Galinsky et al., 2003). Thereby, I tested the idea that whereas power diminishes *pre*factual thinking and fosters prompt action when outcomes are unknown, it in turn promotes *counter*factual thinking on own actions (i.e., a strategy implying thorough deliberation and inaction) when needed in a situation in order to attain a goal.

The powerful indeed reflected less in terms of *pre*factual thinking on upcoming situations and focused more on promptly taking action than the powerless (Chapter 2). These findings extend prior research, demonstrating that the action orientation power comes with (Galinsky et al., 2003; Keltner et al., 2003) is paralleled by a diminished tendency to engage in prefactual thinking beforehand. Additional findings in this chapter yielded a first indication that this reduced prefactual thinking when being in power (versus powerless) might not imply negative consequences in terms of a reduced likelihood to attain one's goals.

In contrast, when prior events and actions were insufficient to attain a goal, signalling the need to revise one's strategies, the powerful imagined more alternatives to their own behavior in terms of counterfactual thinking and did not take action again more quickly than the powerless (Chapter 3). This effect emerged though, as part of their independence from others, the powerful could also (theoretically) have been self-indulgent after the failure, blamed the powerless or the situation, and leaned back or taken action without taking a backward glance. This, however, was not the case. Instead, the results in Chapter 3 consistently showed that the powerful reflected more on their past behavior than the powerless. In particular, the way the powerful engaged in reflection (i.e., by generating more

self-focused counterfactuals) appeared to be more *effective* in facilitating learning on what to do differently in the future.

Importantly, the present research extends previous assumptions and findings with regard to social power and the propensity to take action (Galinsky et al., 2003; Keltner et al., 2003). The sum of findings shows that power holders' flexibility and efficiency in making use of goal-directed strategies is not at all times restricted to *action*-related tendencies. Instead, social power can also foster the (effective) use of strategies of apparent *in*action and deliberation, that is, generating self-focused counterfactuals, when required. The present dissertation thus emphasizes the importance to take other (not only action-related) goal-directed strategies into account when studying the impact of social power.

The results are in line with the situated focus theory of power (Guinote, 2007a, 2010b) proposing the application of more variable and effective means when being in power compared to when being powerless. Chapters 2 and 3 as well as the additional field study reported above demonstrated that the powerful only reflect more on their behavior before taking action (again) than the powerless when *needed* in a situation, that is, in the case of prior failure. This behavior can be considered effective in a way that the powerful focus more on taking action than the powerless as long as goal attainment appears to be successful (i.e., generate less prefactuals), but start revising their strategies more extensively in cases where behavior seems to be unsuccessful (i.e., generate more self-focused counterfactuals than the powerless). Thus, their engagement in reflection was more adaptive to the situation at hand. Notably, this set of findings also implies that those in power especially reflect on alternatives to their behavior when things go *wrong*. Nonetheless, especially these situations of prior failure provide useful information about which strategies are successful or not and, thus, provide concrete grounds to reflect upon and learn from (cf., Daudelin, 1996; Epstude & Roese, 2008; Markman & McMullen, 2003).

Interestingly, the present findings also contribute to an integration of research on social power with research on leadership. Whereas *power* research so far presumed that social power generally diminishes reflection for the benefit of prompt action (cf., Galinsky et al., 2003; Magee, 2009; Magee et al., 2005), *leadership* research treats reflection (especially of those being in power) as a crucial aspect of leaders' social responsibility (Crossan et al., 2008; De Hoogh & Den Hartog, 2008) and effective performance (e.g., Mumford et al., 2000, 2007), bringing about benefits for both subordinates and the organization (e.g., De Hoogh & Den Hartog, 2008; for an overview see Johnson, Conger, & Riggio, 2007). At first, these two views seem somewhat incompatible, with the first proposing that social power diminishes

reflection versus the second assuming that reflection is especially needed when being in power. However, the present research may provide a first step in integrating these two research approaches, demonstrating that whereas social power diminishes *pre*factual thinking (Chapter 2), it promotes *counter*factual thinking on one's own behavior when the situation calls for it (Chapter 3). Hence, the results point out to situations in which social power can indeed promote reflection, but also when it diminishes reflection before taking action.

Paralleling these findings, research on leadership indicates that leaders' problem solutions are indeed commonly based on knowledge that is gained by prior experiences. Thus, leaders' behavior in case of failure is abstracted from *past* performance (Isenberg, 1986; Nutt, 1989) providing a basis for problem solving to begin with (cf., Scott, Lonergan & Mumford, 2005). In combination, these results and the current findings indicate that power holders may be better able to learn from the past, but that prior failures are necessary to make power holders think more than the powerless and thereby learn how to improve their actions. Consequently, there might be situational moderators limiting or promoting these effects of social power and determining the outcomes of pre- and counterfactual thinking, which will be discussed later on.

To conclude, the present research indicates that social power facilitates the adaptation of reflection to the situation at hand, reducing (prefactual) thinking on unknown outcomes and promoting (counterfactual) thinking on one's behavior when needed (i.e., after failure) before taking action again. Thus, social power not only enhances the use of strategies related to prompt action, but at times also promotes careful reflection on one's behavior beforehand.

Implications for research on reflection as pre- and counterfactual thinking

The present findings also add to research on pre- and counterfactual thinking. Whereas previous research mostly focused on pre- and counterfactual thoughts on individual achievements (e.g., Markman et al., 2008; Markman & Tetlock, 2000; Nasco & Marsh, 1999; Roese, 1994; Roese et al., 1999; Roese & Olson, 1993b, 1995; Sanna, 1996, 1998), the current research studied pre- and counterfactual thoughts within social contexts, and in particular situations characterized by social power. In doing so, the findings outline how the *social context* (even beyond the current situation) can shape individuals' pre- and counterfactual thoughts during goal pursuit and contribute to research on the role of *thought content* (i.e., self- versus other-focused counterfactuals). Finally, the results point out how research on pre- and counterfactual thinking within social contexts could be integrated with (and differentiated from) research on team reflection, as will be discussed in the following.

The role of social context in predicting individuals' thoughts

The present research yields insights into how social power as one feature of the social context predicts both prefactual and counterfactual thoughts. With regard to *prefactual* thinking (Chapter 2), social power diminished individuals' prefactual thoughts prior to engaging in a course of action. Therefore, the results add to so far scarce literature on the preconditions of prefactual thoughts (McConnell et al., 2000) going beyond earlier research on individuals' outcome expectations (del Valle & Mateos, 2008; Sanna, 1996, 1998). In doing so, the present findings thus contribute to an understanding of when individuals engage in prefactual thinking before approaching an interpersonal situation.

Regarding *counterfactual* thinking, Chapter 3 demonstrated that social power promotes self-focused counterfactual thoughts by affecting individuals' sense of control (i.e., experienced opportunities to change outcomes), which relates to earlier research on the role of control perceptions in promoting both counterfactual thinking and self-critical evaluations of past behavior. First, earlier research on counterfactuals after individual failure demonstrated that counterfactual thinking especially occurs in reaction to scenarios where a failure is caused by a protagonist's decision versus by chance or accident (Roese & Olson, 1995) and focuses more on controllable than uncontrollable aspects of a situation (Markman et al., 1995). These earlier findings also highlight the role of control in promoting counterfactual thinking, but without taking the role of *thought content* (i.e., self- versus other-focus) or the *social context* influencing these control perceptions into account.

Second, the present findings thus relate to other domains of research on *self*-critical (versus self-protective) reactions to negative outcomes or failure. For instance, individuals evaluate those unfavourable personal attributes more self-critically (versus self-protectively) that are controllable (versus uncontrollable; Rothermund et al., 2005), react more self-critically to negative feedback addressing controllable attributes (versus stable ones; e.g., Dunning, 1995; Duval & Silvia, 2002), and interpret failure more as a chance for self-improvement when skills are seen as amendable (versus as stable entity; Dweck & Leggett, 1988; Elliot & Dweck, 1988). Thus, this research also emphasizes the importance of perceived control in facilitating in particular a self-critical (rather than self-protective) evaluation of one's behavior, but with a focus on more *general* beliefs about controllability of a specific aspect, attribute, or behavior.

In contrast, the present research emphasizes social power as a feature of the social *context* psychologically altering the way individuals perceive their environment, sense more power and control over outcomes, and likewise are less concerned about potential (positive or

negative) outcomes within *and* beyond the given situation.[12] Complementing these earlier findings, the present research thus exemplifies that context characteristics can impact on both pre- and (self-focused) counterfactual thinking, and that this effect can even apply to other situations. In this way, the results also extend research demonstrating that counterfactuals can serve as a mindset to promote behavior regulation across different contexts (Galinsky & Kray, 2004; Epstude & Roese, 2008; Markman et al., 2007). For instance, engaging in counterfactual thinking in one situation can promote information sharing with others in an unrelated setting (Galinsky & Kray, 2004). However, that research was limited to counterfactual thinking in one context providing benefits for subsequent behavior in other contexts. The current findings thus show that counterfactuals can vice versa be *influenced* or triggered by features of unrelated contexts individuals face beforehand.

Taken together, the findings indicate that the factors contributing to pre- and counterfactual thinking during goal pursuit in interpersonal situations can be complex. In order to understand the way individuals reflect on alternatives, researchers should therefore consider more than the specific situation where reflection occurs. Instead, the broader social context needs to be taken into account, such as interpersonal relations and the resulting psychological experiences that precede thought generation.

The role of thought content in social contexts

Adopting the perspective of functionality of counterfactual thinking, the findings add to initial research highlighting the importance of thought content (i.e., the reference focus) in determining subsequent outcomes. Chapter 3 demonstrated that in particular self-focused counterfactuals were associated with insights for the future (cf., Epstude & Roese, 2008). These results complement recent findings from De Cremer and van Dijk (2010) that generating self- rather than other-focused counterfactuals benefits group functioning and reduces members' tendency to leave a group in case of conflict. However, as the authors focused on experimentally induced self- versus other-focused thoughts, they did not reveal circumstances *when* these counterfactuals with a focus on the self are generated. By examining social power (and the resulting sense of control) as a precondition, the present findings thus add valuable insights on predictors of self-focused counterfactual thinking.

Related to this issue, the current dissertation outlines a potential relation between research on counterfactual thinking and research on *team reflection* in organizational research

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[12] Please note that the term 'beyond the situation' in this section refers to concrete situations where individuals do not have more or less power than their counterparts, and – due to the nature of Study 3.4 previously discussed – not necessarily to *completely* other tasks or situations.

(De Dreu, 2002, 2007; Gurtner et al., 2007; Schippers, Den Hartog, Koopman, & Wienk, 2003; West, 1996, 2000). This research focuses on reflexivity as the general working style of a team (Gurtner et al., 2007) representing how much team members "reflect upon the group's objectives, strategies, and processes and adapt them to current or anticipated endogenous or environmental circumstances" (West, 1996; p.559). This line of research conceptualizes reflection as comprising (a) a review whether desired outcomes were obtained, (b) imagination of alternatives (i.e., similar to counterfactual thinking), and (c) deduction of intentions for the future (i.e., similar to deriving behavioral intentions from counterfactuals; Epstude & Roese, 2008). Notably, prior studies in this domain focused on the *extent* to which reflection takes place and accentuate benefits for performance (Carter & West, 1998; Gurtner et al., 2007; Schippers et al., 2003), innovation (e.g., De Dreu, 2002), and organizational citizenship behavior among team members (Tjosvold, Hui, & Yu, 2003). Applying the current findings to research on team reflection could therefore yield new insights on *when* individuals engage in reflection (i.e., after prior failure and when experiencing power) and the role of thought *content* (i.e., self- rather than other-focus) in facilitating behavioral intentions. This knowledge might be especially useful for team interventions seeking to enhance performance by guided reflection within a team (Gurtner et al., 2007).

To sum up, the current findings contribute to an understanding how individuals adjust their behavior, avoid potential pitfalls, and pick themselves up from failure again while pursuing goals in social interaction with each other. The results highlight the role of sense of control in promoting self-focused counterfactual thought, demonstrate the impact of the social context on pre- and counterfactuals beyond situations, and outline potential parallels to research on team reflection.

Implications for future research

As previously outlined, the sum of findings from Chapters 2 and 3 indicates that social power promotes an effective adaptation of one's reflection to the situation at hand. In a first step, Chapters 2 and 3 explored some potential consequences of individuals' pre- and counterfactual thoughts for subsequent outcomes. However, future research should investigate these more directly and could also take potential moderators into account, which will be discussed in the following.

Consequences of powerful and powerless individuals' thoughts

With regard to *prefactual* thinking, the tendency of the powerless to engage in more prefactual thinking before taking action in the first place may, at least in part, have positive effects for them in a way that it might actually make them feel prepared, provide predictability (cf., Guinote 2007a), or harness concern about yet unknown outcomes (cf., Sanna, 1996). In contrast, power holders' tendency to engage in prompt action (Galinsky et al., 2003) and generate less prefactuals than the powerless (Chapter 2) is likely to contribute to faster and more successful goal attainment in many circumstances (cf., Galinsky et al., 2003; Guinote, 2007c; see also additional findings from Chapter 2). For instance, relying on first impressions or unconscious processes when making decisions is oftentimes more effective than coming to a decision only after extensive deliberation (e.g., Dijksterhuis, 2004; Dijksterhuis, Bos, Nordgren, & van Baaren, 2006) and also serves as a time savour when being in power and facing several tasks to solve simultaneously. Thus, future research should focus on investigating such outcomes of individuals' prefactual thoughts in the context of social power.

In contrast, the powerless engaged in less self-focused counterfactual thinking than the powerful after failure (Chapter 3). This tendency may be prudent, for instance for powerless individuals' personal well-being, when they actually *have* low control in a given context (i.e., few opportunities to change an outcome). However, the powerless also engaged in less self-focused counterfactual thinking after failure than the powerful when they did not actually have less power in the specific situation (Study 3.4) or indeed contributed to shared outcomes (see Studies 3.2 and 3.3). Thus, in these situations, the powerless could actually still have learned from the failure, similar to the powerful. Compared to being powerless, high power thus appeared to provide an advantage for learning from failure (cf., Epstude & Roese, 2008). The results on behavioral intentions in Chapter 3 yielded support on a correlational basis, which should be replicated experimentally in future studies (see above). Importantly, these findings point to a potential mechanism that could affirm the *stability* of power relations over time. Once individuals are given power, they appear to reflect more effectively on prior failure than the powerless (Chapter 3). As a result, power holders might better learn how to be successful in the future. In terms of implications in the long-run, those high in power may thereby continuously improve their performance, climb the career ladder, and obtain even more power than before, whereas the powerless may do so to a considerably smaller extent and with less speed.

Though such long-term consequences of counterfactual thinking have not been studied yet, findings from Nasco and Marsh (1999) on individual failure yield first support for this proposition. Their results demonstrated that generating counterfactuals after a first exam enhanced undergraduates' experience of control over following exams and improved performance one month later (Nasco & Marsh, 1999). Taken together, counterfactuals during individual goal pursuit can thus both be *stimulated* (Markman et al., 1995; Roese & Olson, 1995) and *followed* by an enhanced sense of control (Nasco & Marsh, 1999). Applying these findings to the present research, generating self-focused counterfactuals in interpersonal settings may thus promote a productive cycle of social power and the resulting sense of control promoting self-focused counterfactuals and vice versa. Put differently, those high in power sense more control than the powerless, thus generating more self-focused counterfactuals. These counterfactuals may in turn enhance the sense of control again, resulting in even more counterfactual thinking and learning over time when being in power (versus low in power).

As promising next steps for future research, linking pre- and counterfactual thinking to subsequent *action* and *performance* would thus extend our understanding of how power dynamics evolve and individuals regulate their behavior over time. In addition, future studies could investigate how insights derived from counterfactual thinking are *communicated* towards others (Wong, 2010), for instance, the extent to which power holders (or the powerless) share their own lessons learned with colleagues on the same hierarchical level.

To sum up, power holders' tendency to engage in less prefactual, but more counterfactual thinking on own actions might be functional in promoting faster goal attainment as long as things go well and, in turn, promote learning and subsequent performance improvement in the face of failure, which should be investigated in future research. However, one could also imagine situations where more *pre*factual thinking of the powerful is required or, vice versa, power holders' cognitive disengagement from a failure is crucial. Thus, there may be circumstances moderating the effect of social power on pre- and counterfactual thinking, potentially comprising the specific *situation* at hand (e.g., characteristics of the failure), features of the power *relation* (e.g., the stability of one's power position), or individual *resources* to identify whether reflection is required or not (e.g., after resource depletion). These moderators will be discussed in the next section.

Potential moderators of the impact of social power on pre- and counterfactuals

The potential benefits of prompt action and reduced prefactual thinking on yet unknown outcomes notwithstanding, one can imagine certain *situations* that require reflection on upcoming outcomes (i.e., prefactual thinking) especially of those high in power. This could be the case when the stakes are exceptionally high, for instance because of irreversible implications of a decision (e.g., a military strike) or the far-reaching consequences for others (e.g., passing a new law). Hence, careful preparation of one's actions beforehand by thinking ahead and anticipating likely outcomes is essential in situations or on tasks where one cannot afford a prior failure to learn from.

Similarly, the effect of social power on self-focused counterfactual thinking (and resulting outcomes) may underlie certain limitations, depending on the situation. Revisiting prior failure by generating counterfactuals is only useful in cases where the negative outcome could actually have been prevented and when an opportunity to try again is given (for an overview see Epstude & Roese, 2008), both of which were given in the current studies (cf., Goerke et al., 2004; Markman et al., 2008; Nasco & Marsh, 1999; Roese, 1994). In contrast, if failure is uncontrollable, occurs repeatedly, or no subsequent chance for improvement is given, extensive self-focused counterfactual thinking can serve as constant reminder of missed opportunities similar to, for instance, counterfactual thinking among highly depressive individuals (Markman & Miller, 2006). Thus, in such situations, cognitive disengagement from a goal and searching for alternative *goals* (rather than alternative *ways* to attain a goal) is prudent (Di Paula & Campbell, 2002; Wrosch, Scheier, Carver, & Schulz, 2003; Wrosch, Scheier, Miller, Schulz, & Carver, 2003).

Taken together, in some situations, the effects of social power on pre- and counterfactual thinking may need to turn around in order to prove effective and promote subsequent goal attainment. Put differently, the powerful might at times need to engage more extensively in *prefactual* thinking than the powerless in order to reach their goals, but they may also at times need to stop generating *counterfactuals* on a past failure more quickly. But would social power promote successful adaptation in this way? A large body of research demonstrates that power holders adapt their behavior and the strategies applied more effectively to the situation than the powerless (e.g., Gruenfeld et al., 2008; Guinote, 2007c, 2008; Karremans & Smith, 2010; Overbeck & Park, 2001). Thus, I would assume that social power promotes counterfactual thinking only in case it is functional and the chance to try again is actually given, and may otherwise rather quickly turn to alternative goals. Similarly, high (versus low) power might make individuals more attentive to situations requiring

thoughtful action preparation in the first place (i.e., prefactual thinking), thus resulting in more prefactuals among the powerful (only) when needed. These assumptions should be addressed in future research.

This body of evidence notwithstanding, however, there may be boundary conditions concerning features of the power *relation* under which individuals high in power are not better able to regulate their behavior more in line with the situation than the powerless. For instance, especially power holders may react differently to negative outcomes during goal pursuit when their power is unstable and failure to reach a desired goal is perceived as a threat to their position or competence. For instance, when power is illegitimate, unstable, or paired with feelings of incompetence, the benefits of high (compared to low) power may decrease (e.g., Lammers, Galinsky, et al., 2008; Magee et al., 2005; Sligte, De Dreu, & Nijstad, 2011). Conversely, especially in such situations, the powerless may perceive opportunities to change negative outcomes; thus, their goal pursuit (Willis et al., 2010) and learning from a failure may improve compared to those high in power.

Similarly, there may be exceptional circumstances when even the powerful lack personal *resources* and are inattentive to what is and what is not required in order to successfully attain a goal in a given context. This could be the case under ego depletion when no personal resources are available to adequately judge the situation at hand (De Wall et al., 2010) or under extreme time pressure distracting individuals from making adequate judgments. Likewise, as the powerful rely more on their internal states during goal pursuit (e.g., Galinsky et al., 2008; Maner et al., 2007; Weick & Guinote, 2008), it may be especially difficult for those high in power to (cognitively) disengage from a goal that is of particular personal relevance, but turns out to be unreachable.

In sum, investigating the effects of social power on reflection under these moderating circumstances with regard to the situation, power relation, and factors limiting goal-directed attention represents a promising endeavour for future research. This would contribute to our understanding of potential exceptional occasions where counterfactuals may peak in performance decrements or increase distress when being in power, but also of situations in which those low in power might engage in more self-focused counterfactual thinking than the powerful.

Practical implications

Put together (and presuming no such limiting circumstances), the impact of social power on pre- and counterfactual thinking is likely to have beneficial effects for power

holders' learning and performance, but at the eventual cost of accepting occasional failure that might have been preventable by reflecting more extensively beforehand. Conversely, this effect may have less positive implications for the powerless, lowering learning from the past and slowing down performance improvement at the plus of possibly being well prepared in the first place. The findings could thus provide the basis for practical interventions.

Promoting reflection after failure among the powerless may be a fruitful step for such interventions. By identifying experienced *control* as a mediating mechanism, the findings from Chapter 3 provide useful directions on how reflection at the workplace could be enhanced. Thus, in order to foster self-focused counterfactual thinking after failure at work, it might be crucial for organizations to render employees a certain amount of freedom to act in their work environment. This assumption is supported by findings from Inesi et al. (2011) demonstrating that restoring individual control when being powerless, for instance by providing individuals with high choice, compensates for the effects of low power. Hence, restoring the (sense of) control of those low in power may promote self-focused counterfactual thinking and, thus, learning from failure among the powerless.

Furthermore, increasing individual control might not only be beneficial for the powerless, but also for power holders. First, in large organizations, even power holders' control often depends on their own superiors or institutional policies (cf., Erdogan & Enders, 2007; Mohr & Wolfram, 2010). This is especially the case for those employees in middle management, balancing the control they have over their subordinates' outcomes as well as the control their own superiors vice versa have over theirs. Second, power holders in organizations usually do not only have high control but are also accountable, meaning that they need to justify their actions to others (Lerner & Tetlock, 1999). Accountability can constrain the effects of social power on behavior (Keltner et al., 2003; Lammers, Gordijn, et al., 2008; Magee, et al., 2005) and hinders self-focused counterfactual thinking after failure (Morris & Moore, 2000). Hence, one effective way to foster self-focused counterfactual thinking after failure for both the powerful and powerless could be to heighten the (sense of) control at work.

This could be done, for instance, by enhancing individuals' job control and autonomy, that is, providing control over own work routines (cf., Hackman & Oldham, 1975). In addition, participative leadership may generate a sense of control over outcomes for the powerless and those in middle management positions (cf., Yukl, 2006). Notably, however, the latter may be insufficient to promote self-focused counterfactual thinking as a stand-alone intervention, considering that those low in power in the present studies (see Studies 3.2 and

3.3) also somewhat contributed to shared decisions. Hence, supporting reflection by guided interventions (Daudelin, 1996; Gurtner et al., 2007) or regular instructive feedback could describe an additional fruitful way to promote counterfactuals on past failures, especially among the powerless. Future research should further investigate this assumption. Importantly, however, these interventions should seek not only to enhance the *subjective* sense of control, but to *actually* provide individuals (as far as possible) with more opportunities to determine the procedures and outcomes of their work, in order to prevent extensive reflection on things that could not or cannot be changed in the future by own effort (see above).

Conclusion

Social power is an omnipresent feature of social relations serving the common interest to coordinate effort among co-workers, promote agreements within or between work groups and nations, take care for and represent the interests of others, and contribute to benefits for own institutions. Possessing or experiencing social power fundamentally alters the way people act, feel, and think while pursuing their goals, which can have implications for themselves and others' outcomes. Those high in power are better able to regulate their behavior while pursuing goals, also by being ready to take action without much forethought and hesitation. However, at times, goal-directed behavior may fail to result in the desired outcomes or need to be adapted in order to be effective. For instance, this is the case when military actions may fail, government policies might be outdated, or industry managers' decisions may produce significant decrements. In such situations, especially those high in power need to figure out how to improve the situation and learn from the past.

The current dissertation combines both research on social power and research on pre- and counterfactual thinking and indicates that whereas the powerful think less ahead before initiating action in the first place, they engage in more extensive and functional reflection on their past behavior when required to improve the status quo. Thereby, they may better learn from prior failure, preventing similar situations from happening again in the future. In sum, the present research thus provides a deeper insight into how social power shapes individuals' thoughts during goal pursuit and helps to better understand when those high and those low in power engage in reflection before taking action.

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Appendix

Scenarios on e-mail communication (Study 2.1) *[English version in brackets]*

Bitte stellen Sie sich folgende Situation vor: Sie absolvieren im Rahmen Ihres Studiums ein mehrmonatiges Praktikum bei einem großen Unternehmen, das aus Mitarbeitern und Praktikanten, Führungskräften, und Auszubildenden besteht. Im Folgenden werden Sie gebeten, sich ein paar konkrete Erfahrungen während dieses Praktikums vorzustellen. Bitte versetzen Sie sich so intensiv wie möglich in die beschriebene Situation hinein. Beantworten Sie dann bitte ein paar kurze Fragen zu jeder Situation.

[Please imagine the following situation: During your studies, you are doing an internship in a large company for several months. The company is made up of employees, interns, leaders, and student apprentices. In the following, please imagine some concrete experiences during your internship. Please imagine yourself being in that situation as vividly as possible. Afterwards, please answer a few questions regarding every situation.]

Scenario A:

Sie bereiten einen Vortrag vor und suchen dafür Literatur zusammen. Im Katalog der hausinternen Bibliothek haben Sie Bücher gefunden, die zu Ihrem Vortragsthema passen könnten. Eines der Bücher auf Ihrer Liste ist allerdings gerade von J. Müller ausgeliehen. Dieses Buch enthält eventuell einige Informationen, die Sie als Randbemerkungen in den Vortrag einbauen können. Sie wollen daher nun J. Müller eine Email schreiben mit der Bitte, Ihnen das Buch zu überlassen.

[You are preparing a presentation and are gathering literature for this talk. You have now found out that there are books available that are relevant to your presentation. One of those books has already been borrowed by J. Müller. You suspect that this book contains some information potentially relevant as a side note to your talk. Thus, you plan to write an e-mail to J. Müller requesting this book.]

Scenario B:

Sie organisieren eine Sitzung im Unternehmen. Dafür benötigen Sie einen Besprechungsraum, den Sie reservieren können. Es gibt im Unternehmen einen einzigen Raum, der für die geplante Teilnehmerzahl passend wäre. Dieser Raum ist allerdings jede

Woche um diese Zeit für eine andere Arbeitsgruppe durch M. Baumert reserviert. Sie wollen daher nun M. Baumert eine Email mit der Bitte schreiben, ob Sie den Raum für diesen einen Sitzungstermin übernehmen können.

[You are organizing a company meeting and need to reserve a conference room. In the company, there is only one room available matching the number of participants. However, this room is reserved at the respective time by M. Baumert on a weekly basis. Thus, you plan to write an e-mail to M. Baumert including a request to take over this room for one meeting.]

Scenario C:

Sie werden im Rahmen eines Projektes ein spezielles Computerprogramm benutzen, das Sie selbst vorher nicht gekannt haben. Sie haben bereits einige Dinge in das Programm eingebaut, allerdings treten an einer zentralen Stelle Fehlermeldungen auf. Sie haben nun erfahren, dass M. Weiss mit diesem Programm bereits häufig gearbeitet hat und sich damit auskennt. Sie wollen daher nun M. Weiss eine Email schreiben mit der Bitte, Ihnen Informationen zur Behebung dieser Fehlermeldung zu geben.

[For a project, you are planning to use a specific computer program that has so far been unfamiliar to you. You already managed to do several things with this program. However, at a crucial point, error messages keep reappearing. You just found out that M. Weiss frequently works with this program and knows his/her way around. Thus, you plan to compose an e-mail to M. Weiss asking about information on this error message.]

Scenario D:

Sie organisieren eine Präsentation. Dazu haben Sie geplant, einen Teil Gruppenarbeit einzubauen, für die Sie eventuell eine Flipchart oder Pinnwand gebrauchen können. Sie haben nun erfahren, dass die eine Flipchart bereits für einen anderen Vortrag verplant ist, dass im Zimmer von K. Berger aber eine weitere Flipchart steht. Sie möchten daher nun K. Berger eine Email schreiben mit der Bitte, Ihnen diese Flipchart für die Präsentation zu leihen.

[You are preparing a presentation and would like to include team work tasks. Therefore, you need a flipchart or pin board. One flipchart has already been booked for a different presentation. However, there is another flipchart available in K. Berger's office. You are thus planning to make an e-mail request regarding this flipchart to K. Berger.]

Stock information from the investment task (Studies 3.2 – 3.4)

1) Rembach und Co. AG

Rembach und Co. AG ist ein mittelständiges Bauunternehmen, das u.a. Aufträge von städtischen Einrichtungen und privaten Großkonzernen bearbeitet.

[Rembach and Co. plc is a middle sized construction business processing orders from communal institutions and private enterprises.]

Aktueller Kurs [*current rate*] in €:	**61,02**
Umsatz jährlich [*annual revenue*] in Mio. €:	**67.124**
Nettogewinn jährlich [*annual net profit*] in Mio. €:	**8.487**
Nettoumsatzrendite [*net profit margin*]:	**5,1 %**
Zuwachs letzte 6 Monate [*growth rate last 6 months*]:	**+ 1,4 %**
Prognose nächste 6 Monate [*prognosis next 6 months*]:	**+ 1,3 %**

Übersicht Verlauf letzte 12 Monate (2006/07) [*overview development last 12 months, 2006/07*]:
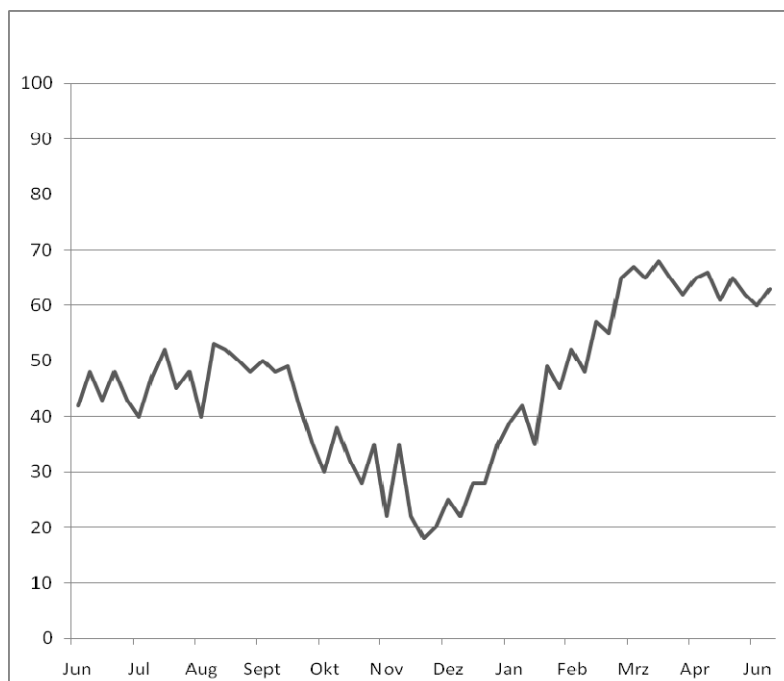
2) Tau Systems AG

Tau Systems AG entwickelt Softwaresysteme und ist spezialisiert auf individuelle Koordinationssysteme, die z.B. bei Rettungsdiensten und Polizei zum Einsatz kommen.

[Tau Systems plc develops software systems and specializes in individual coordination systems used, for instance, in rescue services and the police.]

Aktueller Kurs [*current rate*] in €:	**46,56**
Umsatz jährlich [*annual revenue*] in Mio. €:	**35.643**
Nettogewinn jährlich [*annual net profit*] in Mio. €:	**9.423**
Nettoumsatzrendite [*net profit margin*]:	**7,0 %**
Zuwachs letzte 6 Monate [*growth rate last 6 months*]:	**+ 2,1 %**
Prognose nächste 6 Monate [*prognosis next 6 months*]:	**+ 0,8 %**

Übersicht Verlauf letzte 12 Monate (2006/07) [*overview development last 12 months, 2006/07*]:
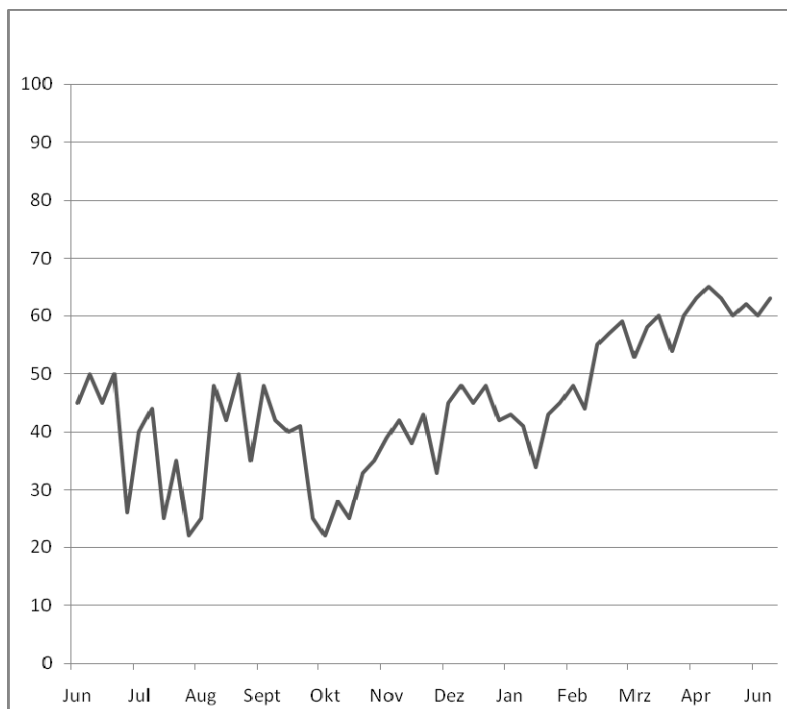
3) Solomon Medical Care

Solomon Medical Care vertreibt medizinische Geräte und Werkzeuge. Es beliefert damit Krankenhäuser, Forschungsinstitute und Arztpraxen.

[Solomon Medical Care manufactures medical equipment and instruments. It supplies hospitals, research institutes, and medical practices.]

Aktueller Kurs [*current rate*] in €:	**62,20**
Umsatz jährlich [*annual revenue*] in Mio. €:	**75.918**
Nettogewinn jährlich [*annual net profit*] in Mio. €:	**4.894**
Nettoumsatzrendite [*net profit margin*]:	**6,8 %**
Zuwachs letzte 6 Monate [*growth rate last 6 months*]:	**+ 1,8 %**
Prognose nächste 6 Monate [*prognosis next 6 months*]:	**+ 1,1 %**

Übersicht Verlauf letzte 12 Monate (2006/07) [*overview development last 12 months, 2006/07*]:

4) Metzler Technologies GmbH

Metzler Technologies GmbH entwickelt Computertechnologien, die insbesondere von mittelständigen und Großunternehmen eingesetzt werden.

[Metzler Technologies Ltd. develops computer technologies applied in middle sized and large scale enterprises.]

Aktueller Kurs [*current rate*] in €:	**47,29**
Umsatz jährlich [*annual revenue*] in Mio. €:	**70.501**
Nettogewinn jährlich [*annual net profit*] in Mio. €:	**5.265**
Nettoumsatzrendite [*net profit margin*]:	**6,4 %**
Zuwachs letzte 6 Monate [*growth rate last 6 months*]:	**+ 0,8 %**
Prognose nächste 6 Monate [*prognosis next 6 months*]:	**+ 1,2 %**

Übersicht Verlauf letzte 12 Monate (2006/07) [*overview development last 12 months, 2006/07*]:
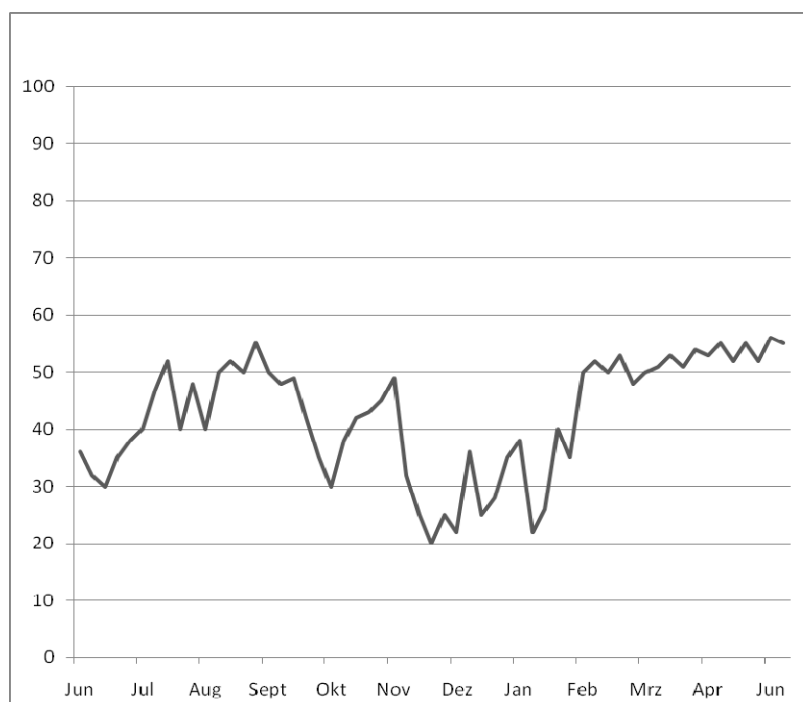
5) Nycopharm

Nycopharm ist ein Pharmaunternehmen, das Laboranalysen durchführt und sich auf die Herstellung von Impfstoffen spezialisiert hat.

[Nycopharm is a pharmaceutical company that conducts laboratory analyses and specializes in methods of preparation and vaccine.]

Aktueller Kurs [*current rate*] in €:   **48,91**

Umsatz jährlich [*annual revenue*] in Mio. €:   **36.836**

Nettogewinn jährlich [*annual net profit*] in Mio. €:   **8.132**

Nettoumsatzrendite [*net profit margin*]:   **7,2 %**

Zuwachs letzte 6 Monate [*growth rate last 6 months*]:   **+ 0,8 %**

Prognose nächste 6 Monate [*prognosis next 6 months*]:   **+ 1,4 %**

Übersicht Verlauf letzte 12 Monate (2006/07) [*overview development last 12 months, 2006/07*]:
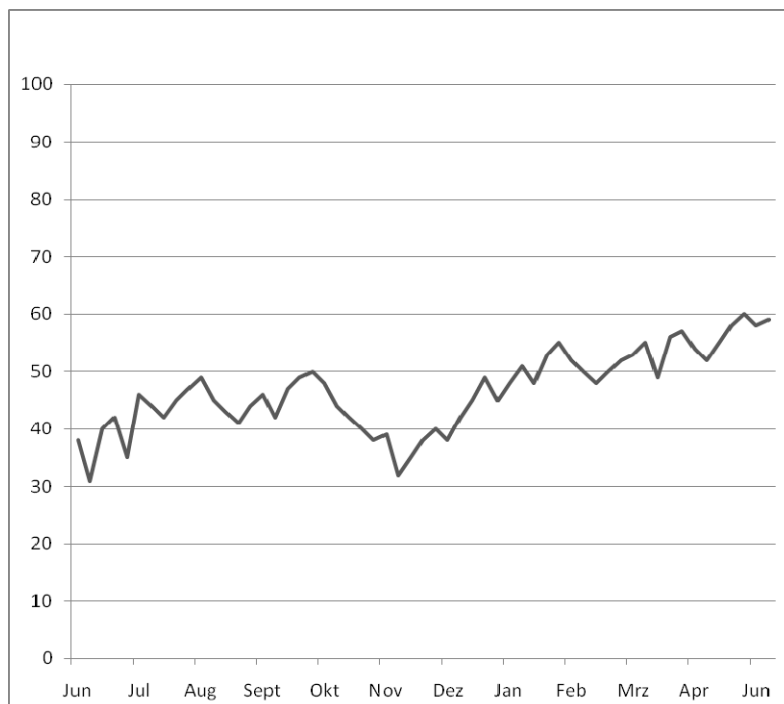
6) EcoEnergy AG

EcoEnergy AG ist ein Stromanbieter, der günstigen Ökostrom anbietet und vor allem mittelständige Unternehmen und Einrichtungen beliefert.

[EcoEnergy plc is an electricity supplier offering low priced green power and supplying mainly middle sized companies and institutions.]

Aktueller Kurs [*current rate*] in €:   **47,48**

Umsatz jährlich [*annual revenue*] in Mio. €:   **74.703**

Nettogewinn jährlich [*annual net profit*] in Mio. €:   **4.953**

Nettoumsatzrendite [*net profit margin*]:   **6,5 %**

Zuwachs letzte 6 Monate [*growth rate last 6 months*]:   **+ 1,6 %**

Prognose nächste 6 Monate [*prognosis next 6 months*]:   **+ 0,9 %**

Übersicht Verlauf letzte 12 Monate (2006/07) [*overview development last 12 months, 2006/07*]:

Summary

Social relations are frequently structured by social power, that is, some individuals have control over others' outcomes, while others let themselves be guided. Along the way, social power fundamentally alters the way individuals feel, think, and act. A large body of research demonstrates that social power fosters readiness to take action during goal pursuit (e.g., Galinsky et al., 2003; Guinote, 2007c). This propensity to act is frequently part of one's powerful role and considered effective, as it reduces the likelihood to miss opportunities for goal attainment. However, some situations require individuals to thoughtfully prepare their actions beforehand. This is especially the case when prior failure signals the need to revise and adapt one's strategies in order to attain a goal in the future. Thinking about alternatives to one's actions in such situations provides the potential to learn from the past and improve subsequent goal striving (Epstude & Roese, 2008). Hence, this dissertation addressed the question how social power impacts on reflection on alternatives prior to taking action (again), in particular in the case of failure.

Social power not only enhances readiness to act, but on the also promotes more variable and effective goal striving that is adapted to the situation at hand (Guinote, 2007c; Guinote et al., 2002; Overbeck & Park, 2001). In addition, social power evokes a general sense of control over outcomes, which has been linked to enhanced reflection after failure. Based on these findings, this dissertation examined the assumption that social power (1) diminishes (prefactual) thinking prior to taking action as long as outcomes are unknown, but (2) promotes (counterfactual) thinking on how one could have improved an outcome as a means of learning from the past in the special case of failure.

This research question was investigated in a set of empirical studies in the field and in the lab. The findings indicate that social power indeed reduces prefactual thinking and enhances prompt action when no concrete grounds are given to reflect upon. In contrast, in case of prior failure, power holders think more about alternatives to their own action (than the powerless) before taking action again. This effect is explained by a heightened sense of control (i.e., experienced opportunities to change an outcome) when being in power, but not by feelings of responsibility for the failure. First additional results indicate the functionality of these effects of social power for goal attainment and learning from failure.

The findings thus contribute to our understanding how social power influences individual behavior regulation during goal pursuit, indicating that the flexibility and effectiveness in behavior that comes with elevated power can also extend to strategies related less directly to prompt action (i.e., here counterfactual thinking). How social power impacts

on reflection on alternatives and consequences to one's actions while pursuing goals thus depends on the situation. Along the way, power holders show tendencies that might enable them to continuously improve their performance.

Deutsche Zusammenfassung

Soziale Strukturen sind oftmals durch soziale Macht gekennzeichnet, bei denen einige Personen die Ergebnisse anderer bestimmen, während andere sich von diesen leiten lassen (Fiske & Berdahl, 2007). Soziale Macht beeinflusst dabei, wie Personen denken, sich fühlen, und beim Verfolgen eigener und gemeinsamer Ziele verhalten. Eine ganze Reihe an Forschung zeigt, dass soziale Macht die Bereitschaft zu schnellem Handeln fördert (z.B. Galinsky et al., 2003; Guinote, 2007c). Dies ist oftmals ein Teil der eigenen Machtrolle und häufig zielführend, da durch schnelles Handeln wenig Gelegenheiten zur Zielerreichung verpasst werden. Allerdings gibt es auch Situationen, in denen das eigene Handeln gut durchdacht (d.h. vorbereitet) sein will. Dies ist besonders dann der Fall, wenn vorherige Misserfolge die Notwendigkeit signalisieren, eigene Strategien zu überdenken und anzupassen. Die Reflexion über eigene Verhaltensweisen vor dem (erneuten) Handeln kann insbesondere in diesen Situationen ein Lernen aus vergangenen Misserfolgen und darüber die zukünftige Zielerreichung fördern (Epstude & Roese, 2008). Diese Dissertation beschäftigt sich daher mit der Frage, wie soziale Macht die Reflexion über mögliche Alternativen zum eigenen Verhalten vor dem Unternehmen von Handlungen beeinflusst, insbesondere im Fall von Misserfolgen.

Soziale Macht fördert nicht nur die Bereitschaft zu schnellem Handeln, sondern geht zum einen auch mit variablerem und effektiverem Verhalten bei der Zielverfolgung einher, das mächtige Personen besser als wenig mächtige an gegebene Situationen anpassen (Guinote, 2007c; Guinote et al., 2002; Overbeck & Park, 2001). Zum anderen steigert soziale Macht das Gefühl von Kontrolle über Ergebnisse, was wiederum das Nachdenken nach Misserfolgen fördern kann. Basierend auf diesen Ergebnissen wurde in dieser Dissertation die Annahme untersucht, dass soziale Macht (1) das (präfaktische) Nachdenken über mögliche Konsequenzen des eigenen Verhaltens vermindert, solange Ergebnisse unklar sind, während sie im Gegenzug (2) das (kontrafaktische) Nachdenken über eigene Verhaltensweisen als Möglichkeit des Lernens aus Erfahrung fördert, wenn vorherige Handlungen (mit) zu einem Misserfolg geführt haben.

Diese Fragestellung wurde in einer Reihe empirischer Studien im Feld und experimentellen Setting untersucht. Die Ergebnisse zeigen, dass soziale Macht das (präfaktische) Nachdenken vermindert, wenn Ergebnisse des eigenen Verhaltens noch ungewiss sind, und im Gegenzug einen Fokus auf schnelles Handeln fördert. Hingegen zeigt sich nach einem vorherigen Misserfolg, dass mächtige Personen mehr über Alternativen zu

ihrem eigenem Verhalten nachdenken (als weniger mächtige Personen), bevor sie erneut Handlungen unternehmen. Dieser Effekt wird darüber erklärt, dass mächtige Personen mehr Möglichkeiten wahrnehmen, zu einem besseren Ergebnis beizutragen (d.h. mehr Kontrolle wahrnehmen), aber nicht darüber, dass sie sich stärker als andere für einen Misserfolg verantwortlich fühlen. Erste Ergebnisse zeigen die Funktionalität dieser Effekte für zukünftige Zielerreichung und das Lernen aus Misserfolgen auf.

Die Befunde tragen zu unserem Verständnis bei, wie soziale Macht die Regulation von Verhalten bei der Zielverfolgung beeinflusst. Sie zeigen damit, dass die Flexibilität und Effektivität im Verhalten, die mit erhöhter Macht einher gehen, sich auch auf Tendenzen beziehen können, die nicht direkt mit schnellem Handeln in Verbindung stehen (d.h. hier das kontrafaktische Nachdenken). Wie soziale Macht das Nachdenken über mögliche Alternativen und Konsequenzen beeinflusst, hängt somit von der Situation ab. Dabei zeigen mächtige Personen ein Verhalten, das es ihnen möglicherweise auf lange Sicht hin stärker (als wenig mächtigen Personen) erleichtert, ihre Leistung fortwährend zu verbessern.

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