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Power, Reputation, and Cooperation: the Reputational Account of Power

A thesis submitted by
Hirotaka Imada
to School of Psychology, University of Kent
July, 2022.

Declaration

I declare that the thesis has been written by myself and that the work has not been submitted for any other degree or qualification. I confirm that the studies reported in the thesis are my own. The research was supervised by Prof. Tim Hothrow, Prof. Dominic Abrams, and Dr. Jim Everett at the School of Psychology, University of Kent. Some findings have been presented at several academic conferences and events, including the 14th Biennial Conference of the Asian Association of Social Psychology (July, 2021), British Psychological Society Social Section Annual Conference 2021 (August, 2021), and the Cooperation Colloquia (October, 2021). In addition, I am planning to present some findings at the International Conference on Social Dilemma 2022 (July, 2022).

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Abstract

Asymmetries in power permeate social life, relationships, and groups. Previous studies have long investigated the role of power in shaping cooperation, yielding mixed evidence as to whether and how power affects cooperation. Synthesizing the evolutionary psychological literature on reputation-based cooperation with the social psychological literature on power, I propose a novel theory on power: the reputational account of power. More specifically, I hold that power asymmetry shapes cooperation via reputational concern. In 14 studies with several mini meta-analyses, I have found support for the theory.

In Chapter 2, I present four correlational studies (Studies 1 – 4) revealing the association between reputational concern and power. In addition, I have found that others' power (i.e., target power) shapes prosocial behaviour via reputational concern in organizational and friendship contexts; the more power another individual has, the more prosocial people are to the person. Importantly, it was suggested that across the four studies, it is target power rather than one's own power that was strongly related to reputational concern and reputation-based prosocial behaviour.

In Chapter 3, I present three studies designed to experimentally manipulate one's own power, using commonly used power priming methods. Results revealed that an increased sense of power did not reduce reputational concern; feeling power does not liberate people from reputational concern. This is in line with the findings from Chapter 2 that suggested that target power, rather than one's own power, is related to reputational concern.

In Chapter 4, I report four studies in which I manipulated target power. Namely, I developed a novel paradigm in which participants were put into a hierarchically structured group and played economic games with others varying in power (i.e., higher power, equal power, and lower power group members). These studies together suggested that when people were faced with higher power in-group members, they felt more reputational concern and

displayed more cooperation compared when faced with equal and lower power in-group members.

In Chapter 5, I present three studies that were designed to further extend the finding from Chapter 4 to intergroup prosocial behaviour. More specifically, I explored whether individuals favour in-group members over out-group members regardless of power asymmetries. I found that people were more prosocial towards higher power in-group members than out-group members. Nevertheless, they did not discriminate between lower power in-group members and out-group members. Thus, in-group favouritism was conditional to power.

Overall, I have collated correlational and experimental evidence supporting the theory. I have demonstrated that when people interact with others holding power over themselves (i.e., when target power is high), they feel an increased level of reputational concern and, therefore, they display an increased level of cooperation. The reputational account of power contributes to diverse fields of studies by offering a novel interdisciplinary framework to understand when and how power influences cooperation. In addition, given the ubiquity of power asymmetries in daily lives, my findings have practical implications and help us understand how power shapes social behaviours, especially prosocial behaviour in daily lives. Promising future directions are discussed.

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Ch. 1: Introduction and Theoretical Background

1.1. Introduction

Power asymmetries pervade a wide range of interpersonal and intergroup relationships (Anderson & Brion, 2014; Halevy et al., 2012; Righetti et al., 2015; Smith & Hofmann, 2016). People experience and witness often-deleterious consequences of power and have cumulated folk wisdom on power. One of the most famous quotes on the lay perception of power is from Lord Acton, “*Power tends to corrupt, and absolute power corrupts absolutely.* (Dalberg-Acton, 1907)” References to such negative influences of power are also common in plays and novels. William Shakespeare, for instance, well-illustrated dark sides of power in his play, *Measure for Measure*. The play starts when the Duke leaves Vienna and hands over his authority to the deputy, Angelo. Angelo was reluctant to take this at first, but it did not take long for him to start exercising his power over citizens. He enacts an old law that prohibits premarital sex, and a young man, Claudio, whose fiancée has got pregnant, is sentenced to death by Angelo. Isabella, Claudio’s sister, begs Angelo to release Claudio. Angelo then offers to discharge Claudio if Isabella sleeps with him. Here, Shakespeare first depicts the abuse of power by an authority figure. The Duke, who disguises and remains in the city, observes this and uses his wit to resolve the situation, saving Claudio and exposing Angelo’s abusive leadership. However, the story ends with a twist; the Duke proposes marriage to Isabella, whose brother has been just saved by him. Isabella stays silent till the very end of the play. It appears that the Duke is now using his power to get Isabella, just as Angelo did. As illustrated in the play, folk perceptions of power tend to be negative (Fleming & Spicer, 2014; Terrizzi et al., 2020; Wingen & Dohle, 2021), and early psychological studies on power emerged in an attempt to scientifically elucidate the corruptive nature of power.

In the 20th century, there were a number of international wars and within-country conflicts in which power holders’ selfish actions led to devastating consequences. Notably,

the 20th century witnessed powerful political leaders (i.e., dictators) being active in warfare, which led to catastrophic consequences. This historical background further nudged social psychologists to examine how power influenced people's behaviour, with their primary interest of disentangling why power increases self-centred behaviours among the powerful and often encourage them to hurt others, especially the powerless. One of the earliest social psychological works on the issue includes the Stanford Prison Experiment by Zimbardo and colleagues (Haney et al., 1973). Participants were randomly assigned to play a role of a prison guard or a prisoner, and they were led to a simulated prison. The guards were given a baton and police-looking uniforms, and Zimbardo and colleagues observed the guards displaying aggressive, demeaning, and sadistic behaviours towards the prisoners. This experiment gained much scholarly attention and became one of the essentials for social psychology textbooks, as evidence suggesting that people behave in a way that suits their role. While the interpretation of the finding has recently been debunked due to newly excavated archival evidence (Bartels, 2019; Haslam et al., 2019), the finding still alludes to how Angelo, who was once reluctant to take a position of power, became one to abuse it.

Kipnis (1972) is another early cornerstone of psychological research on power. In their study, participants were told to supervise workers completing tedious tasks and asked to evaluate the workers based on their performance. Half of the participants were further given the power to reward supervisees with monetary bonuses and punish them with ostracism (i.e., transferring them to another job). The other half (i.e., supervisees) did not have such power. They found that those with power contacted the workers more frequently than those without power to discuss their performance, and they actively used their delegated power (pay rises and ostracism) as a means to influence them. Furthermore, those with power evaluated the workers less favourably than those without power. Lastly, those with power were less likely to attribute the workers' effort to the workers' own motivation to do well. These findings

became landmark evidence for the disruptive effect of power; power increases the tendency to manipulate and negatively view others; *power corrupts*.

Overall, early psychological findings on the role of power coincided with the folk perceptions of power, and this inspired social psychologists to further investigate the negative influences of power on a wide range of social behaviours. Consistently with the early findings, they have documented negative effects of power in various domains, such as, for example, reduced perspective-taking (Galinsky et al., 2006), increased use of stereotypes (Fiske, 1993), reduced attention to others' emotions and needs (Van Kleef et al., 2006, 2008), reduced trust towards others (Mooijman et al., 2015; Schilke et al., 2015; but also see Weiss et al., 2021), and facilitated selfish and self-serving behaviour (for reviews, see Foulk et al., 2020; Williams, 2014).

Of particular importance for scholars and societies was the finding that power led to selfish behaviour, which hinders cooperation. Human social lives are rife with social dilemmas, in which one's personal interests conflict with collective interests, and failures to cooperate in such situations lead to several societal issues such as environmental problems (Joireman, 2005; Van Vugt, 2009). Thus, the implications of the finding on the role of power in shaping selfish behaviour were vast not only for the empirical literature on cooperation but also for societies and policymakers. In the early 2000s, the line of social psychological research on the negative effect of power caught the eyes of cooperation researchers, and they have formed the rich body of the empirical literature on the relationship between power and cooperation (for reviews, see Foulk et al., 2020; Williams, 2014).

Contrary to the lay beliefs and early psychological work on power, later studies yielded mixed evidence as to whether power leads to increased selfishness and/or decreased cooperation, which have produced ample scholarly discussions about when and how power influences cooperation; namely, some studies revealed that power holders consistently

displayed the reduced cooperation, but others revealed the negative effect of power was conditional to individual, social, and contextual factors (for reviews, see Foulk et al., 2020; Galinsky et al., 2014; Sturm & Antonakis, 2015; Williams, 2014). While previous studies have identified various moderators of the effect of power on cooperative behaviour, the current literature lacks an overarching explanation for the role of different moderators, such as power legitimacy (e.g., De Cremer & Van Dijk, 2005), power stability (e.g., Dorrough et al., 2017), and individual differences (e.g., DeCelles et al., 2012; Harrell & Simpson, 2016). In addition, it is difficult to predict how power shapes social behaviour, especially cooperation in a complex social situation where various moderators of power are simultaneously present. Given that power asymmetries often exist in diverse contexts and relationships (e.g., interpersonal, intergroup, organizational, and romantic relationships), the elucidation of the relationship between power and cooperation is important. Further research disentangling when and how power influences cooperation under the presence of different moderators would provide practical implications for understanding and promoting cooperation in societies.

In the thesis, I explore the relationship between power and cooperation with the goal of providing a new perspective towards understanding and predicting the effect of power on cooperation. More specifically, by marrying the evolutionary psychological literature on cooperation to the social psychological literature on power, I hypothesise that power asymmetries would function as a reputational cue such that they shape reputation-based cooperation and test it with several correlational and empirical studies. These studies have yielded converging evidence that target power (others' power over oneself) influences cooperation via reputational concern, and based on the findings, I will formulate the reputational account of power, which has the potential to become a parsimonious and overarching framework explaining when and how power asymmetries shape cooperation. In

the present chapter, I shall first review relevant literature on power, reputation, and cooperation and then close the chapter with an overview of the thesis. I would like to note here that while my literature review led me to hypothesise that power asymmetries (the degree of the difference between power that one holds and power that others hold) would be related to reputational concern, my studies revealed that it is target power (i.e., power that another individual holds over oneself), not one's own power or power asymmetries, that is the most relevant to reputational concern.

1.2. Power: Definitions and Operationalizations

1.2.1. Definitions of Power

Power refers to the ability to act or affect something strongly and the capacity to direct or influence the behaviour of others, according to the Oxford English Dictionary (Oxford University Press, n.d.), which is supposed to reflect present-day usages and meanings of the word. The definitions that psychologists have employed are not far from the non-scholarly definition. For instance, Thibaut and Kelley (1959), drawing upon interdependence theory, defined power as the potential or ability to control others' outcomes or behaviours. Likewise, Sivanathan et al. (2008) defined it as the ability to control, modify, or influence others via rewards and punishments. Farmer and Aguinis (2005) defined it as the capacity to influence others. Lastly, Keltner et al. (2003) defined it as individuals' relative capacity to modify others' states by providing or withholding resources or administering punishment (for a review, see Sturm & Antonakis, 2015). Whilst these definitions conceptualise power as an ability to influence, other scholars defined it rather as having control over valued resources (Galinsky et al., 2003; Jordan et al., 2012; Magee & Galinsky, 2008; Malhotra & Gino, 2012; Rucker et al., 2011, 2012). These two conceptualisations of power are often referred to as social power (Overbeck & Park, 2001). In addition, power has also been defined as being autonomous and being unaffected by others (Galinsky et al.,

2008), which Overbeck and Park (2001) referred to as personal power. These types of the conceptualisation of power are all based on *what power affords power holders* in the relationship with others (cf., Pratto, 2016).

It is worthwhile noting that scholars have also attempted to define power according to the bases of power. French and Raven (1959) distinguished between five types of power: reward power (i.e., the ability to provide rewards for others), coercive power (i.e., the ability to punish others), legitimate power (i.e., having a legitimate right to prescribe behaviour others), referent power (i.e., having others desire to be affiliated with), and expert power (i.e., having special knowledge or expertness). The first two types of power can be collapsed into power as an ability (i.e., social power). However, researchers lately treat the last three types of power as distinct constructs from power, and recent studies have shown that power legitimacy (legitimate power), status (referent power), and prestige (expert power) rather interact with power to shape social behaviours (e.g., Anicich et al., 2016; Blader et al., 2016; Blader & Chen, 2012; De Cremer & Van Dijk, 2005; Fast, Halevy, et al., 2012; Fragale et al., 2011; Gu et al., 2020; Hays & Bendersky, 2015; Yu et al., 2019). Thus, whilst French and Raven's (1959) guided subsequent research on the typology of power, their definitions are no longer frequently used in current psychological work.

Given that what power affords powerholders substantially depends on contexts, it is inevitable that scholars opt for one of the most convenient and relevant definitions of power for their research. In organizational contexts, for instance, powerholders (e.g., bosses, CEOs, managers, etc.) often have the ability to influence those with less power (e.g., subordinates) via rewards (e.g., bonus payments and promotions) and punishments (e.g., pay cut, relegation, and dismissal). Thus, both power as an ability and power as control are relevant. Sturm and Antonakis (2015), for instance, extensively reviewed prior definitions of power in organizational research and have provided a general definition of power that is theoretically

most relevant to studies in organizational contexts—power is having the discretion and the means to asymmetrically enforce one’s will over others.

Contrastingly, in academic contexts, supervisors often have scholarly prestige and status, and it is often difficult to distinguish between power, prestige, and status (Aguinis et al., 1996). In addition, whilst supervisors have control over the progress of research carried out by their supervisees and influence supervisees’ behaviour, they are not endowed with the ability to use rewards and punishments in the same manner as powerholders in organizational contexts. Thus, studies in which power is defined and operationalized, for instance, as the ability to punish others, would be ultimately irrelevant for those who are interested in the role of power in academic contexts. Overall, the current literature on power offers several definitions of power, and scholars typically choose one which suits the context that their research is concerned about the best, such that their studies would have the most practical implications for their field (Sturm & Antonakis, 2015). In my experimental studies where I manipulated power (Chapters 4 and 5), power was defined as the ability to ostracise others, which is similar to power in organizational contexts, i.e., employment and firing. In Chapters 2 and 3, I focused on power as a psychological construct (i.e., a sense of power). Thus, I do not rely on a single definition of power in the thesis and attempt to produce evidence generalizable across different contexts.

1.2.2. Operationalizations of Power

As there are diverse scholarly definitions of power, researchers have employed a wide range of operationalizations of power in their research. There are two major manipulation methods: priming methods and economic game approaches. Typically, the former manipulates psychological power (i.e., a sense of power; Anderson et al., 2012), and the latter manipulates both psychological power and structural power (i.e., having power over others; Tost, 2015; Tost and Johnson, 2019). I shall briefly summarize the two major manipulations

as well as other commonly used methods in previous research and discuss their strengths and weaknesses. I do not review operationalizations of power in other fields that are not relevant to studies on power and cooperation (e.g., Schaerer et al., 2020; Tjosvold & Okun, 2016).

1.2.2.1. Power Priming Methods

Power priming methods have been frequently used in previous studies, including episodic priming (Galinsky et al., 2003), semantic priming (Brandt & Sigmund, 2006; Galinsky et al., 2008), and physical priming (Carney et al., 2010; Chen et al., 2001). These methods are designed to induce a sense of having or lacking power, and numerous previous studies have reported successful manipulations of psychological power. This suggests that power is a mental construct and can influence behaviours as an unconscious and automatic process (Bargh et al., 1995). Similar to priming methods in general, power priming procedures have several strengths; they are easy to implement, do not involve ethical concerns, can affect a psychological sense of power without conscious awareness of participants, and are relatively less susceptible to the demand effect (Sturm & Antonakis, 2015). Yet, previous studies have suggested that these easy-to-implement manipulations are not as reliable as previously thought (Heller & Ullrich, 2017; Lammers et al., 2017, also see Chapter 3). In addition, Khademi et al. (2021) have recently suggested that power priming is still susceptible to the demand effect. Despite the widespread use of power priming, these recent studies call for cautious use of the experimental method (also see Chapter 3).

Episodic Power Priming. Episodic power priming is one of the most frequently used experimental manipulations of psychological power, which was first developed by Galinsky and colleagues (Galinsky et al., 2003). In a high power priming condition, participants are asked to recall an event where they had power over another individual or individuals. By contrast, in a low power priming condition, they are asked to recall a situation in which another individual or individuals had power over themselves. In some previous studies,

scholars also introduced a control condition where participants were asked to recall a social interaction that they experienced during the previous day (e.g., Fast, Sivanathan, et al., 2012) so that they can distinguish between the effects of having power and lacking power. The episodic recall task has been reported to work in various languages (Hashimoto & Karasawa, 2021; Schmid & Mast, 2013).

Despite the common use of the recall priming method, Heller and Ullrich (2017) reported that it failed to manipulate a sense of power, in a preregistered study with sufficient statistical power. In addition, the manipulation failed in a sufficiently-powered preregistered study reported in Chapter 3 (Study 5). Based on the discussions in Heller and Ullrich (2017) and my experiment, it seems that the episodic power priming is not always effective, and the potential influences of moderators of the effect should be carefully considered (e.g., Lammers et al., 2017).

Lastly, Khademi et al. (2021) found that the episodic power priming method was prone to the demand effect when it was used in combination with a manipulation check question. That is, a great share of participants can correctly guess the purpose of the priming. They also suggested that the demand effect, knowledge about the hypothesis, might contribute to the previously established effect of power on risk-taking (Anderson & Galinsky, 2006). While Galinsky et al. (2014), in their review, argued that priming methods could influence psychological power without participants' conscious awareness and are effective, Khademi et al. (2021) suggest that they may fail to do so, leaving a caveat on the use of power priming. See Chapter 3 for more elaborate discussions about the limitation of the priming method.

Semantic Power Priming. Bargh et al. (1995) was the first to implement semantic priming methods to study the influence of power. In their first study, they presented power-related words for 90 ms. In the next study, they had participants complete word fragment

tasks, where they were presented with power-related fragments (e.g., AUT __ R _ T _ / authority) and asked to complete them. These tasks are designed to activate the semantic representation of power. One of the key strengths of the method is that researchers could prime a certain type of power; Bargh et al. (1995), for instance, manipulated authority and physical powers using different sets of words. I would like to note, however, that in my preregistered experiment with sufficient power (Study 6 in Chapter 3), the semantic manipulation with the set of word fragments developed and used in Mast et al. (2009) was not successful. See Chapter 3 for more details and discussions.

Physical Power Priming. Chen et al. (2001) invited participants to a professor's office and had those in a high power condition sit in a professor's chair. Contrastingly, those in a low power condition sat in a guest chair. The manipulation successfully influenced psychological power, and they demonstrated that people readily detect a subtle environmental cue of power, and this unconsciously affected a sense of power.

Power posing is another famous physical power priming (Carney et al., 2010). Carney et al. (2010) found that body postures led to the change in a feeling of power, which in turn resulted in physiological and behavioural changes. More specifically, they showed that participants with an expansive posture (i.e., nonverbal display of high power) had an increased level of testosterone and a decreased level of cortisol than those with a closed posture (i.e., nonverbal display of low power). Moreover, the high power posing led to risk taking behaviour, which was consistent with previous studies that showed that other types of high power priming methods resulted in increased risk-taking tendencies (Anderson & Galinsky, 2006).

It should be noted that the power pose literature has collated extensive discussions about the generalizability and replicability of the effect. Firstly, Ranehill et al. (2015) conducted a conceptual replication of Carney et al. (2010) with a larger sample size but failed

to find evidence for the physiological and behavioural effects of power posing. Yet, Ranehill et al. (2015) reported the significant effect of power posing on a feeling of power (i.e., psychological power), consistently with a number of studies showing the link between expansive posture and psychological changes (for a review, see Carney et al., 2015 but also see Simmons & Simonsohn, 2017). Thereafter, several preregistered experiments failed to replicate the findings of Carney et al. (2010) and identified moderators of the effect (Bailey et al., 2017; Bombari et al., 2017; Keller et al., 2017; Ronay et al., 2016). *Comprehensive Results in Social Psychology* (CRSP) published a special issue on the effect of power posing (Cesario et al., 2017; Jonas et al., 2017), which included the above-cited papers (Bailey et al., 2017; Bombari et al., 2017; Keller et al., 2017; Ronay et al., 2016). Gronau et al.'s (2017) Bayesian meta-analysis on the published papers in the issue, for instance, provided evidence for the effect of power posing on a felt power, but did not support the physiological and behavioural effects. In addition, they revealed that familiarity with the power posing effect was a crucial moderator of the effect. It is also worthwhile noting that one of the author of the original paper reporting the effect of power posing stated on their blogpost that they no longer believe that the power posing effect is real (Carney, 2016) before the publication of the special issue in the CRSP. The debate continued and there have been several reviews and meta-analyses published since 2018 (Crede, 2019; Cuddy et al., 2018; Elkjær et al., 2022; Körner et al., 2022; Körner & Schütz, 2020). The most recent meta-analysis documented a small-to-medium effect size of power posing, including posing and postures, on self-reported and behavioural dependent outcomes, but a non-significant effect on physiological measures such as hormonal levels (Körner et al., 2022). Yet, Körner et al. (2022) found a significant moderating role of the existence of a cover story in previous studies and noted that the effect on behavioural outcomes was influenced by publication bias and outliers. Overall, it is yet unclear whether and when power posing significantly shapes behaviours.

1.2.2.2. Economic Game Approaches

The invention of the power priming methods accelerated psychological research on power in the early 2000s (Galinsky et al., 2014). Nevertheless, given the recently raised methodological concerns about the power priming methods (Heller & Ullrich, 2017; Khademi et al., 2021, also see Chapter 3) and social priming in general (Cesario, 2014; Hoogeveen et al., 2019; Stroebe & Strack, 2014; Van Elk & Lodder, 2018), there is an increasing interest among social psychologists in economic game approaches that can manipulate diverse kinds of structural power (van Dijk et al., 2020). While social psychologists have heavily relied upon power priming methods (Galinsky et al., 2014; Sturm & Antonakis, 2015), cooperation researchers, especially those in experimental and behavioural economics, have long utilized several manipulations of power, including, for instance, punishment power (Fehr & Gächter, 2000, 2002) and reward power (Parks, 2000; Rand, Dreber, et al., 2009). Typically, economists and some psychologists set up their experiments so that one person was endowed with such power and examined how it would influence cooperative behaviours. Interestingly, while such experimental procedures indeed serve to manipulate power (i.e., who holds and does not hold power), they were primarily interested in whether the introduction of rewards and punishments could sustain cooperation in groups (Balliet et al., 2011) and how some forms of power (e.g., punishment and ostracism) contributed to the evolution of cooperation (e.g., Boyd & Richerson, 1992). In other words, previous economic game-based power manipulations were not typically framed as manipulations of power. While economic game approaches are relatively underrepresented in the social psychological literature on power, they can offer a mathematical and rigorous analytical tool to investigate how power shapes social behaviour, especially cooperation (for a recent review on the use of economic games for power research, see van Dijk et al., 2020).

Punishment and Reward. In social dilemmas, where personal and collective interests collide, people have to decide whether to contribute to the public goods (i.e., cooperate) or prioritize their personal gains (Van Lange et al., 2013). In such situations, people often fail to cooperate, and this results in losses of public goods, leading to a variety of societal issues (Fontaine, 2014; Hardin, 1968; Van Vugt, 2009). Scholars have studied punishment and reward as incentives to cooperate (Balliet et al., 2011; Wu et al., 2022). Previous studies showed that a variety of punishments and rewards could sustain and promote cooperation (e.g., Lefebvre & Stenger, 2020; Masclet et al., 2003; Micheli et al., 2021; Sefton et al., 2007; Wu et al., 2022), such as social exclusion and ostracism (e.g., Dannenberg et al., 2020; Güth et al., 2004, 2007; Hilbe et al., 2016), financial punishment and reward (e.g., O’Gorman et al.; Rand et al., 2009; Sefton et al., 2007), and social punishment and reward (expressions of disapproval and approval: Dugar, 2013; Masclet et al., 2003; negative and positive gossip: Imada et al., 2021). Moreover, a large-scale meta-analysis revealed that punishments and rewards were both effective in maintaining cooperation (Balliet et al., 2011; cf., Wu et al., 2022). Of particular relevance to power is the influence of the centralized punishment and reward systems (Kamijo et al., 2014), in which one person is endowed with the ability to punish or reward others in a social dilemma. To put it concretely, in experiments with a centralized system, there is one power holder, and the others are powerless. Recent studies on centralised systems tended to focus on moderators of the effect, such as legitimacy (Baldassarri & Grossman, 2011) and stability (Dorrough et al., 2017) of the systems and how the system is established (Grieco et al., 2017; Gross et al., 2016). Baldassarri and Grossman (2011), for example, revealed that a centralised sanctioning system was most effective when the system was perceived to be legitimate. Overall, centralized systems are generally effective in promoting cooperation but its effectiveness varies depending on several factors.

Asymmetric Control over Resources. Scholars have utilized two-person asymmetric games, such as a dictator game (Engel, 2011) and an ultimatum game (Güth et al., 1982), as a simulation of asymmetric power (Anderson & Berdahl, 2002; Galinsky et al., 2003; Handgraaf et al., 2008; Sivanathan et al., 2008; Suleiman, 1996). In a dictator game, one player (i.e., giver) is given money and decides the division of the money between themselves and the other player (i.e., receiver). The receiver cannot reject the decision, and the giver has full control over the resource that they have received. In other words, the giver holds power over the receiver. An ultimatum game is a variant of a dictator game, where the receiver has a chance to reject the division. When they reject it, both the giver and the receiver get nothing. Thus, while the giver still holds control over the endowed resource, interdependence between the two is increased in ultimatum games compared to dictator games. These games have been used as manipulations of the strength of outcome-interdependence (i.e., power asymmetries) between two individuals (Galinsky et al., 2003; Handgraaf et al., 2008; Molho et al., 2019; Sivanathan et al., 2008; Suleiman, 1996, also see Section 1.2.2.4.). It should be noted, however, that in some research, the strength of interdependence and power were treated as orthogonal constructs rather than the identical construct (De Cremer & Van Dijk, 2005).

1.2.2.3. Role Manipulations

Previous social psychological studies have utilized diverse role manipulations, in which participants were asked to complete some scenarios as a power holder (e.g., a boss, a leader, and a supervisor) or a powerless person (e.g., an employee, a follower, and a supervisee). Anderson and Berdahl (2002), for instance, instructed participants that they would complete an organizational decision-making task where those in high and low power conditions were assigned to a role of a leader and a subordinate, respectively. Furthermore, they were told that a leader was responsible for group decision making, group performance, the evaluation of the subordinates. Additionally, leaders had to determine bonus money

allocation for the subordinates. Cho and Fast (2012) told participants that they would work with another person either as a supervisor or a subordinate. The supervisor was supposed to provide feedback to the subordinate. In leadership research, scholars used leader-follower roles in the same manner (Berdahl & Martorana, 2006; De Cremer & Van Dijk, 2005; Giurge et al., 2021; Güth et al., 2004; Harrell & Simpson, 2016; Rus et al., 2010; Van Dijk & De Cremer, 2006). Similarly, Gu et al. (2020) employed a president of a group and a member of the group as their role manipulation. Role manipulations have been found to be effective such that a mere imagination of working as a boss can successfully manipulate power (e.g., Dubois et al., 2010), and it has been used in numerous studies (for reviews, see Galinsky et al., 2014; Sturm & Antonakis, 2015). However, while it can be an effective manipulation of power, it should be noted that the effect of the role manipulation makes it difficult to distinguish between the influence of people's expectations about how individuals with powerful/powerless roles should behave (i.e., a labelling effect and a demand effect) and the effect of certain types of power given to those holding a high power role. In other words, antecedents of the observed effect of power are ambiguous, when role manipulations are used.

1.2.2.4. Manipulations of the Strength of Power

Power priming typically induces a sense of either holding or lacking power. In studies using economic game approaches, one individual is typically given power, and the others do not hold power at all. In role manipulations, while participants in a high power role condition are endowed with power, those in a low power role condition usually do not have power over others at all. These manipulations, therefore, do not allow scholars to investigate whether and how differing levels of power, rather than having vs. not having power, would shape behaviours. There are a few, however, methods that can manipulate the extent of power that individuals hold.

Suleiman's (1996) delta ultimatum game allows to simulate the continuum between a dictator game, where one has power and the other does not at all, and an ultimatum game, where one has power over resources, but the other also has power to determine the final outcomes for both. Suleiman introduced a discount factor of δ ($0 \leq \delta \leq 1$) to an asymmetric game between two individuals. As in a basic ultimatum game, one player is first given, for instance, £10 and decides the division of the money between themselves and the other player. The receiver, then, can decide whether to reject the offer. If the first player keeps £8 for themselves and offers £2 to the second player, the rejection of the offer leads to the first and second players receiving $\text{£}8 * \delta$ and $\text{£}2 * \delta$, respectively. In other words, when $\delta = 0$, the rejection of an offer leads to both receiving nothing, and, thus, the delta ultimatum game is identical to a basic ultimatum game. When $\delta = 1$, the rejection of an offer does not change the outcomes at all, and this is the same as a dictator game. Therefore, in the delta ultimatum game, one can manipulate the level of outcome-interdependence between two players.

Some previous studies with a leader-follower role manipulation further introduced variables that could manipulate the level of power that the leader held (Bendahan et al., 2015; Giurge et al., 2021). In these studies, the number of followers and the number of choices that a leader was given were orthogonally manipulated; the more followers and choices the leader had, the more power they had. Bendahan et al. (2015) found that both manipulations independently (i.e., additively) increased the level of power and, in turn, the leader's corruptive behaviour. In addition, Bone et al. (2016) varied the cost of punishment among participants in prisoners' dilemma games; *weak* players could punish others with a 1:1 fee to fine ratio, and *strong* players could do so with a 1:6 fee to fine ratio. In other words, both types of players have power, but the cost of exercising power is different. While this is not a direct manipulation of the strength of power, it may be, to some extent, relevant.

1.2.2.4. Trait Power and Other Relevant Constructs

Until the late 2000s, a majority of studies examined the role of power without distinguishing between dispositional power (i.e., a stable belief about one's power over others; a.k.a., trait power) and situational power typically induced by one of the above-reviewed power manipulations (i.e., a sense of power that people feel at the current moment, a.k.a., state power / situational power). Previous studies predominantly focused on either one of them, and, irrespective of the type of power, they draw a conclusion as to whether power influences behaviours of their interest. Luckily, dispositional and situational power are oftentimes coherent (Anderson et al., 2012), and both trait and situational power have been found to have a similar effect (Anderson & Galinsky, 2006). However, a sense of power is not always consistent with one's actual power or their power position. More specifically, people in a power position, for instance, do not always feel powerful (Tost, 2015). Thus, it is important to note here that they are distinct constructs, and some previous studies have found that they, in fact, interactively influence social perception and behaviours in some cases (Chen et al., 2009; Schmidt-Barad & Uziel, 2020).

There are several measures of trait power, such as a personal sense of power (Anderson et al., 2012), trait dominance (Burger, 2016; Gough, 1956; Schutz, 1958), and the generalised sense of power (Anderson & Galinsky, 2006). The personal sense of power has been favoured by a majority of recent studies and the personal sense of power scale developed by Anderson et al. (2012) has been used, with modifications, to assess not only trait power but also situationally induced power (Körner et al., 2021). Also, it has been used as a manipulation check (Fast, Sivanathan, et al., 2012; Heller & Ullrich, 2017). See Galinsky et al. (2014) for a detailed review of the use of these constructs in previous studies.

1.2.3. Definitions and Operationalizations of Power: Summary

Definitions of power in psychological research are largely in line with the lay perception of power. Yet, there is not a uniform definition of it. Scholars focus on divergent

aspects of power that are most relevant to their field and employ different definitions. Correspondingly, as reviewed earlier, previous studies have differently operationalized and manipulated power. In my studies (Chapters 4 and 5), I operationally defined power as the ability to ostracise others. I discussed implications of the choice of the operationalization for generalizability and future directions in Chapter 6. In the following section, I shall extensively review previous studies on power and cooperation and discuss the influence of operationalization of power that might alter the relationship between them.

1.3. Power and Cooperation

Power asymmetries can be found in diverse relationships and contexts, for example, friendship contexts (e.g., Modecki et al., 2014; Vaillancourt et al., 2008), academic relationships (e.g., Aguinis et al., 1996; Manathunga, 2007), organizational contexts (e.g., Fleming & Spicer, 2014; Podsakoff, 1982), romantic relationships (Felmlee, 1994; Gordon & Chen, 2013; Righetti, Luchies, Gils, et al., 2015), and intergroup contexts (e.g., Nadler, 2002, 2016; Nadler & Halabi, 2006). As discussed earlier, power asymmetries often benefit the powerful and encourage them to display negative and socially undesirable behaviours. Having power over others, for instance, is associated with increased positive emotions and decreased negative emotions (Anderson & Berdahl, 2002; Berdahl & Martorana, 2006; Gerpott et al., 2018; Langner & Keltner, 2008; van Kleef & Lange, 2020), increased creativity (Galinsky et al., 2008), and enhanced cognitive functioning (Yin & Smith, 2020). While power can also disadvantage powerholders by, for instance, increasing risk-taking behaviour and overconfidence (Anderson & Galinsky, 2006; Fast, Sivanathan, et al., 2012; Ronay & Von Hippel, 2010) and reducing aversion to losses (Inesi, 2010), previous studies have suggested that powerholders, overall, can largely benefit from their power in social interactions. Regarding the influence of power on social behaviours, previous studies found that having power was associated with increased dehumanization (Lammers & Stapel, 2011),

less perspective-taking (Galinsky et al., 2006), increased cheating (Lammers et al., 2010), increased distrust (Mooijman et al., 2015; Schilke et al., 2015; but also see Weiss et al., 2021), and objectification of others (Gruenfeld et al., 2008). In addition, power holders often abuse their power and bully others in diverse contexts (e.g., Carney & Barner, 2012; Fleming & Spicer, 2014; Modecki et al., 2014). Thus, power often leads powerholders to display socially undesirable behaviours. Consequently, the powerless counterparts have been reported to experience negative consequences such as depression and social anxiety (Gilbert, 2000).

The relationship between power and selfish behaviour has gained considerable scholarly attention, given it has a close bearing on social dilemmas that are rife in human lives (for reviews, see Foulk et al., 2020; Williams, 2014). As power can devastate collective benefits in groups (Greer et al., 2017, 2018), the elucidation of the relationship between power and cooperation, in general, offers practical implications for people outside of academia. Do powerholders always behave selfishly? Why do powerholders act selfishly? In the following sections, I shall review studies concerning how power influences cooperative and selfish behaviour. While power is associated with negative social behaviour (Fleming & Spicer, 2014; Terrizzi et al., 2020), recent studies have revealed that power does not always result in negative behaviour, such as reduced cooperation.

I would like to note that cooperation is often defined as a prosocial contribution to the collective (Van Lange et al., 2013) and is one of the different forms of prosocial behaviour (i.e., costly other-benefitting behaviour: Penner et al., 2005; West et al., 2011, for a review on the definition of prosocial behaviours in diverse fields, see Pfattheicher et al., 2022). Given that the relationship between power and prosocial behaviour, theoretically, is not affected by the form of prosocial behaviour, I shall review previous studies on power and prosocial

behaviours in general and note which types of prosocial behaviours, e.g., cooperation or prosocial behaviour, these studies were concerned about.

1.3.1. Power Corrupts: the Traditional View on Power

Since the seminal work by Kipnis (1972), previous studies consistently revealed that powerholders tended to act selfishly. For instance, De Cremer and Van Dijk (2005) used a leader-follower role manipulation and found that participants who were asked to play a role of a leader took more money from collective goods than those who were assigned a follower role. Similarly, Bendahan et al. (2015) and Giurge et al. (2021) also provided experimental evidence suggesting that leaders' power is associated with a tendency to act selfishly in resource allocation tasks. Gordon and Puurtinen (2020) operationally defined power as the ability to punish others with immunity from others' punishment and showed that power holders cooperated less than non-powerholders in a public goods game. Finally, Koning et al. (2011) found that when an allocator in an ultimatum game felt more powerful, they offered less money to recipients. These studies suggest that those with power are generally less cooperative than those without power.

Regarding the potential psychological mechanism behind the negative effect of power, several studies have shown that power leads to negative consequences via enhanced view of the self (for a review, see Galinsky et al., 2014), including increased self-esteem (Wojciszke & Struzynska-Kujalowicz, 2007) and increased sense of entitlement (De Cremer & Van Dijk, 2005). Crucially, De Cremer and Van Dijk (2005) found that power holders were more selfish than the powerless in resource sharing tasks and this difference was explained by different levels of feelings of entitlement.

1.3.2. Power Does Not Always Corrupt

It is tempting to conclude that powerholders are less cooperative than the powerless, but previous studies have revealed that it is not always the case (for reviews, see Foulk et al., 2020; Williams, 2014); there are several moderators of the effect of power on cooperation,

such as individual differences, power stability, power legitimacy, and power construal. In this section, I shall review previous findings on the moderators of the influence of having and lacking power on cooperation.

1.3.2.1. Social Value Orientation (SVO)

Social value orientation has been widely used as an index of personal preferences regarding the distribution of resources to others. It distinguishes between prosocials and pro-selfs. The former and the latter typically seek to maximise collective and personal payoffs, respectively, in social dilemmas (Messick & McClintock, 1968; Murphy et al., 2011; Van Lange et al., 1997). Prior research has robustly shown that SVO translates into prosocial and cooperative behaviours (for systematic reviews, see Balliet et al., 2009; Pletzer et al., 2018). Previous studies found that power led powerholders to display selfish behaviour only when they have proself orientation but not when they have prosocial orientation (Harrell & Simpson, 2016; Van Dijk & De Cremer, 2006). Harrell and Simpson (2016), for instance, endowed the ability to punish others with one individual in a public goods game and showed that the powerful person with proself, but not prosocial orientation displayed reduced level of cooperation. Thus, the negative effect of power emerges only among those with selfish tendencies. Rus et al. (2010) further showed that individuals who were led to believe that they had prosocial tendencies by bogus feedback acted more prosocially compared to those who were made to believe they had pro-self tendencies; a mere belief that oneself is prosocial sufficiently discourage powerholders to display selfish behaviour.

1.3.2.2. Moral Identity

Moral identity refers to the degree to which being a moral person is important to a person's self-concept (Blasi, 1980; Shao et al., 2008). DeCelles et al. (2012) hypothesized that individuals with high moral identity would be concerned about the moral implications of their behaviours and, correspondingly, would not display selfish behaviour when they hold

power over others. Supporting the proposition, in a dictator game, they found that a feeling of power was negatively associated with selfish money allocation among those with high moral identity. In addition, they also found a positive association between a feeling of power and selfish behaviour among those with low moral identity. More recently, Sun et al. (2021) surveyed Chinese students and found that when moral identity is low, a sense of power was negatively related to self-reported prosocial behaviour. By contrast, however, the relationship was nonsignificant among those with high moral identity. While these two studies yielded somehow inconsistent results on the influence of power among those with high moral identity, they both suggested that high moral identity can at least buffer against the negative effect of psychological power on cooperation.

1.3.2.3. Relationship Orientation

Individuals with communal and exchange relationship orientations were known to vary in exchange and distribution of resources with others (Clark & Mills, 1979). More specifically, those with a communal relationship orientation tend to benefit others based on their needs, and they do not expect others to reciprocate their generous behaviour. Contrastingly, those with exchange relationship orientation do not pay much attention to others' need, and they benefit others in a rigid *give-and-take* manner. Chen et al. (2001) examined the interaction between relationship orientations and power and demonstrated that communally-oriented individuals with an elevated sense of power behaved cooperatively, but exchange-oriented individuals with an elevated sense of power acted selfishly. Thus, those with communal relationship orientation are not susceptible to the negative effect of an increased sense of power.

1.3.2.4. Status

Status refers to being respected and admired by others (Anderson & Kilduff, 2009b), and power and status have often been interchangeably used in research (Anderson & Berdahl,

2002; Fiddick et al., 2013; Kwaadsteniet & Dijk, 2010). However, recent studies demonstrated that power and status are distinct constructs and often interactively shape social behaviours (Anicich et al., 2016; Blader et al., 2016; Y. Cho & Fast, 2018; Fast, Halevy, et al., 2012; Fragale et al., 2011; Gu et al., 2020); more specifically those studies have indicated that power with lack of status is typically destructive. Cho and Fast (2018), for instance, orthogonally manipulated power and status in a vignette study and found that high power individuals without status reported a lower helping intention than low power individuals with status. Yet such a tendency was not observed between high and low power individuals with status. Thus, power would lead powerholders to display less cooperation only when they lack status.

1.3.2.5. Power Legitimacy

Lammers et al. (2012) extended the episodic power priming method such that participants were asked to recall a situation where they had had or lacked legitimate/illegitimate power in order to orthogonally manipulate power and its legitimacy. Those in the legitimate power condition displayed a significantly lower level of willingness to help compared to those who did not complete the priming task. Moreover, they found that those in the illegitimate powerless condition also showed a decreased willingness to help. These findings were further supported by a study with the semantic power priming method. In sum, Lammers et al. (2012) suggest that power asymmetries can lead both powerholders and powerless counterparts to reduce cooperation depending on the legitimacy of the power asymmetries.

The moderating role of power legitimacy was further supported by studies with economic game paradigms (De Cremer & Van Dijk, 2005). De Cremer and Van Dijk (2005) had their participants answer questions that were ostensibly framed as measures of managerial skills. Participants in the legitimate power condition were told that they would

complete a resource distribution task as a manager and their responses to the managerial skill task indicated that they possessed the necessary skills to be a leader. On the other hand, those in the illegitimate power were instructed that they scored relatively low on the managerial skill survey but would take a role of a leader. They revealed that legitimate power holders were more selfish in the resource distribution task than illegitimate power holders, consistent with Lammers et al. (2012).

1.3.2.6. Power Stability and Power-Loss Concern

Dorrough et al. (2017) investigated how power stability shapes cooperation in a public goods game in two situations; in one study, they instructed participants that a player who earned the most money would become a powerholder. In other words, selfish behaviours could lead to obtaining power. In another study, they told participants that a person with the highest social status (the sum of contribution – the sum of received punishments) would become a powerholder. Thus, cooperative behaviour could lead to obtaining power. In the former study, they found that the level of cooperation by powerful players did not significantly vary depending on the stability of their power. Contrastingly in the latter study, they revealed that powerful players were less cooperative when their power was stable than when it was unstable. Players without power were always less cooperative when power was unstable compared to when it was stable. Overall, while power instability encourages selfish behaviour among the powerless, it rather diminishes the negative effect of power among the powerful, at least, when cooperation helps them maintain their power.

1.3.2.7. Power Construal and Cultural Differences

Previous studies revealed that power could be construed either as responsibility or opportunity (Sassenberg et al., 2012; Scholl, 2020; Scholl et al., 2018), and power increases cooperation when powerholders see their power as responsibility (Handgraaf et al., 2008; Tost & Johnson, 2019; Wade-Benzoni et al., 2008). Previous studies have reported that

powerholders in different cultures displayed varying levels of self-serving behaviours (Kopelman, 2009). Kopelman (2009) found that powerholders from Hong Kong were more cooperative in social dilemmas compared to those from Western countries. The cultural difference in the construal of power is thought to underlie the finding, and Torelli et al. (2020) have argued that individualism and collectivism should be associated with power as self-benefits and as care for others, respectively.

1.3.2.8. Summary

Overall, previous studies have identified several moderators of the influence of holding and lacking power on cooperation, including individual differences (SVO, moral identity, relationship orientation, and status), structural factors (power legitimacy and stability), the construal of power, and cultural differences. If I extend my scope of review towards the influence of power on other social behaviours, it is known to be moderated by, for example, the need for accountability (Pitesa & Thau, 2013), task relevancy (DeWall et al., 2011), agreeableness (Fouk et al., 2018), need for belonging (Rios et al., 2015), self-focus (Gordon & Chen, 2013), testosterone level (Mead et al., 2018), framing effects (Kim & Guinote, 2021), perceived conflict (Weiss et al., 2021), and Machiavellianism (Wisse & Sleebos, 2016). Future studies may reveal that these variables also intervene in the relationship between power and cooperation. I would like to note that existing studies investigated the role of each moderator separately, and, to my knowledge, no studies have attempted to examine how power influences cooperation when multiple moderators are present. In addition, no existing theoretical framework can offer a single explanation for psychological mechanism behind the observed effects of the above-reviewed moderators (see Sections 1.3.3. and 1.4.). It also remains unknown how these moderators together account for the effect of power; how does power influence cooperation when more than one moderators are simultaneously present? This question is particularly important to address given that

actual social interactions are complex and can involve multiple moderators at the same time. Thus, an integrative model or framework that can potentially account for how different moderators together shape the relationship between power and cooperation will substantially advance the empirical literature as it can provide practical implications to understand how power shapes everyday cooperation (also see Sections 1.3.4.1. and 1.4.).

1.3.3. Theories on Power

In the empirical literature on power, there are several major theories accounting for how power influences behaviour. While none of them was specifically designed to understand the relationship between power and cooperation, some of them offer relevant underpinnings to understand when and how the powerful and the powerless cooperate with others. In this section, I shall briefly review such theories and how they are relevant to the effects of the existing moderators of power that were reviewed in the previous section.

1.3.3.1. Dependence and Need for Control

Drawing upon prior research on interdependence and information processing, Fiske and colleagues conducted a series of experiments in which they investigated the influence of power on attention to various pieces of information (for reviews, see Fiske, 1993; Fiske & Dépret, 1996). They first pointed out that a sense of control is one of the basic human needs. Yet, by definition (e.g., Thibaut & Kelley, 1959), while powerholders meet the need, the powerless often lack control over their outcomes in interaction with those who have more power. As such, the powerless would be typically motivated to seek control. Fiske and Dépret (1996) argued that power asymmetries would influence information processing strategies in a way that the powerful and the powerless satisfy their own needs. More specifically, they held that powerholders did not need to attend to diagnostic information about others to make a judgement about them, as they already had control over the environment and outcomes of themselves and the powerless counterpart. In contrast, they contended that the powerless

tended to attend to diagnostic information about others in order to make an accurate judgement and attain a sense of control. Overall, Fiske and colleagues have argued that power asymmetries trigger different cognitive processes in attention and, correspondingly, information-seeking tendencies because of the need for control.

The theory suggests that power influences to which available cues individuals pay attention to in order to make decisions in social dilemmas. In social dilemmas, individuals are known to base their decision on several contextual cues such as characteristics of others (e.g., Balliet et al., 2014) and a reputational cue (e.g., Bradley et al., 2018; Wu et al., 2016a), which I shall extensively review in Section 1.4.. Based on Fiske's theory, given that powerholders' need for control is already met and they do not endeavour to seek diagnostic information, they might be less likely to be swayed by the presence of contextual cues and, as a result, their decision is likely based on and consistent with their predisposition. Thus, the theory can potentially explain the moderating role of the dispositional factors reviewed in the previous section (Chen et al., 2001; DeCelles et al., 2012; Harrell & Simpson, 2016; Van Dijk & De Cremer, 2006). Conversely, the powerless individuals should be more likely to utilize available contextual cues in order to better predict others' behaviour, and these cues would dictate their decision making. Overall, the theory suggests that power asymmetries may affect the way individuals weigh contextual cues and their innate tendencies when making decisions in social dilemmas.

1.3.3.2. The Approach-Inhibition Theory of Power

The approach-inhibition theory of power (Keltner et al., 2003; also the general model of disinhibition: Hirsh et al., 2011) is one of the most influential theories on power (Galinsky et al., 2014). Drawing upon the early social psychological literature on power, Keltner and colleagues proposed that power was associated with (1) positive affect, (2) increased attention towards rewards (cf., Lin & Schmid, 2022), (3) automatic information processing,

and (4) disinhibited social behaviour. In addition, they held that powerlessness is associated with (1) negative affect, (2) increased attention to threats, punishments, needs of the powerful, (3) controlled information processing, and (4) socially inhibited behaviour. Keltner et al. (2003) further argued that these psychological consequences of power would be rooted in neurobiological systems: the behavioural approach and inhibition systems (Carver & White, 1994). Their claims have been supported by a number of subsequent empirical studies (Cho & Keltner, 2020; but also see Liu & Schmid, 2022; Pike & Galinsky, 2020).

The theory provides explanations for the relationship between power and cooperation as well as the role of some moderators; Keltner et al. (2003) proposed that power lets powerholders pursue their goals, rather than simply increases socially undesirable behaviours. As such, the previous findings on the moderators of the relationship between power and cooperation are largely in line with the theory; power holders behave in line with their prosocial and relationship orientations, i.e., goals (Chen et al., 2001; Harrell & Simpson, 2016; Van Dijk & De Cremer, 2006). In addition, based on the theory, Keltner et al. (2003) also predicted that factors that would reduce the freedom of the powerful, such as power stability, might facilitate the role of the behavioural inhibition systems, which is usually associated with the powerless.

However, while empirical findings on power and cooperation are generally consistent with the predictions derived from the approach-inhibition theory, it is not yet clear whether psychological mechanisms underlying the relationship between power and cooperation are, in fact, rooted in the behavioural approach and inhibition systems. The behavioural approach system generally motivates individuals to move towards desired goals and rewards (Carver & White, 1994), and the approach-inhibition theory, correspondingly, assumes that power encourages the pursuit of individuals' goals among the powerful via the activation of the system. Pike and Galinsky (2020), in their review, recently argued that power liberates

individuals from social constraints that hinder goal pursuits rather than actively promote goal/reward pursuits. More importantly, they pointed out that recent studies do not offer robust evidence for the association between power and the behavioural approach system. Consistently with this, Liu and Schmidt (2022) recently found little empirical evidence for the association between power and attention to reward. Overall, while the theory offers a useful way to interpret the existing findings on the role of power on cooperation, there needs to be further investigations regarding the psychological processes by which power influences cooperation.

1.3.3.3. The Situated Focus Theory of Power

Guinote (2007) proposed the situated focus theory of power, arguing that power is associated with a cognitive processing orientation that is sensitive to the demands of the situation, such as needs and goals that one should fulfil. Guinote (2007) also held that powerlessness is related to holistic information processing in which individuals do not discriminate between goal-relevant and goal-irrelevant information. Unlike the approach-inhibition theory of power, which claims that power makes individuals seek certain information (e.g., rewards), this theory posits that people process information differently depending on their power. Guinote (2007) has posited that while powerholders can selectively attend to information that is relevant to their cognition, motivation, and inner forces, the powerless do not afford to distinguish between relevant and irrelevant information. Such a difference in information processing leads to behavioural differences between the powerful and the powerless. More specifically, powerful individuals are more ready to act and can display flexible behaviours that suit their goals across different situations. Like Fiske and colleagues' theory on power (Fiske, 1993; Fiske & Dépret, 1996), the situated focus theory supports the idea that power does not always lead to selfish behaviour.

1.3.3.4. The Social Distance Theory of Power

Magee and Smith (2013) proposed the social distance theory of power, aiming to offer a new theory on power that can go beyond the scope of the approach inhibition theory (Keltner et al., 2003). They argue that the powerful and the powerless experience different levels of social distance between themselves and others. More specifically, they hold that the powerful have a greater sense of social distance with others compared to the powerless since the powerholders are not dependent on the powerless. They have argued that social distance plays a crucial role in determining consequences of having and lacking power. More specifically, they place social distance as the first mediator of the effect of power on dependent measures; they proposed that power first affects social distance and it then influences various dependent variables via goal pursuit and information processing. They hypothesized, for instance, that holding power leads to disinterest in others' mental states and needs and increased resistance to social influences via increased perceived social distance with others. Magee and Smith (2013) argue that the social distance theory of power can account for psychological effects of power on a wider range of attitudes, behaviours, and cognitions than the approach inhibition theory of power does (Keltner et al., 2003).

These two theories are similar in that they both see goal pursuit as one of the most important mediators of the effect of power. Yet, key psychological processes that the two theories assume are different; according to the approach inhibition theory, it is the activation of the behavioural approach and inhibition systems (i.e., neurobiological systems) that explains the effect of power. In stark contrast, the social distance theory places social distance perception, a psychological mechanism, as a key process behind power. Since the association between power and the behavioural approach and inhibition systems has been both theoretically and empirically challenged and the approach inhibition theory recently receives criticism that little empirical evidence is offered to its core premises (Lin & Schmid, 2022;

Magee & Smith, 2013; Pike & Galinsky, 2020), the social distance theory of power has become one of the influential theories since it was proposed (Scholl & Sassenberg, 2022).

The social distance theory of power provides several predictions about how power influences cooperation. Given that Magee and Smith (2013) proposed that high power is associated with decreased motivation to affiliate others and is therefore linked to, for instance, decreased interests in others' welfare and increased instrumental person perception. It can be reasonably assumed that these further translate into decreased cooperation with others, and it is tempting to conclude that the theory is in line with the traditional view on power (i.e., power corrupts). Yet, the theory also discusses the role of powerholders' goal in shaping the relationship between social distance and social behaviours; similarly to the approach inhibition theory (Keltner et al., 2003), Magee and Smith (2013) expects power to afford power holders to pursue their goal and offer a similar prediction about the moderating role of some individual differences factors such as SVO, moral identity, and status. Therefore, while the social distance theory explains the effect of power on a broader range of behaviours than the approach inhibition theory, these two theories provide converging predictions about the role of power in shaping cooperation

1.3.3.5. Summary

These theoretical frameworks provide motivational and cognitive accounts for how power shapes cooperation. Overall, they converge on the idea that the powerful can pursue their personal goals (also see Guinote, 2017), which is in accordance with the previous findings that power encourages behaviours congruent with dispositions. In addition, the inhibition-approach theory also offers an explanation for the role of situational moderators such as power stability. However, they explain the relationship between having and lacking power and cooperation by referring to seemingly independent psychological processes (i.e., the behavioural inhibition-approach systems vs. cognitive information processing

orientations) and predominantly focus on one's own power rather than target power (power that others have over oneself). Thus, several important questions remain unanswered (Scholl & Sassenberg, 2022): do these psychological processes operate simultaneously? Alternatively, are they situation-specific processes? Are there other psychological processes? Finally, is there a single overarching explanation of the role of power in shaping social behaviour?

I would like to also note that these existing theories solely focus on the effects of holding and lacking power, i.e., one's own power, and predominantly discuss how power influences behaviours of power holders (Schaerer et al., 2018). The effect of power can be divided into a) having/lacking power and b) facing the powerless/powerful, and the current literature lacks studies and theories on the latter. Therefore, previously documented effects of power have been largely discussed in relation to one's own power and it should be examined whether or not they are in fact effects of target power rather than one's own power. Theoretical developments that incorporate potential effects of target power will help scholars revisit and reinterpret existing findings on power and further elucidate how power plays a role in social interactions. Galinsky et al. (2014), in their review, expected that the next generation of power research should address some of these questions to elucidate the psychological processes behind the influence of power.

1.3.4. Towards Understanding the Relationship between Power and Cooperation

Research on power and cooperation/selfishness sprang from the day-to-day observation that power corrupts, and early social psychological work, as well as some recent studies, have documented negative effects of power (e.g., Bendahan et al., 2015; De Cremer & Van Dijk, 2005; Giurge et al., 2021; Gordon & Puurtinen, 2020; Kipnis, 1972; Koning et al., 2011). Yet, the monolithic view on power has been empirically and theoretically overturned; previous experiments have demonstrated that power does not always reduce

cooperation, but the relationship between power and cooperation is moderated by several individual and situational factors. Consistently with this, the major theories on power do not predict that power directly and automatically results in increased selfish behaviour. Rather, they suggest that power affects cognitive and motivational mechanisms and encourages personal goal pursuits. While there is ample theoretical and experimental evidence regarding the relationship between power and cooperation, there are several questions to be answered to better understand the effect of power on cooperation, which I aim to address in the program of research presented in the thesis.

1.3.4.1. Synthesizing Moderators and Theories.

As reviewed earlier, different theories propose distinct psychological processes underlying the effect of power on cooperation and offer explanations for the role of several moderators. However, none of the theories can fully account for the existing set of moderators of the relationship between power and cooperation. More specifically, while the theories provide explanations for the previously observed role of individual factors related to goal pursuit (SVO, moral identity, and relationship orientation), psychological processes responsible for the moderating effects of, for instance, power legitimacy and power construal were yet to be integrated into existing theories. Currently, different theories offer different accounts for underlying psychological mechanism behind the moderators and the current literature lacks an overarching explanation for why these moderators influence the relationship between cooperation and power. Thus, as pointed out by Galinsky et al. (2014), it would be of vital importance to further elucidate the different moderating effects on power by establishing theoretical frameworks that can provide an overarching explanation for them. An integrative framework, which can potentially accommodate a comprehensive set of moderators of the relationship between power and cooperation, is sought. Given that real social interactions are complex and often involve more than one moderator, such a

framework can help us understand how power shapes day-to-day cooperation (see Chapter 6 for more discussions).

1.3.4.2. Sources of the Effect of Power

Schaerer et al. (2018) reviewed roughly 300 published studies that manipulated power and found that more than 60% of the studies on power lacked a control condition. In addition, a sizable number of studies (17.80%) also did not have a low power condition, focusing on the comparison between a high power/powerful condition and a control condition. Previous studies on power and cooperation are no exception; studies with economic game paradigms, for instance, typically had one power holder and compared their behaviour with that of those who do not possess power at all. In other words, these studies lack a control condition. These studies yield valuable evidence as to behavioural differences between powerholders and the powerless, but the differences can be attributed to (1) an effect of power on powerholders' behaviour (e.g., the increased selfishness among powerholders) and/or (2) on the powerless' behaviour (e.g., the reduced selfishness among the powerless). In other words, such studies could not distinguish between the effect of holding power over others and that of lacking power. As pointed out by previous reviews (Schaerer et al., 2018; Sturm & Antonakis, 2015), psychological influences of power asymmetries on the powerless have been relatively understudied, and future studies should comprehensively discuss how power asymmetries shape cooperative behaviours by powerholders and the powerless.

1.3.4.3. One's Own Power vs. Others' Power

An effect of power on the powerful can be further broken down into two sources: an effect of holding power over others (i.e., social power; Overbeck & Park, 2001) and having powerless others (i.e., personal power; Overbeck & Park, 2001). In a similar vein, the effect of power on the powerless can be divided into the effect of lacking power and being subject to the power of the powerful. I argue that psychological effects of one's own power (having

power or lacking power), which the existing theories primarily focus on, and others' power (the presence of powerful or powerless others) are distinct and should be carefully discussed, especially when it comes to the relationship between power and cooperation.

When individuals are faced with a social dilemma and are to decide whether to cooperate with another person, they carefully evaluate the characteristics and past behaviours of the person (e.g., Nowak & Sigmund, 2005). People are known to selectively cooperate with others based on the evaluation, and evolutionary biologists have claimed that this very selective nature of cooperation has favoured the evolution of cooperation (Nowak & Sigmund, 1998, 2005; Roberts, 1998). More relatedly, Inesi et al. (2021) found that individuals utilize power asymmetries between others as information to guide their social judgment and prosocial behaviour towards them. Namely, people were less prosocial towards a person who helped another person with higher power than a person who helped another person with less power, as upward helping (lower power people helping those with more power) appears to be strategically motivated. Thus, these previous findings together suggest that others' power, rather than one's own power, may affect social behaviours including cooperation.

Nevertheless, the relationship between target power and cooperation has been understudied (Feenstra et al., 2021; Fu et al., 2020). Feenstra et al. (2021) systematically reviewed more than 300 studies and revealed that only 3.8% (13 studies) of the studies they reviewed manipulated target power. Thus, future studies should elucidate the association between target power and cooperation to better understand the source of the effect of power on cooperation. I address this issue in Chapters 2, 4, and 5.

1.3.4.4. Hierarchical Nature of Power Asymmetries

As discussed earlier, previous studies mostly focused on cooperation among those with and without power. In these studies, participants in the power condition were endowed

with some form of power, and those in the control or powerless condition were not given any power at all. While the simplistic power asymmetries, where only one person holds power and the others do not, are useful for research on power and cooperation, this experimental approach does not allow scholars to address the more complex nature of power asymmetries in actual social interactions. In reality, individuals belong to a wide range of informal and formal groups. In such groups, power asymmetries are often hierarchically structured (Fiske, 1992; Gruenfeld & Tiedens, 2010; Halevy et al., 2011; Magee & Galinsky, 2008). Even when hierarchies are not present, they can quickly and spontaneously emerge in groups (Anderson & Kilduff, 2009a). Thus, individuals, except for those at the very top or bottom of the hierarchy, have some extent of power over others and are subject to someone's power at the same time. In other words, individuals interact with others who hold higher, same, and lower power in their everyday interactions (Magee & Galinsky, 2008).

Thus, it is imperative to elucidate how individuals behave towards others, varying in their power in a hierarchically structured group context, and research on how power hierarchies shape cooperation would provide practical implications that help us better understand actual cooperation in groups. As reviewed above, previous studies typically employed manipulations in which one individual had power over another individual or other group members (for a review, see van Dijk et al., 2020), and the current empirical literature on power and cooperation lacks empirical evidence as to how hierarchically structured power asymmetries influence cooperation among group members (Feenstra et al., 2021). Thus, in Chapters 4 and 5, I report studies designed to examine how individuals cooperate towards different others, especially group members, varying in their power.

1.4. Reputational Concern, Power, and Cooperation

I have so far reviewed prior studies and theories on power and cooperation. Those are fundamentally motivated to examine the consequence of power, and cooperative/selfish

behaviour is one of the many dependent variables that social psychologists have been interested in. As such, previous work on power and cooperation has been detached from the mainstream of the research on cooperation built mainly by evolutionary biologists and psychologists. The empirical literature on power and cooperation benefits from revisiting findings from cooperation research and re-think about why people cooperate with others in the first place.

The nature and evolution of cooperation is central to the evolutionary psychological literature on human social behaviour (Henrich & Muthukrishna, 2021), and I argue that the integration of the evolutionary psychological insights into the research on power would help us elucidate the relationship between power and cooperation as well as address some of the limitations of the current literature discussed in the previous section. In this section, I shall review the evolutionary psychological literature on cooperation and propose a novel and interdisciplinary theoretical framework on the relationship between power and cooperation, which can potentially offer an overarching explanation for the different moderators of power.

1.4.1. Reputation and Cooperation

Cooperation and other forms of prosocial behaviours are costly by nature (Fehr & Fischbacher, 2003), and cooperative individuals are at risk of exploitation by defectors. Imagine that you live in a village as a fisherman. Most people, including yourself, in the village make a living by fishing. If you want to maximise your personal profit, the optimal solution is to catch as many fish as possible every year. However, if all fishermen in the village do so, the fish will be depleted and eventually go extinct. As a result, every fisherman, including yourself, will suffer. You can cooperate with others to limit your haul, but if others keep catching as many fish as possible, your self-sacrificing cooperation is exploited by them. As such, individuals are generally tempted to act selfishly rather than cooperatively, which benefits themselves but deteriorates the collective welfare (Rand & Nowak, 2013), i.e.,

the tragedy of commons. Consistently with this, in a traditional view of human beings informed by game-theoretical and economic approaches, individuals are thought to be rational agents who pursue self-interest without considering the welfare of others (*i.e.*, *homo economicus*, Yamagishi et al., 2014).

However, previous studies have reported that such costly other-benefitting behaviour is prevailing (e.g., Engel, 2011; Frey & Meier, 2004; Mengel, 2018; Penner et al., 2005; Soetevent, 2005); in highly controlled lab experiments using a dictator game and a prisoners' dilemma game, individuals are known to give, on average, 28.35% of the money they are endowed to a stranger (Engel, 2011), and the average cooperation rate was 37% (Mengel, 2018). Frey and Meier (2004) conducted a large-scale field survey and reported that more than 60% of surveyed individuals ($N > 32000$) made prosocial contributions. Therefore, the traditional model of human beings, *homo economicus*, has been challenged. In fact, Yamagishi et al. (2014) surveyed roughly 500 Japanese adults and found that only 7% of them matched the description of *homo economicus*. People are more cooperative than theoretically expected, and it has been a theoretical conundrum as to why individuals often display costly other-benefitting behaviour, especially towards nonkin.

Addressing the puzzle, evolutionary biologists have identified several mechanisms that can explain the evolution and the prevalence of cooperation (Nowak, 2006; Rand & Nowak, 2013; Van Vugt et al., 2012; Wu et al., 2016) since the seminal work by Hamilton (1964). Trivers (1971) was the first to propose a theory that can account for cooperation towards nonkin. In the theory of reciprocal altruism (*i.e.*, direct reciprocity; Trivers, 1971), they argued that cooperation could be beneficial in the long run if the probability of future interactions is high (Axelrod & Hamilton, 1981; Trivers, 1971). In other words, immediate costs associated with cooperation can be compensated in future interactions as one's cooperation is reciprocated by the person who has received the cooperative behaviour in the

previous interaction. Scholars utilize iterated and sequential economic games to provide empirical evidence for the theory (e.g., Nowak & Sigmund, 1994), and numerous studies have demonstrated that individuals are more cooperative when they are aware of future interactions with their interaction partners compared to when they complete a one-shot game (Rand & Nowak, 2013). One of the critical limitations of the theory is that direct reciprocity is based on the assumption that repeated interactions occur between individuals. In reality, however, some human interactions are transient and do not involve sure future interactions. In such circumstances, direct reciprocity loses its explanatory power for the evolution of cooperation (cf., Krasnow et al., 2013).

Nowak and Sigmund further extended the theory of reciprocal altruism and posited that indirect reciprocity could favour cooperation (Nowak & Sigmund, 1998, 2005). According to the indirect reciprocity account, cooperation with another person can earn a positive reputation, and this increases the chance of receiving favourable treatment from others. In other words, while individuals have to incur immediate costs to cooperate with others, cooperation brings reputational benefits, which outweigh the cost associated with cooperation in the long run. Indirect reciprocity is particularly useful to account for cooperation when individuals live in a large group and re-encountering with others is unlikely. In line with the theory, previous studies have consistently demonstrated that individuals are more cooperative when their reputation is at stake compared to when it is not (e.g., Bradley et al., 2018). Supporting the indirect reciprocity account, numerous empirical studies have also shown that cooperation results in future reputational benefits such as receiving rewards from a third party (e.g., Wedekind & Milinski, 2000).

Competitive altruism is an alternative evolutionary explanation for the prevalence of cooperation (Barclay, 2016; Roberts, 1998; Van Vugt et al., 2012; also see Zahavi & Zahavi, 1999). This perspective is built upon two assumptions. Firstly, it assumes that individuals

vary in altruism. Secondly, there is competition for the most cooperative partners when individuals attempt to form coalitions and alliances. These two premises together suggest that individuals should compete to be more cooperative than others in order to form the best possible partnerships. This perspective has collated experimental evidence, and previous studies consistently showed that individuals were more cooperative when they could be chosen as a partner by others compared to when they could not (Barclay, 2004; Barclay & Willer, 2007; Fu et al., 2008; Sylwester & Roberts, 2013).

While indirect reciprocity and competitive altruism have different foci, they converge on the idea that reputation plays a crucial role in shaping cooperation, and the development of the theories has formed a rich empirical literature on reputation-based cooperation. These theoretical frameworks on the evolution of cooperation point to the importance of reputation management in social lives, especially in shaping cooperation. According to the theories, cooperation serves to receive indirect reciprocity and find desirable coalitions through earning a positive reputation (for reviews, see Giardini et al., 2021; Van Vugt et al., 2012; Wu et al., 2016). Individuals with a positive reputation can also maintain group memberships (Mifune et al., 2010; Yamagishi & Mifune, 2008) and earn trust from others (Barclay, 2004; Imada, Hopthrow, et al., 2021; Wu et al., 2015, 2016b). The reputational benefits of cooperation go far beyond acquiring such preferable outcomes. A positive reputation also helps individuals avoid ostracism (Dannenberg et al., 2020; Feinberg et al., 2014) and punishment (Balliet et al., 2011).

Consequently, individuals readily detect cues indicating that their reputation is at stake and condition their cooperative decision to them. Previous studies have revealed that individuals increase their level of cooperation when their behaviour is simply communicated to others, even if no explicit reputational consequences, such as a future opportunity to receive rewards, are implied (Andreoni & Petrie, 2004; Beersma & Van Kleef, 2011;

Campbell & Slack, 2006; Filiz-Ozbay & Ozbay, 2014; Hardy & Van Vugt, 2006; Piazza & Bering, 2008a; van Vugt & Hardy, 2010). In line with this, Bradley et al. (2018) meta-analysed previously published 134 effect sizes and found that mere observability promoted prosociality. Notably, they found that even a mere belief that they would be observed by others (i.e., perceived observability) sufficiently promoted prosocial behaviour. Overall, reputational concern is a strong driver of cooperation.

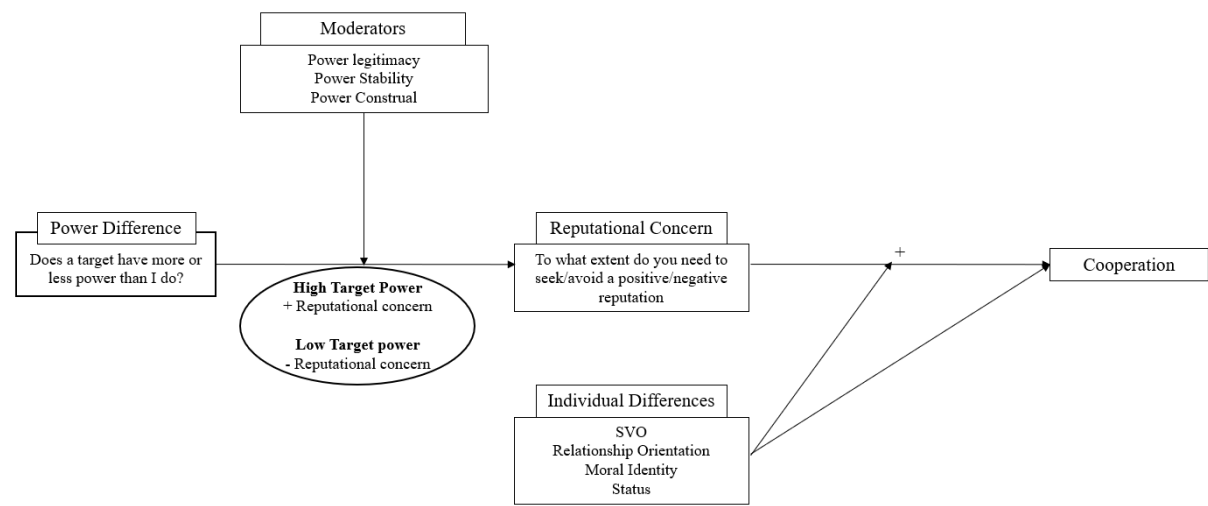
1.4.2. Reputational Accounts of Power and Cooperation

Power, by definition (see Section 1.2.1.), involves asymmetric influences between individuals. Namely, the powerful can unilaterally influence others, and the powerless are susceptible to their power. Power holders, such as CEOs, managers, and authority figures, have the asymmetric ability to influence those with less power in a variety of ways. They can, for instance, use their control of both symbolic and material resources, ranging from ostracism or imposition of unwelcome tasks on others with a negative reputation to determining wages, advancement, and privileges as rewards for those with a positive reputation. Moreover, the powerful may not be subject to negative reputational consequences even if they establish a negative reputation (Mondillon et al., 2005). By contrast, the powerless counterparts cannot exert power (i.e., reputational consequences) over the powerful. Accordingly, the powerless are likely to be much more susceptible to negative reputational consequences than the powerful, and it is crucial for the powerless to maintain a positive reputation to actively seek to avoid negative reputational consequences (Yamagishi & Mifune, 2008). Taking them together, I argue that power asymmetries (i.e., whether people have more or less power than a person with whom they interact) can inform individuals of to what extent they should be concerned about their reputation; power asymmetries may function as a reputational cue. More specifically, I expect that when individuals are faced with someone who has power over themselves, they become more vigilant as the power

relation elicits increased reputational concern, and, correspondingly, increase cooperation. Accordingly, in such a situation, those who are not inclined to be prosocial are substantially influenced by reputational concern (Wu et al., 2015) and the relative influence of their intrinsic motivations (e.g., SVO, moral identity, relationship orientation, and status) on cooperation appears to decrease. On the other hand, I predict that when people are faced with someone who has no power over themselves, they become less concerned about their reputation, as a negative reputation is unlikely to result in negative consequences such as ostracism and punishments. Consequently, this increases the relative influence of intrinsic motivations on cooperation.

Hereby, I propose the reputational account of power, and this theory places reputational concern, the evolutionarily acquired mechanism, as the psychological process determining how power influences cooperation. Unlike the existing theories on power, this perspective explains the effects of power by focusing on power difference (i.e., whether others have more or less power compared to oneself), rather than one’s own power. This theoretical framework can accommodate the previously documented moderators of the effect of power on cooperation. See Figure 1 for the visualisation of the proposed model.

Figure 1. The Proposed Reputational Account of Power



First of all, there is some preliminary evidence of the relationship between power and reputational concern. Petkanopoulou et al. (2019) revealed that the powerless were less likely to express anger than the powerful because the powerless were concerned about negative outcomes such as establishing a negative reputation and punishments. Cai and Wu (2017) found that those who were primed with a lack of power were more fearful of negative evaluation than those who were primed with holding power. Moreover, Inesi et al. (2021) showed that individuals perceived upward helping (i.e., the powerless helping the powerful) to be selfishly motivated, suggesting that people may assume that upward helping is a means for reputation management.

The proposed reputational account of power can potentially provide an overarching framework to understand the role of different moderators of the effect of power on cooperation (Figure 1), such as individual differences (i.e., prosocial orientation, relationship orientation, moral identity, and status) and contextual factors (i.e., power legitimacy and power stability). These individual differences are all associated with the extent to which individuals generally attend to others' needs and behave in a way that benefits others. The powerful are much less susceptible to negative reputational consequences, and they can afford to behave in a way that they can achieve their goal (Cho & Keltner, 2020; Keltner et al., 2003); the force of reputational concern is weaker for the powerful as compared to the powerless. As such, it is only the powerful with more intrinsic proself motives who can afford to display selfish behaviour. Thus, these suggest that power indirectly influence prosocial behaviour via reputational concern and the relative importance of individual differences such as prosocial orientation would be weaker for the powerful. I would like to also point out that previous studies found an interaction between prosocial orientation and reputational concern. Wu et al. (2015) found that prosocial individuals were prosocial regardless of how much they experience reputational concern, but reputational concern has a

bigger cooperation-enforcing effect on those with prosocial orientation. Thus, Prosocial behaviour can be influenced by an indirect effect of power via reputational concern, the influence of individual differences, and the interaction between them (see Figure 1).

Lammers et al. (2012) found that illegitimate power was associated with a reduced sense of power (self-sufficiency). Accordingly, powerholders with illegitimate power may anticipate vulnerability to negative reputational consequences, and this can explain their increased cooperativeness. When power is unstable and a person with the most favourable reputation is rewarded with power, powerholders become less selfish (Dorrough et al., 2017). This can be interpreted such that powerholders (i.e., low target power) feel increased reputational concern because of the power instability and display cooperation in order to establish a positive reputation. Finally, power construal influences people's expectation about powerholders' behaviour. More specifically, when power is construed as responsibility, people expect that powerholders prioritise treating others in a respectful manner (Scholl, 2020) and high target power is unlikely to translate into reputational concern (i.e., susceptibility to negative reputational consequences such as punishments). All in all, these moderators explain whether and how power difference translates into reputational concern. Taken together, these considerations lead me to expect that reputational concern may offer a parsimonious explanation for why and how these different moderators affect the relationship between power and cooperation.

In addition, the reputational account of power can offer relevant underpinnings to intergroup cooperation, as several previous studies pointed to the crucial role of reputational concern in shaping in-group favouritism (e.g., Kajiwara et al., 2022; Mifune et al., 2010; Mifune & Yamagishi, 2015). Mifune and colleagues have argued that individuals are motivated to establish and maintain a positive reputation within their in-group but not in out-groups, which leads to an increased level of cooperation towards in-group members (i.e., in-

group favouritism). Yet, the empirical literature on in-group favouritism did not pay much attention to within-group variations, including power asymmetries. Incorporating the reputational account of power into the existing finding on intergroup cooperation, it can be assumed that individuals may not increase cooperative behaviours towards all in-group members; assuming that individuals are immune from sanctions from lower power in-group members, they may not favour lower power in-group members over out-group members, as reputational benefits of favouring them can be minimal. Thus, the elucidation of the relationship between power, reputational concern, and cooperation can extend the empirical literature on intergroup cooperation by shedding light on the role of within-group power differences on intergroup discrimination in cooperation. I present studies addressing this in Chapter 5.

Finally, the reputational account of power can be generalised to explain how power influences a wide range of social behaviours that are driven by reputational concern, including punishment (e.g., Batistoni et al., 2022; Sylwester & Roberts, 2010) and pro-environmental behaviour (Barclay & Barker, 2020). Therefore, the proposed theory and the program of research in the thesis can theoretically advance diverse fields of research.

1.5. The Overview of the Thesis

Despite the theoretical link between power and reputational concern and preliminary findings (Cai & Wu, 2017; Inesi et al., 2021; Petkanopoulou et al., 2019), there have not been any attempts to theorize and elucidate the influence of power differences on cooperation focusing on reputational concern. As discussed earlier, the hypothesised relationship between power, reputational concern, and cooperation can potentially offer a parsimonious explanation for the roles of several moderators and help us harness how power shapes cooperative behaviour. In addition, the proposed reputational account of power overcomes several limitations identified in the current empirical literature on power (see Section 1.3.4.).

Therefore, in this thesis, I aim to offer correlational and experimental evidence to the reputational account of power, testing and elaborating on the hypothesis that power asymmetries would function as a reputational cue and influence cooperation via reputational concern. More specifically, I test the prediction that when people face others who hold more power than they did, they would feel more concerned about their reputation and correspondingly become more cooperative. Conversely, when people interact with others who hold less power than themselves, they would feel less reputational concern, leading to less cooperation. Thus, I mainly focus on establishing the link between power, reputational concern, and cooperation, which is central to the reputational account of power in the present thesis. As such, empirical tests of moderators are out of the main scope of the thesis and left for future studies (see Chapter 6 for detailed discussions).

In Studies 1 – 4 (Chapter 2), I sought to first establish the relationship between reputational concern and social power, providing correlational evidence that social power indirectly shapes prosocial behaviour via reputational concern. More specifically, I tested the following key hypotheses: (1) positive power asymmetry (one's own power – another person's power) would be negatively associated with reputational concern and (2) power asymmetry would have an indirect effect on prosocial behaviour via reputational concern. In addition to power asymmetries, I also examined how one's own power and target power were related to reputational concern and prosocial behaviour.

I would like to note again that in Studies 3 and 4, I measured prosocial behaviour, rather than cooperation. Prosocial behaviour, costly acts that benefit others, includes diverse forms of other-benefitting behaviour, such as volunteering, sharing, helping, and cooperation. Strictly speaking, in several scientific fields, cooperation is typically defined as a prosocial contribution to the collective (Van Lange et al., 2013) and is one of the forms of prosociality. That said, previous studies have found that costly other-benefitting behaviour in general,

regardless of the form of the behaviour (i.e., prosociality vs. cooperation), can be a means for reputation management (Barclay, 2012). Thus, the reputational account of power and hypotheses derived from the proposition should hold across prosocial behaviour and cooperation.

In Studies 5 – 7 (Chapter 3), using the two power priming manipulation methods, I aimed to provide empirical evidence that an experimentally induced sense of power would influence reputational concern. I employed episodic power priming (Galinsky et al., 2003) and semantic power priming (Mast et al., 2009), and manipulated one's own power rather than power asymmetries or target power. These studies served to extend the correlational studies by offering a causal relationship between a sense of power and reputational concern. I tested the following two hypotheses; (1) high power priming would lead to reduced reputational concern, and (2) low power priming would lead to increased reputational concern.

Studies 8 – 11 (Chapter 4) probed the findings from Studies 1 – 4 using economic game paradigms by directly manipulating target power rather than one's own power. I developed a novel experimental paradigm where participants were nested in a group with a power hierarchy. In the hierarchically structured experimental group, some participants were able to ostracise other group members, but others were not. Thus, the power hierarchy was operationalized based on the ability to ostracise others. In these studies, participants played prisoners dilemma games with group members who had more, equal, and less power compared to their own. This design allowed me to directly manipulate the power of others, rather than one's own power, and simultaneously investigate how power would influence cooperation with others, each having different levels of power, going beyond conventional power-related studies where researchers could only address the influence of the dyadic power asymmetry. I tested the hypothesis that individuals would cooperate more with a higher-

power group member than with same- and lower-power group members. In follow-up analyses, I conducted mini meta-analyses to examine the robustness of evidence for the hypotheses.

In Studies 12 – 14 (Chapter 5), I further extended the experimental paradigm and findings from Studies 8 – 11 to investigate how a power hierarchy in an in-group would influence intergroup cooperation. Namely, I investigated whether in-group favouring tendencies would hold regardless of how much power other in-group members holds over oneself. Do people still favour in-group members who have higher or lower power than they do over out-group members?

In the final discussion chapter (Chapter 6), I first summarise and discuss findings from the experimental chapters (Chapters 2 – 5). Based on the summary, I articulate and discuss the reputational account of power, the theory that the thesis is dedicated to proposing and testing. Lastly, I discuss its contribution and applications as well as limitations and future directions.

Ch. 2: Correlational Evidence: Power, Reputation, and Prosociality

Introduction

Ubiquitous references and quotes to power in novels, plays, and historical materials demonstrate just how relevant power asymmetries are to people's everyday lives. Power - the ability to control and influence others' behaviours (Farmer & Aguinis, 2005; Keltner et al., 2003; Sivanathan et al., 2008; Thibaut & Kelley, 1959) – is often thought to have negative consequences, exemplified in the adage that “power tends to corrupt and absolute power corrupts absolutely” (Dalberg-Acton, 1907). It is claimed that “the greater the power, the more dangerous the abuse” (Edmund Burke, 1771 in Oxford Essential Quotations, 2015), and many works have explored the effects of power on corruption – from Shakespeare's *Measure for Measure* to the modern-day *House of Cards*. Indeed, social psychological work has found evidence of the negative effects of power asymmetries (e.g., Gilbert, 2000), which manifest as negative social behaviour such as corruption (e.g., Kipnis, 1972) and selfishness among the powerful. Understandably, therefore, lay perceptions of power tend to be negative (Fleming & Spicer, 2014; Wingen & Dohle, 2021).

How does power affect cooperation? Many significant societal issues, such as environmental problems (Joireman, 2005; Van Vugt, 2009), present themselves as social dilemmas, and in many cases, the resolution depends on cooperative action between more and less powerful agents (Gross et al., 2020; Hauser et al., 2019). Despite lay perception and early findings on power (e.g., Kipnis, 1972), recent studies have indicated that power asymmetries do not always negatively affect cooperation and that individual differences and contextual cues can moderate such effects (for reviews, see Foulk et al., 2020; Galinsky et al., 2014; Williams, 2014). In the previous chapter, synthesizing social and evolutionary psychological perspectives, I proposed the reputational account of power and I aim to provide preliminary correlational evidence for the account in this chapter.

Power and Reputational Concern

As reviewed in Chapter 1, reputation is crucial in social lives: individuals strive to maintain a positive reputation to acquire coalition partners (Roberts, 1998; Van Vugt et al., 2012) and receive favourable treatments from others (Nowak & Sigmund, 1998, 2005). Similarly, people are motivated to avoid establishing a negative reputation as it leads to destructive social consequences such as ostracism and punishment (Fehr & Gächter, 2000; Feinberg et al., 2014). Previous studies have demonstrated that reputational concern encourages individuals to cooperate rather than defect in social dilemmas (for a review, see Wu et al., 2016), as cooperation serves to earn a positive reputation. People cooperate more with others when their behaviour is observed by or communicated to others than when it is not (Bradley et al., 2018; Campbell & Slack, 2006; Filiz-Ozbay & Ozbay, 2014; Hardy & Van Vugt, 2006; van Vugt & Hardy, 2010). They display increased generosity and cooperation when their behaviour can be gossiped about by others (Beersma & Van Kleef, 2011; Imada, Hothrow, et al., 2021; Piazza & Bering, 2008b; Wu et al., 2015). They are more cooperative when they compete to be chosen as an exchange partner than when they do not (Barclay, 2004; Barclay & Willer, 2007; Fu et al., 2008; Sylwester & Roberts, 2013). They cooperate more with others when they can be ostracized based on their behaviour (Dannenberg et al., 2020; Feinberg et al., 2014). Finally, people are more prosocial when their behaviour could earn trust and cooperation from others (Imada, Hothrow, et al., 2021; Milinski et al., 2002; Wu et al., 2015). Overall, these findings suggest individuals are sensitive to diverse reputation cues in social environments (e.g., anonymity, the possibility of being the subject of gossip, etc.) and display cooperation as a means of reputation management.

The Reputational Account of Power

Whilst previous studies on power have predominantly focused on how an actor's own power influences that actor's cooperation (Galinsky et al., 2014; Sturm & Antonakis, 2015), the reputational account of power treats power asymmetry as a contextual cue to induce reputation-based cooperation and explains the role of power in relation to whether or not power asymmetry induces reputational concern or not. I hold that the consequences of having a negative reputation are particularly acute when it is combined with low power. Therefore, when people interact with others who have power over themselves, they are likely to feel more reputational concern and display more cooperation compared to when they interact with others over whom they have power. Consequently, the powerless will be more inclined to be more cooperative than the powerful because of the increased level of reputational concern that the powerless experience. By contrast, powerholders, who have the ability to punish and reward others, are less susceptible to receiving negative reputational consequences even when they have a negative reputation. Therefore, the force of reputational concern might be less strong for the powerful compared to the powerless. In summary, I expect that power asymmetry (i.e., whether people have more or less power over others) is a cue to reputational risk and influences cooperative behaviour via concern to avoid negative and secure positive reputation.

In Chapter 2, I present four correlational studies designed to offer preliminary, correlational evidence to the reputational account of power. More specifically, I tested the following hypotheses: (1) positive power asymmetry (one's own power – another person's power) would be negatively associated with reputational concern (Studies 1 – 4), and (2) power asymmetry would have an indirect effect on prosocial behaviour via reputational concern (Studies 3 & 4). In addition, I examined the role of own versus others' power and of potential moderators of the relationship between power and cooperation. Overall, these

studies provided converging evidence that target power (i.e., power that others have over oneself) is strongly associated with reputational concern and prosocial behaviour.

Study 1: Power and Reputation in Everyday Life

The present study served to provide preliminary evidence pointing to the association between social power and reputational concern. I asked participants to think about one of their acquaintances and recall a situation they had interacted with the person. I hypothesized that reputational concern they had experienced in the relationship with the recalled person would be positively and negatively correlated with the recalled person's power over themselves and their own power over the recalled person, respectively.

Data, study material, analysis code, and supplementary results are available at https://osf.io/f98q6/?view_only=b37e655671ab426b9462fa4b98e01151. I preregistered a brief study procedure, a target sample size, and the hypotheses at https://osf.io/bz4rt/?view_only=95fa369e54bb46099c6bed34c1ccf3b6.

Methods

I recruited 300 university students, and 292 participants fully completed the study (251 women, $M_{age} = 19.55$, $SD = 4.18$) in exchange for partial course credit. After giving consent, participants were asked to recall their acquaintance and a situation when they interacted with the recalled person the last time. They answered three open-note questions asking them to indicate the nature of their relationship with the recalled person, where and when they interacted with them the last time, and under what occasion they interacted with the person. After the recall task, I measured the perceived power of themselves over the recalled person and the perceived power of the recalled person over themselves. I employed and modified the sense of power scale (Anderson et al., 2012) to measure them. They were measured with eight items (e.g., I can get him/her/them to listen to what I say; His/her/their wishes do not carry much weight), and participants indicated their level of agreement with

them using a 7-point scale from 1 = *Strongly disagree* to 7 = *Strongly agree* (one's own power: $\alpha = .82$; the recalled person's power: $\alpha = .76$). I call the perceived power of the recalled person *target power*. The order of these measures was randomized and counterbalanced.

Then, participants answered four questions measuring reputational concern they experienced in the relationship with the recalled person (Wu et al. 2015; e.g., it's important to me that the person has a positive evaluation about me; $\alpha = .77$), using a 6-point scale from 1 = *Strongly disagree* to 6 = *Strongly agree*. I measured emotions they experienced when interacting with the recalled person for exploratory purposes. Lastly, participants were asked for demographic information and debriefed.

Results and Discussion

Preregistered Hypothesis Testing

I first examined correlations among one's own power ($M = 4.77$, $SD = 0.89$), target power ($M = 4.95$, $SD = 0.84$), and reputational concern ($M = 3.88$, $SD = 0.83$). Target power was positively correlated with reputational concern, $r = .46$, $p < .001$. However, contrary to my prediction, one's own power was positively, rather than negatively, correlated with reputational concern, $r = .24$, $p < .001$. One's own power and target power were positively correlated, $r = .44$, $p < .001$.

Power Difference and Reputational Concern

I then computed the power difference score (one's own power – target power: $M = -0.19$, $SD = 0.92$), and I treated it as an indicative of power difference. The correlation between power difference and reputational concern was significant, suggesting that the power difference between individuals was negatively related to reputational concern in line with the reputational account of power, $r = -.19$, $p < .001$. In other words, the more power a target

person has relatively to participants, the more reputational concern they experienced, which is in line with the reputational account of power.

In addition, I explored whether the relationship between power difference and reputational concern would vary depending on the nature of the relationship with the recalled person. Of 292 participants, 145 participants recalled a friend or a close friend, and the correlation between power difference and reputational concern was not significant, $r = -.12$, $p = .14$. Twenty participants recalled a flatmate, and the correlation was significant, $r = -.46$, $p = .04$. Twenty-six participants recalled a romantic partner, and the correlation was not significant, $r = -.23$, $p = .26$. Due to the small sample size for each correlation, I could not draw a solid conclusion, but this seems to suggest that the power-reputation relationship might not hold in close relationships (an issue I return to in later studies).

Target Power vs. One's Own Power

I found that the correlation between target power and reputational concern ($r = .46$) was significantly stronger than those between one's own power and reputational concern ($r = .24$) and between power difference and reputational concern ($r = -.19$), $z_s > 3.87$, $p_s < .001$. In addition, I regressed reputational concern on both one's own power and target power, allowing me to examine the independent effects of them. The model was overall significant, $F(2, 289) = 39.05$, $R^2 = .21$, $p < .001$. Target power was significantly and positively associated with reputational concern ($B = 0.44$, $p < .001$), but one's own power was not significantly related to it ($B = 0.04$, $p = .46$). These results suggest that it is target power rather than one's own power that is relevant to reputational concern.

Summary

In Study 1, I obtained preliminary evidence that power difference was associated with reputational concern. Importantly, target power was associated with reputational concern more strongly than one's own power and power difference, suggesting that target power may

act as a reputational cue rather than one's own power and power difference. In the study, participants were asked to recall anyone, and this resulted in the qualitative variation in interpersonal relationship contexts. Previous studies suggested that the role of power would differ depending on relationship contexts (e.g., Righetti et al., 2015). Thus, to better harness the association between reputational concern and power, it would be desirable to control for a type of interpersonal relationship to avoid the variation in the types of relationships that participants recall strengthen or weaken the overall association between power and reputational concern. To this end, I decided to first focus on an organizational context (Studies 2 – 3) and then turn to a friendship context (Study 4).

Study 2: Power and Reputation in Organizational Contexts

In Study 2, I sought to test the two preregistered hypotheses. The first hypothesis was that power difference (one's own power – target power) would be negatively correlated with reputational concern, such that people who thought about another person with greater relative power would be more concerned with their reputation. In addition, in the present study, I took an opportunity to test a potential moderating role of interpersonal closeness in the relationship between power and reputational concern. Rumble et al. (2022) suggest that in close interpersonal relationships, individuals may hold expectation that their interaction partner is prosocial rather than selfish and this may buffer against the expectation about the negative influences of power asymmetries, which is arguably responsible for the effect of power on reputational concern. I expected that interpersonal closeness moderates the relationship between power difference and reputational concern such that power difference between individuals in a close relationship would no longer translate into reputational concern. In Study 2, I focused on an organizational context and relationship where power and power hierarchies are relatively salient (Blau & Scott, 1962; Brass, 1984; Liu & Moskvina, 2016).

I preregistered the hypotheses, a brief study procedure, and a target sample size at https://osf.io/f98q6/?view_only=b37e655671ab426b9462fa4b98e01151. I have study material, data, analysis code, and supplementary results available at https://osf.io/2erk9/?view_only=b358a6b5a2204f65b8e1d4a1aea8e047.

Methods

I recruited 300 full-time workers through Prolific (132 males, 168 females, $M_{age} = 35.57$, $SD = 9.73$). The sample size allowed me to detect small correlations of $\rho = .16$ (two-tailed) and regression coefficients of $f^2 = .02$ (one-tailed) with 80% statistical power at $\alpha = 0.05$, and the study was sufficiently powered. I asked them to think about a person at work and recall a situation where they interacted with the person the last time. As in Study 1, they indicated the nature of the relationship (i.e., co-worker, boss, or subordinate), where and when they interacted with the person the last time, and under what occasion they interacted with the person. Additionally, I asked them to indicate the gender of the recalled person. After the recall task, I administered the same set of items to measure one's own power and target power in a randomized order (one's own power: $\alpha = .88$; target power: $\alpha = .86$). I then introduced the same reputational concern measure ($\alpha = .75$).

Participants were then presented with pictures of two circles and instructed that they each represented themselves and the recalled person. The seven pictures varied in the level of overlap between the circles, and participants selected one that described their relationship with the recalled person the best (Aron et al., 1991). The seven pictures were labelled as follows: *1 = no overlap*, *2 = little overlap*, *3 = some overlap*, *4 = equal overlap*, *5 = strong overlap*, *6 = very strong overlap*, and *7 = most overlap*. I treated it as a continuous variable such that the higher score reflected higher closeness with the recalled person. In addition, I measured their perceived position in a hierarchy at their workplace and their perceived status and power at their workplace. I presented a picture of a ladder that

represented the formal hierarchy for their organization and asked them to indicate approximately where on the organizational hierarchy they thought they fell, using a scale ranging from 1 (*top rung*) to 10 (*bottom rung*). For the perceived status and power, I used twelve items developed by Yu et al. (2019). Example items included “I am admired by others at work because I am seen as competent in my work” and “I formally manage many other people,” and they indicated the level of agreement with the items, using a 7-point scale from 1 = *Strongly disagree* to 7 = *Strongly agree* (perceived status: $\alpha = .89$; perceived power: $\alpha = .89$). These measures served to indicate to what extent participants thought they, in general, had status and power at work and were used to control for participants’ position at their workplace (e.g., a CEO or an employee). I planned to use these variables, together with their gender and the recalled person’s gender, as controlling variables. Gender was coded as follows: male = 1: female = 2

I recruited British people who were employed, and they could substantially vary in terms of their actual power, status, and a position or a role in their workplace. To control for the potential effect of them, I measured and added them as covariates in regression models. In addition, gender-related variables were used as covariates because Gonzaga et al. (2008) pointed out that the strength of the influence of interpersonal power asymmetries differed depending on gender of the two individuals. Main results did not change when excluding the covariates in any meaningful ways.

Results and Discussion

Bivariate Correlations

I first examined a bivariate correlation between power difference ($M = -0.44$, $SD = 1.23$) and reputational concern ($M = 3.82$, $SD = 0.72$), and found a significant negative correlation, $r = -.23$, $p < .001$, supporting the first hypothesis. Following Study 1, I compared the correlation between target power and reputational concern ($r = .49$, $p < .001$) with those

between reputational concern and power difference and one's own power ($r = .18, p < .001$). The association between target power and reputational concern was significantly stronger than those between one's own power and reputational concern and between power difference and reputational concern, $z_s > 4.77, p_s < .001$.

Moderation Analyses

I built a linear regression model to test whether the interaction between power difference and interpersonal closeness and the control variables predicted reputational concern (see Table 1). While the model was significant, $F(8, 291) = 9.57, R^2 = .21, p < .001$, the interaction term was not significant. Thus, contrary to the second hypothesis, interpersonal closeness did not moderate the relationship between power difference and reputational concern. Power difference was a significant predictor of reputational concern, suggesting that the more the relative power of the recalled person was, the more reputational concern they felt. Overall, the study successfully replicated Study 1, and the relationship between power asymmetry and reputational concern held regardless of interpersonal closeness.

Table 1. Results from the Multiple Regression Analysis Predicting Reputational Concern

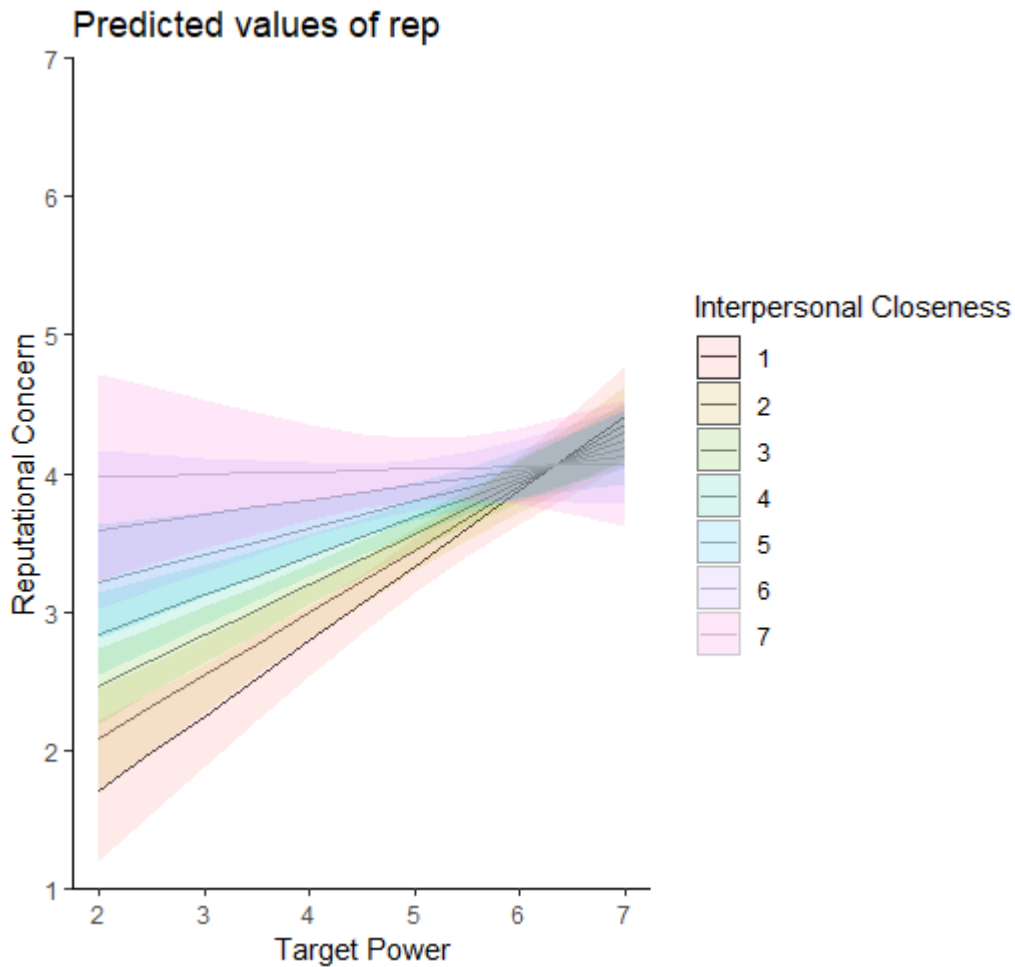
	<i>B</i>	95% CI		<i>p</i>
		LL	UL	
Power Difference	-0.22	-0.38	-0.06	.001
Closeness	0.16	0.10	0.23	< .001
Perceived Status	0.15	0.05	0.25	< .001
Perceived Power	-0.04	-0.10	0.03	.28
Perceived Rank	-0.03	-0.07	0.01	.15
Gender	-0.11	-0.18	-0.03	.01
Recalled Person's gender	-0.03	-0.11	0.04	.41
Power Difference x Closeness	0.02	-0.03	0.07	0.51

In addition, I conducted a regression analysis, in which I dropped power difference and its interaction with interpersonal closeness and added target power, one's own power, and their interactions with interpersonal closeness. Overall, the model was significant, $F(10, 289) = 13.92$, $R^2 = .33$, $p < .001$. I found a significant interaction between target power and interpersonal closeness, while one's own power and its interaction with interpersonal closeness were not significant (see Table 2). I further conducted a simple slope analysis and revealed that the positive association between target power and reputational concern increases as interpersonal closeness decreases, supporting the hypothesis (see Figure 2).

Table 2. Results from the Multiple Regression Analysis Predicting Reputational Concern

	<i>B</i>	95% CI		<i>p</i>
		LL	UL	
Target Power	0.63	0.42	0.83	< .001
Own Power	0.05	-0.14	0.23	.61
Closeness	0.59	0.28	0.90	< .001
Perceived Status	0.05	-0.05	0.15	.36
Perceived Power	-0.03	-0.10	0.03	.27
Perceived Rank	-0.02	-0.06	0.02	.27
Gender	-0.11	-0.18	-0.04	< .001
Recalled Person's gender	-0.03	-0.11	0.04	.35
Target Power x Closeness	-0.09	-0.14	-0.03	< .001
Own Power x Closeness	-0.01	-0.06	0.05	.77

Figure 2. Moderation Plot of the Interaction between Interpersonal Closeness and Target Power



Summary

Overall, the results supported the first hypothesis that power difference would be negatively correlated with reputational concern, replicating Study 1. Consistently with Study 1, though, I found that target power rather than power difference was strongly associated with reputational concern. I did not find support for the hypothesis that the relationship between power difference and reputational concern would be moderated by interpersonal closeness with another person such that the relationships would only emerge when they were not close to each other. However, target power and interpersonal closeness interactively predicted reputational concern such that the positive association between target power and reputational concern was the strongest when interpersonal closeness was low, in line with the reputational account of power.

Study 3: Power, Reputation, and Prosociality in Organizational Contexts

In Study 2, I obtained further evidence that the power difference between two individuals was associated with the reputational concern. In Study 3, I aimed to replicate and extend this finding to understand reputation-based prosocial behaviour. In investigating how power asymmetries shape reputational-based prosocial behaviour, I took the opportunity to add three potential moderators: (1) the perceived relationship between themselves and the recalled person (competitive – cooperative), (2) the frequency of the recalled person exerting power over themselves, and (3) the frequency of the recalled person abusing their power. Previous studies have found that the powerful vary in their tendency to exert power, depending on various social and personal factors (Atwater et al., 1998; Podsakoff, 1982). The hypothesized relationship between power and reputation is rooted in the previously documented expectation that powerholders are not vulnerable to negative reputational consequences but the powerless are (Mondillon et al., 2005). Given this, I expected that if individuals did not think power holders would misuse this power over the participant in a negative way (e.g., punishment and ostracism), the presence of power asymmetry would not increase reputational concern.

I preregistered a target sample size, a brief study procedure, the hypotheses, and analytic strategies at https://osf.io/f98q6/?view_only=b37e655671ab426b9462fa4b98e01151. I provide study material, data, analysis code, and supplementary results at https://osf.io/rsmqh/?view_only=c56993e7fb8242d9bee3b132a38347f6.

Methods

I recruited 300 full-time workers from Prolific and obtained 302 completed responses (182 males, 120 females, $M_{age} = 30.50$, $SD = 8.15$). The procedure of the present study was identical to that of Study 2 except for the instruction for the recall task and the introduction of the new measures.

In this study, I asked participants to recall their boss instead of anyone at the workplace. This was because I aimed to test the role of the frequency of the recalled person's exerting power, and I might face the floor effect if most of the participants recalled their subordinate or colleagues. I inserted four new measures after participants completed the reputational concern measure. I used two subscales (altruism and courtesy) from Podsakoff et al.'s (1990) organizational citizenship behaviour scale (e.g., "I help the boss I recalled even though it is not required"). Ten items were presented, and participants indicated their level of agreement with them, using a 7-point scale from 1 = *Strongly disagree* to 7 = *Strongly agree* ($\alpha = .86$). I used the average score on the scale as a measure of prosocial behaviour towards the recalled person. Participants then answered two questions; "How often does your boss exert their power and authority over you?" and "How often does your boss abuse their power and authority over you?" (1 = *Never* to 5 = *Always*). Then, I asked them to indicate how competitive or cooperative they thought their boss felt towards them with a 7-point scale from 1 = *Very competitive* to 7 = *Very cooperative*. All of the measurements in the study had satisfactory reliability ($\alpha_s > .78$).

Results and Discussion

Bivariate Correlations

First, I computed bivariate correlations among key variables. I found that power difference, the extent to which people reported a greater relative difference in the power of themselves and the recalled person, ($M = -0.86$, $SD = 1.06$) was negatively correlated with reputational concern ($M = 3.92$, $SD = 0.75$), but the correlation was non-significant, $r = -.10$, $p = .07$. Power difference was not correlated with prosocial behaviour ($M = 5.51$, $SD = 0.80$), $r = -.02$, $p = .70$, though there was a positive correlation between reputational concern and prosocial behaviour, $r = .43$, $p < .001$. Ratings of target power ($M = 5.43$, $SD = 0.84$) were significantly associated with reputational concern ($r = .39$, $p < .001$) and prosocial behaviour

($r = .47, p < .001$). The correlation between target power and reputational concern was significantly stronger than those between one's own power and reputational concern and between power difference and reputational concern, $z_s > 4.79, p_s < .001$. These results suggest that consistently with Studies 1 and 2, it is target power (i.e., how much power the other person has) rather than power asymmetry (i.e., how much *more* power the other person has *than me*), which is related to reputational concern.

Moderation Analyses

Following the preregistration, I built a linear regression model where reputational concern was regressed onto power difference (PD), closeness, frequency of exerting power (FE), frequency of abusing power (FA), relationship type (competitive - cooperative), PD x FE, PD x FA, PD x relationship type, and the same set of covariates I had in Study 2 (see Table 3), $F(13, 288) = 5.98, R^2 = .21, p < .001$. Inconsistently with my prediction, power difference and the hypothesized interactions were not significantly associated with reputational concern, $p_s > .09$.

Table 3. Results from the Multiple Regression Analysis Predicting Reputational Concern

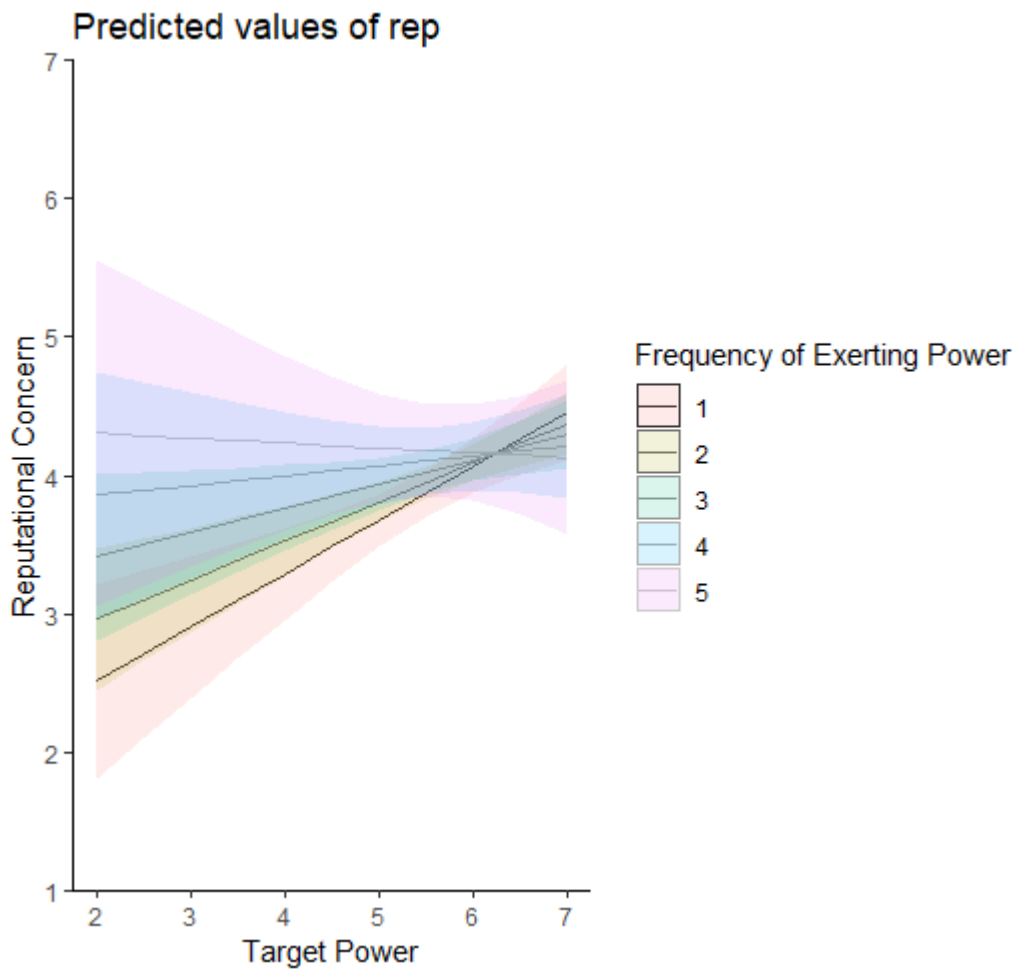
	<i>B</i>	95% CI		<i>p</i>
		LL	UL	
Power Difference (PD)	-0.36	-0.78	0.05	.09
Closeness	0.12	0.06	0.19	< .001
Frequency of Exerting Power (FE)	0.09	-0.04	0.22	.17
Frequency of Abusing Power (FA)	-0.03	-0.17	0.11	.68
Relationship Type	0.12	0.05	0.19	< .001
PD x FE	0.01	-0.07	0.10	.77
PD x FA	0.06	-0.04	0.17	.24
PD x Relationship Type	0.02	-0.04	0.07	.54
Perceived Status	0.09	-0.01	0.20	.07
Perceived Power	-0.00	-0.08	0.07	.91
Perceived Rank	0.01	-0.03	0.05	.54
Gender	-0.09	-0.18	-0.01	.03
Recalled Person's gender	-0.00	-0.09	0.08	.92

Next, I conducted the regression analysis in which power difference was replaced with target power and one's own power, as a non-preregistered exploratory analysis, $F(17, 284) = 6.00, R^2 = .26, p < .001$ (see Table 4). Consistent with the previous studies, target power was positively associated with reputational concern, but one's own power was not. I conducted a follow-up simple slope analysis for the marginally significant interaction and revealed that the positive association between target power and reputational concern was only significant when the frequency of exerting power was low. When the frequency of exerting power was high, reputational concern stayed high regardless of how high target power was (see Figure 3).

Table 4. Results from the Multiple Regression Analysis Predicting Reputational Concern

	<i>B</i>	95% CI		<i>p</i>
		LL	UL	
Target Power	0.90	0.35	1.45	< .001
Own Power	0.03	-0.46	0.53	.90
Closeness	0.29	-0.13	0.70	.18
Frequency of Exerting Power (FE)	0.87	0.09	1.65	.03
Frequency of Abusing Power (FA)	-0.27	-1.07	0.54	.51
Relationship Type	0.36	-0.05	0.76	.08
Target Power x FE	-0.11	-0.22	0.01	.07
Target Power x FA	-0.03	-0.16	0.10	.67
Target Power x Relationship Type	-0.05	-0.12	0.02	.19
Own Power x FE	-0.04	-0.16	0.07	.43
Own Power x FA	0.09	-0.05	0.22	.19
Own Power x Relationship Type	-0.01	-0.07	0.06	.82
Perceived Status	0.06	-0.04	0.17	.25
Perceived Power	-0.00	-0.07	0.07	.99
Perceived Rank	0.02	-0.02	0.06	.33
Gender	-0.09	-0.17	-0.01	.03
Recalled Person's gender	0.00	-0.09	0.09	.97

Figure 3. Moderation Plot of the Interaction between the Frequency of Exerting Power and Target Power



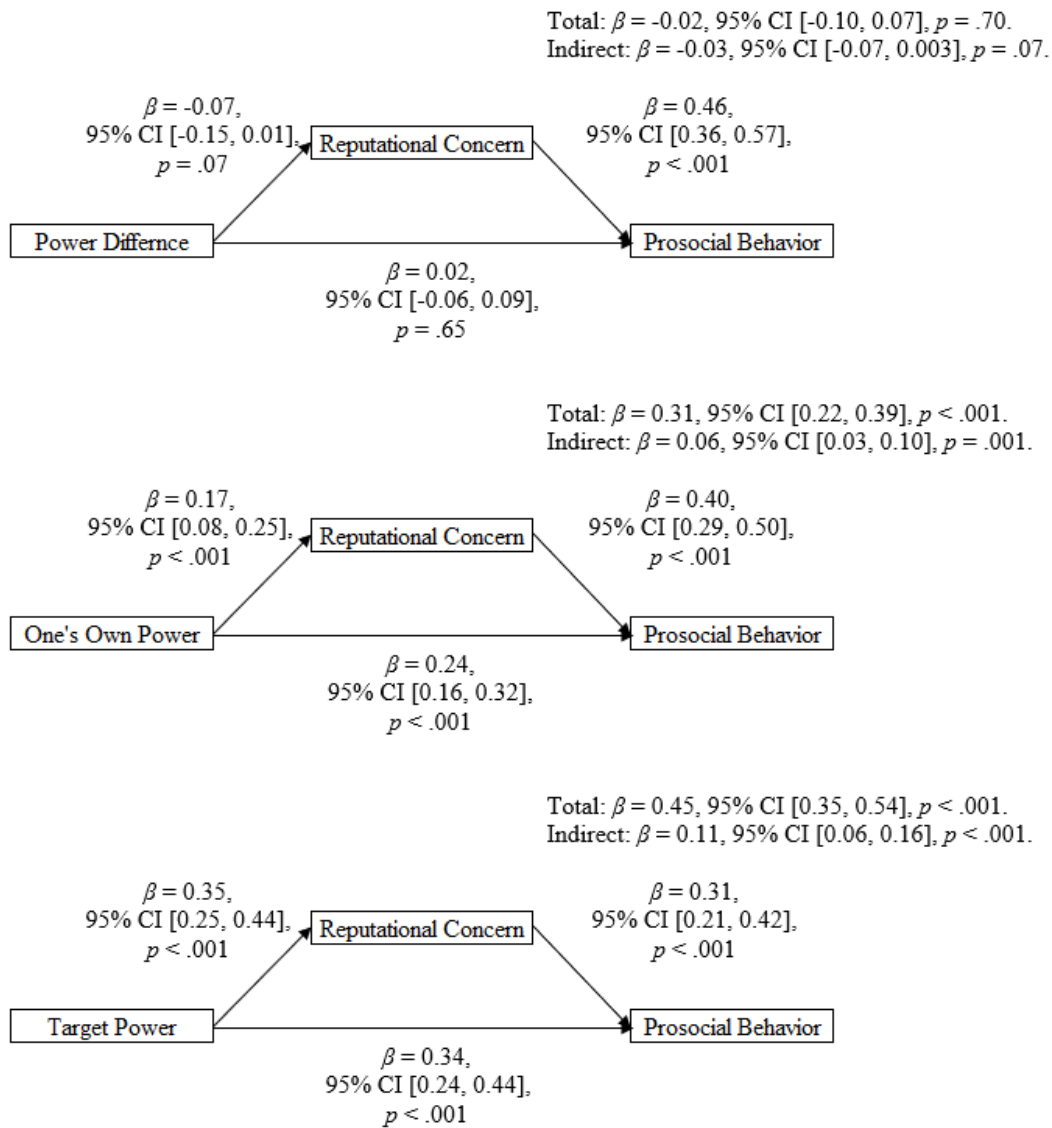
Mediation Analyses

As preregistered, I conducted a mediation analysis looking at whether power difference had an indirect effect via reputational concern on prosocial behaviour (Figure 4). In contrast to the hypothesis, this indirect effect was not significant. As exploratory analyses, I then built two additional mediation models where power difference was replaced with one's own power and target power. I found that target power had a significant indirect effect; the more power their boss had over themselves, the more reputational concern participants experienced, which further led to the increased level of prosocial behaviour towards the boss. This was consistent with my previous observation that target power rather than power

difference was associated with reputational concern. The analysis showed that participants' own power over their boss had a similar indirect effect, suggesting that the increase in their power resulted in more prosocial behaviour via reputational concern.

I would like to note that I used the sub-scales from the organisational citizenship behaviour scale (Podsackoff et al., 1990) and this may limit the generalisability of the findings. While the items in my study cover a wide range of helping behaviours that are rife with social lives, they mainly focused on interpersonal helping and mindful behaviours (e.g., solicited helping, unsolicited helping, etc.), while there are other forms of prosocial behaviours such as cooperation (i.e., prioritising collective benefits over individual benefits) and volunteering (unsolicited helping for a group). Thus, it would be sensible to use items that measure different forms of prosociality or employs an abstract measurement (e.g., behaviours in economic games designed to measure prosociality) in future studies, which I turn to in Chapter 4.

Figure 4. Results of Mediation Analyses



Summary

Overall, Study 3 yielded evidence that target power rather than power difference was associated with reputational concern, controlling for several key variables. The results of the series of mediation analyses suggested weak evidence for the influence of power difference on reputation-driven prosocial behaviour. By contrast, the indirect effect of target power was much stronger than that of the power difference, suggesting that it is target power that functions as a reputational cue and shapes reputation-based prosociality. Overall, Study 3 has pointed to the crucial role of target power in shaping reputation-based prosocial behaviour, consistently with Studies 1 and 2.

The positive association between one's own power and reputational concern was unexpected. Some studies suggested that power could be interpreted as having responsibility (Handgraaf et al., 2008; Scholl et al., 2018; Tost & Johnson, 2019; Wade-Benzoni et al., 2008), and this construal of power imposes demands on power holders (Scholl et al., 2018). Thus, participants' power in an organizational context might be related to their responsibility to meet such demand, which led to the observed positive correlation between one's own power and prosocial behaviour. The relationship between one's own power and reputational concern deserves further investigation.

Study 4: Power, Reputation, and Prosociality in Friendship Contexts

In Study 4, I aimed to replicate the findings from Study 3 in a friendship context and test the generalisability of the previous findings. Organizational contexts can be rife with competition, and powerholders can be more likely to utilize power as a means to benefit themselves in work settings (Swab & Johnson, 2019). Thus, the link between power asymmetry and reputational concern could be stronger in organizational contexts compared to friendship contexts in which interpersonal competitions are less salient. In other words, power may not translate into reputational concern in friendship contexts as strongly as in organizational contexts.

I preregistered a target sample size, a brief study procedure, the hypotheses, and analytic strategies at https://osf.io/rcvab/?view_only=e0844e8716a74cc0bdc84ea35431bf5b. Prior to the final preregistration, I made two previous preregistrations which contained errors and omission of important details.

(https://osf.io/e8yfd/?view_only=f29b7843625b427e9f7f32134d74faab and https://osf.io/4rc6t/?view_only=b60eab3d5c084ff5b637690401cf9a01). The final version was preregistered before data collection. Study material, data, analysis code, and supplementary

results are available at

https://osf.io/f98q6/?view_only=b37e655671ab426b9462fa4b98e01151.

Methods

I recruited 300 undergraduate students, of which 297 participants completed the study in full (42 males, 252 females, $M_{age} = 19.93$, $SD = 4.24$). The structure of the study was identical to that of Study 3, except I changed the instruction of the recall task such that participants were asked to think about one of their friends. In addition, I dropped several scales which were organizational-context-specific. Overall, the survey consisted of the following measures: one's own power ($\alpha = .81$), target power ($\alpha = .72$), reputational concern ($\alpha = .61$), prosocial behaviour ($\alpha = .85$), perceived relationship type (cooperative – competitive), interpersonal closeness, and perceived status among friends ($\alpha = .89$).

Results and Discussion

Bivariate Correlations

Power difference ($M = -0.18$, $SD = 0.77$) was negatively correlated with reputational concern ($M = 4.06$, $SD = 0.64$), $r = -.15$, $p = .01$, but not significantly correlated with prosocial behaviour ($M = 6.13$, $SD = 0.69$), $r = -.04$, $p = .52$. Target power ($M = 5.01$, $SD = 0.72$) was significantly associated with reputational concern ($r = .23$, $p < .001$) and prosocial behaviour ($r = .30$, $p < .001$). There was a strong correlation between reputational concern and prosocial behaviour, $r = .44$, $p < .001$. The association between target power and reputational concern was significantly stronger than those between one's own power and reputational concern and between power difference and reputational concern, $z_s > 3.01$, $p_s < .003$. Consistently with the previous studies, this suggests that target power rather than power difference acts as a strong cue that elicits reputational concern.

Moderation Analyses

Following our preregistration, I built a linear regression model where reputational concern was predicted by power difference, interpersonal closeness, perceived status, relationship type, participants' gender, and the recalled friend's gender (see Table 5), $F(6, 285) = 4.58$, $R^2 = .09$, $p < .001$. Consistent with my hypothesis, power difference was negatively associated with reputational concern. I found similar results when I replaced power difference with target power (see Table 6).

Table 5. Results from the Multiple Regression Analysis Predicting Reputational Concern

	<i>B</i>	95% CI		<i>p</i>
		LL	UL	
Power Difference	-0.15	-0.24	-0.05	< .001
Closeness	0.06	0.00	0.12	.03
Relationship Type	0.05	-0.00	0.10	.07
Perceived Status	0.10	0.02	0.18	.02
Gender	-0.05	-0.16	0.07	.40
Recalled Person's Gender	-0.00	-0.10	0.09	.97

Table 6. Results from the Multiple Regression Analysis Predicting Reputational Concern

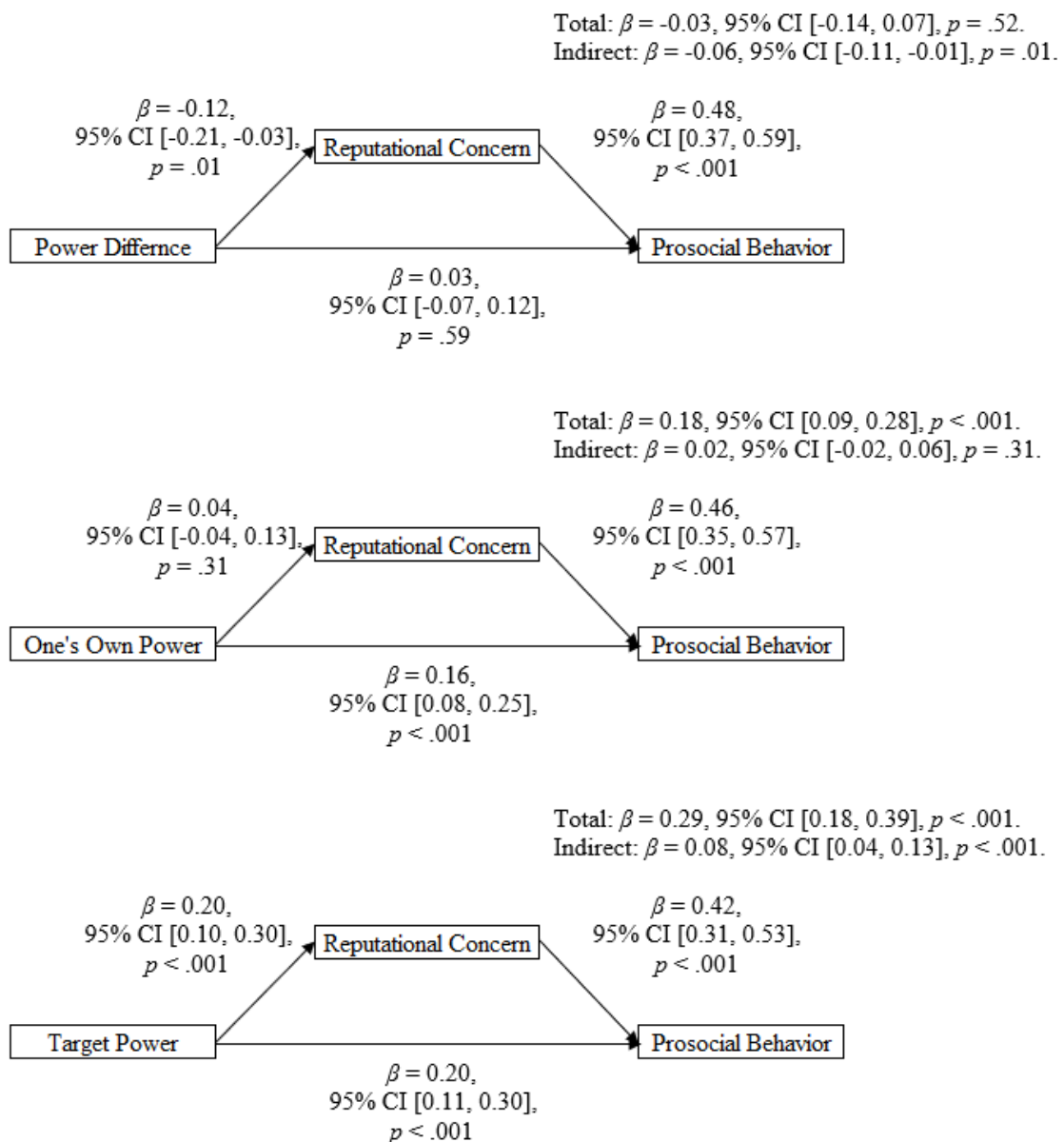
	<i>B</i>	95% CI		<i>p</i>
		LL	UL	
Target Power	0.15	0.04	0.25	.01
Closeness	0.04	-0.01	0.10	.12
Relationship Type	0.03	-0.02	0.09	.28
Perceived Status	0.06	-0.02	0.15	.14
Gender	-0.05	-0.17	0.06	.36
Recalled Person's Gender	-0.02	-0.11	0.08	.71

Mediation Analyses

I built three mediation models where power difference, one's own power, and target power had an indirect effect on prosocial behaviour via reputational concern (Figure 5). While the indirect effect of power difference was not significant in Study 2, it was found to be significant in this study. In addition, consistently with the previous study, target power

also had a significant indirect effect on prosocial behaviour, suggesting that the more power the recalled person had, the more reputational concern they experienced, and this led to increased prosocial behaviour. Contrastingly, one's own power did not significantly influence prosocial behaviour via reputational concern.

Figure 5. Results of Mediation Analyses



Summary

Overall, Studies 3 and 4 together suggest that the increase in the relative and absolute power of another person (i.e., target power) was associated with reputational concern, and this association results in increased prosocial behaviour. However, these studies collated conflicting results regarding the relationship between one's own power and reputational concern. In the organizational context, it was positively associated with reputational concern. By contrast, in the friendship context, it was not. As discussed earlier, this can be attributed to the nature of the context; holding power may be strongly associated with responsibility in organizational contexts, and one's own power might translate into concern about how others see themselves. Either way, these studies have so far yielded sound correlational evidence that others' power is related to reputational concern and reputation-based prosocial behaviour.

Mini-Meta Analysis

Methods

Using the data from Studies 1 – 4, I conducted mini-meta-analyses for the following correlations: power difference – reputational concern, one's own power – reputational concern, and target power – reputational concern. Given that I only had four studies and random effects models are too conservative (Goh et al., 2016), I focused only on fixed effects. Correlations were first Fisher's z transformed for analyses and converted back to Pearson correlations for presentation. Data and analyses codes are available at https://osf.io/f98q6/?view_only=b37e655671ab426b9462fa4b98e01151.

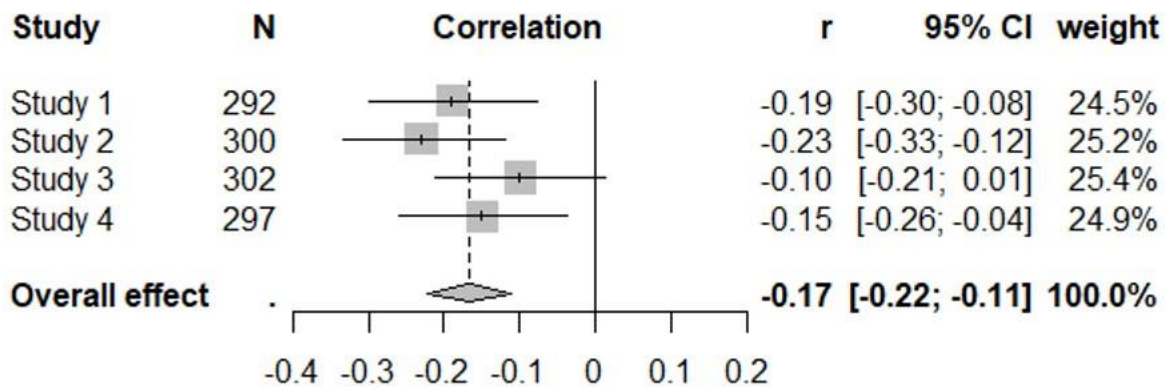
Results and Discussion

Power Difference and Reputational Concern

The meta-analysis revealed that the overall effect was small but significant, $r = -.17$, 95% CI [-.22, -.11], $p < .001$ (Figure 6). This suggests that the increase in the relative power of another person is associated with increased reputational concern. I only had three studies,

and a test of heterogeneity should not be sufficiently powered, but I computed I^2 statistics. I^2 was 0% with 95% CI of [0%, 84.7%].

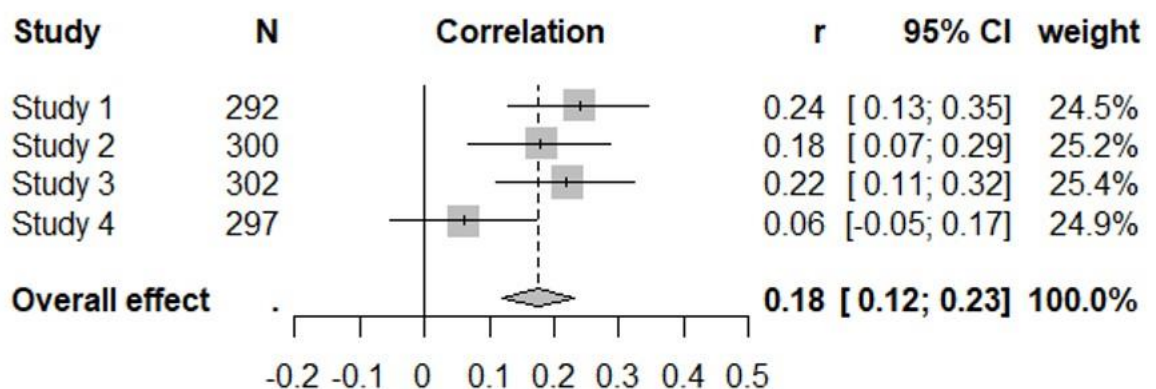
Figure 6. Forest Plot for the Correlation between Power Difference and Reputational Concern



One's Own Power and Reputational Concern

I found a small-to-medium effect size for the correlation between one's own power and reputational concern, $r = .18$, 95% CI [.12, .23], $p < .001$ (Figure 7). The results indicate that the more power individuals have over another person, the more reputational concern they feel towards the person. I^2 was 50.0% (95% CI [0.0%, 83.5%]).

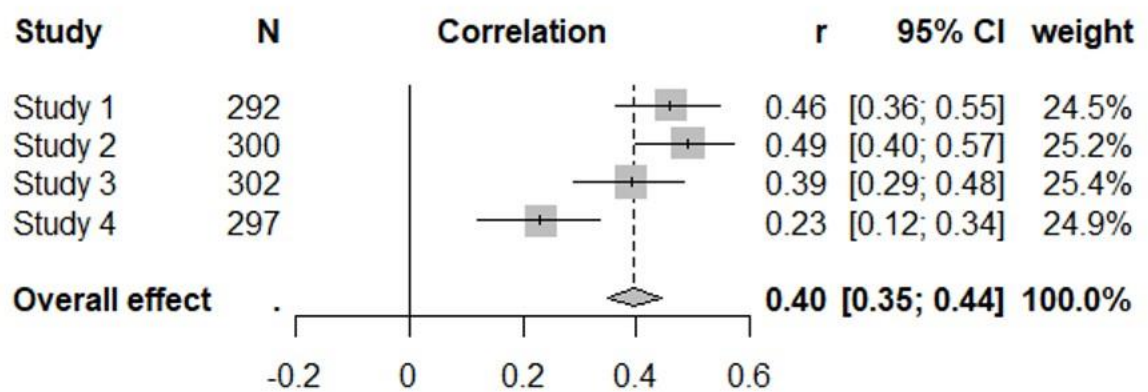
Figure 7. Forest Plot for the Correlation between One's Own Power and Reputational Concern



Target Power and Reputational Concern

The meta-analysis yielded a significant medium-to-large effect for the relationship between target power and reputational concern, $r = .40$, 95% CI [.35, .44], $p < .001$ (Figure 8). I^2 was 81.1% (95% CI [50.7%, 92.8%])

Figure 8. Forest Plot for the Correlation between Target Power and Reputational Concern



Summary

Overall, all of the power-related variables are related to reputational concern. Based on effect sizes and their confidence intervals, the association between target power and reputational concern was the strongest. My studies and meta-analyses have yielded converging evidence that power, especially target power, is associated with reputational concern; people feel more reputational concern when faced with higher power individuals.

General Discussion

In this chapter, I have presented four correlational studies to provide evidence for the reputational account of power, which posited that power asymmetries would function as a contextual cue that influences reputational concern and, in turn, cooperation. Across the four studies (total N = 1191) that focused on different relationship contexts, I have consistently found that power is related to reputational concern and reputation-based prosocial behaviour.

While I originally predicted that power difference (one's own power – target power) would be a cue that induces reputational concern, Studies 1 – 4 have yielded converging evidence that it is target power (i.e., how much power another person holds over oneself) that is most strongly associated with reputational concern. Further studies designed to test the effect of one's own power vs. target power are ideal to elucidate the relationship between power asymmetry and reputational concern and further refine the reputational account of power. In addition, the correlational data do not offer a sound basis to claim a causal relationship between power, reputational concern, and prosocial behaviour, and experimental studies are sought to further elucidate how power shapes reputational concern and prosocial behaviour.

Ch. 3: Power Priming and Reputation

Introduction

Power asymmetry exists in a wide range of interpersonal relationships, and people often experience a situation in which they have power over others or vice versa (Overall et al., 2016; Smith & Hofmann, 2016). Since the seminal work by Kipnis (1972) that revealed the negative consequences of power asymmetry, especially on the powerless, scholars of diverse disciplines have investigated how power asymmetry results in negative social behaviours such as aggression (Overall et al., 2016), exploitation (e.g., Nikiforakis et al., 2014), and non-cooperation (D. S. Gordon & Puurtinen, 2020).

As reviewed earlier, power has been operationally defined as having control over a valued resource (Magee & Galinsky, 2008), the capacity to resist others' influence (Lammers et al., 2016), the ability to control others' outcomes or behaviours (Thibaut & Kelley, 1959), and the ability to control, modify, or influence others via rewards and punishments (Sivanathan et al., 2008). In other words, the powerful, by definition, can asymmetrically influence others, and, even if they establish a negative reputation, it is unlikely that they receive negative reputational consequences such as punishment; they are *immune* from negative reputational consequences (Mondillon et al., 2005). Thus, it can be hypothesized that power can liberate individuals from reputational concern.

On the other hand, the powerless are particularly susceptible to negative reputational consequences. Given that previous studies have found that the powerful often take advantage of and exploit the powerless (e.g., Gordon & Puurtinen, 2020), the powerless are likely to be subject to negative behaviour by the powerful. Thus, it would be of vital importance for the powerless to actively seek a way to avoid receiving negative reputational consequences (i.e., establishing a positive reputation). Accordingly, I hypothesized that power asymmetry would

amplify reputational concern among the powerless, encouraging them to seek a positive reputation and avoid a negative reputation.

Recent studies have provided relevant underpinnings to the predictions about the relationship between power and reputational concern; Petkanopoulou et al. (2019), for instance, found that the powerless anticipated negative consequences (e.g., establishing a negative reputation and potential punishments) of expressing anger. Consequently, they found that the powerless were less likely to directly express anger towards others compared to the powerful. More relatedly, Cai and Wu (2017) employed episodic power priming manipulation (Galinsky et al., 2003) and found that individuals in the high power priming condition felt less fear of receiving negative evaluation from others than those in the low power priming condition. Thus, these previous studies, including Studies 1 – 4, point to the link between reputational concern and power.

However, since these previous studies focused on the powerful vs. the powerless dichotomy, their findings cannot distinguish between the effect of being powerful and being powerless. In other words, it remains uncertain to what extent the effect of being powerful (i.e., liberation from reputational concern) and being powerless (i.e., amplification of reputational concern) together explain the observed association between reputational concern and power. Therefore, I conducted three studies designed to test how an experimentally induced sense of high and low power shapes reputational concern, using two commonly used power priming methods with a control condition, which can distinguish between the effect of being powerful and powerless. These studies also served to complement the findings from the correlational studies reported in Chapter 2 by offering experimental evidence for the causal relationship between one's own power, not target power or power difference, and reputational concern.

Study 5: Episodic Priming I

In the present study, I employed episodic power priming (Galinsky et al., 2003) to test the hypotheses. In this priming paradigm, participants are asked to recall and describe a situation in which they had power over others or someone else had power over themselves. This manipulation has been used in various studies and has successfully impacted a wide range of dependent variables (for reviews, see Galinsky et al., 2014; Sturm & Antonakis, 2015). The method has been favoured and employed in numerous studies for several reasons (Sturm & Antonakis, 2015); firstly, it is easy to implement and does not involve ethical concerns. Secondly, it can affect a sense of power without conscious awareness (Galinsky et al., 2014; but also see Khademi et al., 2021). Thirdly, these methods are thought to be superior to role induction-based manipulation (e.g., leader vs. follower/boss vs. subordinate role plays), as priming methods are free from potential influences of participants' expectations about how they are supposed to behave with an assigned role.

I preregistered a brief description of the experimental procedure, a target sample size and its justification, data exclusion criteria, and the following operationalized hypotheses; H1: powerful priming would decrease reputational concern; H2: powerless priming would increase reputational concern. I preregistered them at https://osf.io/cuwdk/?view_only=9aa5ea3bc4dc483cafd476d0ae96ca7a, and data, study material, analysis code, codebook, and supplementary results are available at https://osf.io/k56u4/?view_only=cf452171a1ea4a4dbc5eb4c946783bc1.

Methods

The present research was a 1 x 3 (priming: high power vs. low power vs. control) between-subject design. A priori power analysis revealed that 285 participants would be sufficient to detect an effect size of $d = .37$ (Fast, Sivanathan, et al., 2012) with a statistical power of .80 at $\alpha = .05$. To account for any data exclusion, 300 university students were

recruited in exchange for partial course credit, and 288 participants ($M_{age} = 19.63$, $SD = 4.06$, 236 females, 52 males) fully completed the study.

As a cover story, participants were informed that the study was designed to investigate the relationship between personality and interpersonal relationships. After giving consent, participants were randomly assigned to one of the three priming conditions: the high power, the low power, and the control conditions. Following Fast et al. (2012), participants in the high power condition were asked to recall and describe an event in which they had power over another individual or individuals. Those in the low power condition were asked to recall and describe an event in which someone else had power over themselves. In the control condition, participants were asked to recall and describe a social interaction during the previous day. In the high and low power conditions, I provided the following description of what power meant; “By power, we mean a situation in which you controlled the ability of another person or persons to get something they wanted or were in a position to evaluate those individuals.” To ensure that participants would seriously complete the recall task, I asked them to spend at least three sentences describing the event. Survey completion time and how long they spent on the recall task were recorded.

After the power manipulation, participants answered four questions measuring reputational concern (Wu et al., 2015; e.g., "I do not consider what others say about me," $\alpha = .77$) and eight items measuring a sense of power (Anderson & Galinsky, 2006; e.g., "If I want to, I get to make the decisions," $\alpha = .80$). I then introduced six items measuring participants' perceived status (Yu et al., 2019) for exploratory purposes (see supplementary results). These items were all measured with a 7-point scale ranging from $1 = \textit{strongly disagree}$ to $7 = \textit{strongly agree}$. Lastly, participants provided some demographic information (sex and age), and they were debriefed.

Results and Discussion

Following the preregistration, I excluded five participants based on their survey completion time (two standard deviations away from a mean completion time). A 1 x 3 (priming: high power vs. low power vs. control) between-subject ANOVA on reputational concern revealed that the effect of power priming was not significant, $F(2, 280) = 1.01$, $p = .36$, $\eta_p^2 = .01$. In addition, I created hypothesis-relevant contrasts: Contrast 1: high power vs. control; Contrast 2: low power vs. control. Planned contrasts yielded nonsignificant contrasts, $t_s < 1.42$, $p_s > .16$. Participants in the high power condition ($N = 88$, $M = 5.27$, $SD = 1.11$) did not experience significantly more reputational concern than those in the control condition ($N = 105$, $M = 5.16$, $SD = 1.07$). Those in the low power condition ($N = 90$, $M = 5.37$, $SD = 0.93$) did not experience significantly less reputational concern than those in the control condition. Thus, the hypotheses were not supported.

As a manipulation check, a 1 x 3 (priming: high power vs. low power vs. control) between-subject ANOVA on a sense of power was conducted. Strikingly, the effect of power priming was not significant, $F(2, 280) = 0.82$, $p = .44$, $\eta_p^2 = .01$. Planned contrasts neither yielded significant effects, $t_s < 1.06$, $p_s > .29$. Participants in the high power condition ($N = 88$, $M = 4.50$, $SD = 0.89$) did not report a significantly higher sense of power than those in the control condition ($N = 105$, $M = 4.52$, $SD = 0.80$). Similarly, those in the low power condition ($N = 90$, $M = 4.64$, $SD = 0.69$) did not have a significantly lower sense of power than those in the control condition. Thus, these results indicated that the power manipulation was not successful in the first place.

As a non-preregistered exploratory analysis, I took an opportunity to code text responses to the recall task and further examined whether the manipulation was, in fact, unsuccessful. Two independent coders inspected each text response, and I excluded (1) participants in the control condition whose recalled event involved power differences and/or did not involve social interactions, (2) those in the high power condition whose recalled event

did not involve an experience of holding power over others, and (3) those in the low power condition whose recalled event did not involve an experience of being powerless. This led to the exclusion of five, two, and four participants in the control, high power, and low power conditions, respectively. In addition, they coded the valence of the recalled event for an exploratory purpose (see supplementary results for more detail). With the data exclusion, I re-examined whether a sense of power and reputational concern significantly varied depending on the priming condition. Nevertheless, consistently with the analyses without the data exclusion, I did not find significant effects of the condition on these dependent variables (see supplementary results for more detail).

Finally, as a nonregistered exploratory analysis, I computed a correlation between reputational concern and sense of power, $r = -.06$, $p = .30$. The nonsignificant correlation suggests that a situationally induced sense of power is not significantly associated with reputational concern.

Episodic power manipulation has been widely used in previous studies (for reviews, see Galinsky et al., 2014; Sturm & Antonakis, 2015) in various languages (Hashimoto & Karasawa, 2021; Schmid & Mast, 2013; Scholl & Sassenberg, 2014). Nevertheless, I did not find evidence that episodic power priming significantly affected participants' sense of power. Accordingly, I could not address whether high power would liberate the powerful from reputational concern (H1) and whether low power would amplify reputational concern among the powerless (H2). While some previous studies found that power manipulation indeed affected a sense of power (e.g., Fast et al., 2012), a recent preregistered study with sufficient statistical power reported that the episodic power manipulation was unsuccessful (Heller & Ullrich, 2017). Thus, the present study, which was preregistered and sufficiently powered, further casts doubt on the reliability of the manipulation.

That being said, it should be noted that, because it was an online survey, the intensity and depth of recollection might be insufficient. The median completion time of the recall task, which includes time for reading instructions, recalling an event, and describing the event, was 138.84 seconds. The instructions had 78, 74, and 41 words in the high power, low power, and control conditions, respectively. Given that Brysbaert, (2019) found that English silent reading speed is 238 words per minute, it can be inferred that participants, especially those in the high and low power conditions, spent far shorter than two minutes in recalling and describing the event. In addition, the study was advertised as a 6-min long survey, and this might have further pushed participants to quickly complete the task. Overall, the online nature of the survey might not sufficiently encourage individuals to engage in the recall task.

In addition, the measurement of a sense of power is often used as a measurement of a trait rather than a state sense of power. Thus, participants might have thought that the items were tapping on to their stable trait, and this might have resulted in the non-significant effect of the manipulation, which was designed to influence a situational power. Therefore, while my study, together with Heller and Ullrich (2017), indeed calls for a systematic investigation of the effectiveness of episodic power priming to identify moderators of the effectiveness of the experimental paradigm, it would be desirable to first conduct an additional experimental study to overcome the methodological limitations in the present study (an issue I return to in Study 7)

Study 6: Semantic Priming

In Study 5, I employed one of the most frequently used power priming methods, episodic priming. However, the manipulation was unsuccessful, presumably due to the online nature of the study, and I failed to address the hypotheses. Thus, in the present study, I chose another commonly used power priming method that would be less susceptible to the potential methodological limitation of the online episodic power priming discussed in the previous

study: semantic power priming (Anderson & Galinsky, 2006; Galinsky et al., 2008; Mast et al., 2009). I preregistered the same hypotheses, a brief explanation of the study procedure, data exclusion criteria, and the target sample size at

https://osf.io/b4hyf/?view_only=986ace805c424002923203d8c05dd877. Data, study

material, analysis code, codebook, and supplementary results are available at

https://osf.io/k56u4/?view_only=cf452171a1ea4a4dbc5eb4c946783bc1.

Methods

The present study employed a 1 x 3 (priming: high power vs. low power vs. control) between-subject design. Following Study 5, I recruited 300 British participants via Prolific Academic ($M_{age} = 34.83$, $SD = 12.37$, 208 females, 92 males).

After giving consent, participants were presented with 20 fragmented words (e.g., CONT_OLL_NG, _GALITARI_N, and OB_DIE_T) and asked to fill out the blanks and answer the completed words. Twenty words were relevant to dominance and subordination in the high and low power conditions, respectively. In the control condition, twenty words were power-neutral. These word fragments were used in Study 2 of Mast et al. (2009), and valence, word length, and word frequency were matched across three conditions (see Mast et al., 2009 for more detail).

After finishing the word completion task, participants answered the questions measuring reputational concern ($\alpha = .85$) and a sense of power ($\alpha = .89$). Participants then provided demographic information (age and sex) and were debriefed.

Results and Discussion

A 1 x 3 (priming: high power vs. low power vs. control) between-subject ANOVA on reputational concern revealed that the effect of power priming was not significant, $F(2, 285) = 0.07$, $p = .94$, $\eta_p^2 < .001$. Following Study 5, hypothesis-relevant contrasts were created: Contrast 1: high power vs. control; Contrast 2: low power vs. control. Planned contrasts

indicated that these contrasts were not significant, $t_s < 27$, $p_s > .78$. Participants in the high power ($N = 96$, $M = 4.99$, $SD = 1.07$) and the low power ($N = 96$, $M = 5.05$, $SD = 1.20$) conditions did not experience significantly different levels of reputational concern compared to those in the control condition ($N = 96$, $M = 5.01$, $SD = 1.08$). Thus, the two hypotheses were not supported.

I then checked whether semantic power priming influenced a sense of power. A 1 x 3 (priming: high power vs. low power vs. control) between-subject ANOVA on a sense of power yielded a nonsignificant effect of semantic power priming, $F(2, 285) = 0.48$, $p = .62$, $\eta_p^2 = .003$. In addition, planned contrasts found that those in the high power ($N = 96$, $M = 4.52$, $SD = 0.91$) and the low power ($N = 96$, $M = 4.43$, $SD = 1.00$) conditions did not feel significantly different levels of sense of power than those in the control condition ($N = 96$, $M = 4.38$, $SD = 0.95$), $t_s < 0.96$, $p_s > .34$. Thus, semantic power priming was not successful.

Finally, as a non-preregistered exploratory analysis, I computed a correlation between a sense of power and reputational concern. Experimentally induced sense of power was not significantly associated with reputational concern, $r = -.01$, $p = .85$. In line with Study 5, this does not support my expectation that a sense of power is related to reputational concern.

Previous studies using semantic power priming reported that the manipulation successfully influenced dependent variables of different kinds, such as risk-taking behaviour (Anderson & Galinsky, 2006, Study 3), creativity (Galinsky et al., 2008, Experiment 1), interpersonal sensitivity (Mast et al., 2009, Study 2), and moral thinking (Lammers & Stapel, 2009, Study 1). In addition, semantic power priming in Study 2 should be less susceptible to the methodological limitations associated with online studies than episodic priming. Thus, it is striking that the present preregistered study did not influence reputational concern or a sense of power, even though I used one of the most elaborate sets of word fragments carefully piloted and developed by Mast et al. (2009). Given that the manipulation was

unsuccessful in the present study, I again failed to address the hypotheses. I would like to note, however, that as in Study 5, the sense of power scale items were not worded in a way that explicitly referred to state rather than trait power, and this might have reduced the effect of the power manipulation on a sense of power.

Study 7: Episodic Priming II

In Study 5, I employed episodic power priming (Galinsky et al., 2003), but the manipulation was not successful, presumably due to methodological limitations. Firstly, the engagement in the recall task in Study 5 might not be sufficient, judging from participants' study completion time. Secondly, the items I used to measure a sense of power were worded, arguably, to tap on a trait rather than a situational sense of power. Thus, in the present study, I sought to modify the study to overcome the limitations and re-test my hypotheses with episodic power priming.

I first modified the experimental instruction for the recall task. In Study 5, I told participants to recall a past event, and participants were simply asked to describe the recalled event in at least three sentences. In order to make sure that participants' engagement in the task would be sufficient, I asked them multiple questions regarding the recalled event (e.g., whom they were interacting with, where did the event take place, emotions they experienced during the event, etc.) and asked them to provide as much detail as possible. In addition, Study 5 was advertised to take approximately 6 minutes in total, and this might make participants rush out, leading to insufficient engagement in the task. In the present study thus, I recruited participants from Prolific, advertising it as a 10-to-15-minute-long survey.

Secondly, I modified the items to measure a sense of power. Körner et al. (2021) modified the instruction for the original scale so that they could measure a state rather than a trait sense of power. They did not change the wording of the original scale items, but they instructed participants, "Please tick the option that applied most to you at the moment." I

employed the same instruction. Additionally, I added “currently” to each scale item to make it clear that participants are asked about their current state (e.g., “Currently, I feel that I can get others to listen to what I say.”)

As an extension, I introduced four items designed to measure how difficult/easy participants found it to recall an event (Lammers et al., 2017). In response to discussions on the effectiveness of priming that called for careful considerations of potential moderators (Cesario, 2014; Stroebe & Strack, 2014), Lammers et al. (2017) reported that measured ease of retrieval moderated the relationship between episodic power manipulation (high power vs. low power manipulation) and several dependent variables (e.g., confidence, disobedience, and unethical behaviour) such that the effect of the manipulation was reduced or nonsignificant among participants who found it difficult to recall the event. Thus, I measured ease of retrieval to exploratorily investigate if it moderates the effectiveness of the manipulation and its effect on reputational concern, as found in Lammers et al. (2017).

Prior to the data collection, I preregistered the hypotheses, study material, and full analysis codes, including data exclusion criteria and analytic strategies (https://osf.io/9azr2/?view_only=6f60f84291aa448497a4b8ec946661a9). Data, study material, analysis codes, codebook, and supplementary results are available at https://osf.io/k56u4/?view_only=cf452171a1ea4a4dbc5eb4c946783bc1.

Methods

The present research was a 1 x 3 (priming: high power vs. low power vs. control) between-subject design. Following Study 5, I recruited 300 participants from Prolific Academic, and I received 301 completed responses without duplicates (Mage = 40.14, SD = 14.42, 147 females, 150 males) fully completed the study. Except for the above-mentioned changes, the present study was identical to Study 5. After giving consent, participants first completed the recall task and then they answered questions measuring their state sense of

power ($\alpha = .91$), reputational concern ($\alpha = .87$), ease of retrieval ($\alpha = .91$). Ease of retrieval was measured with four items using a 7-point scale ranging from 1 = extremely difficult to 7 = extremely easy (Lammers et al., 2017). Lastly, they provided demographic information (sex and age) and were debriefed.

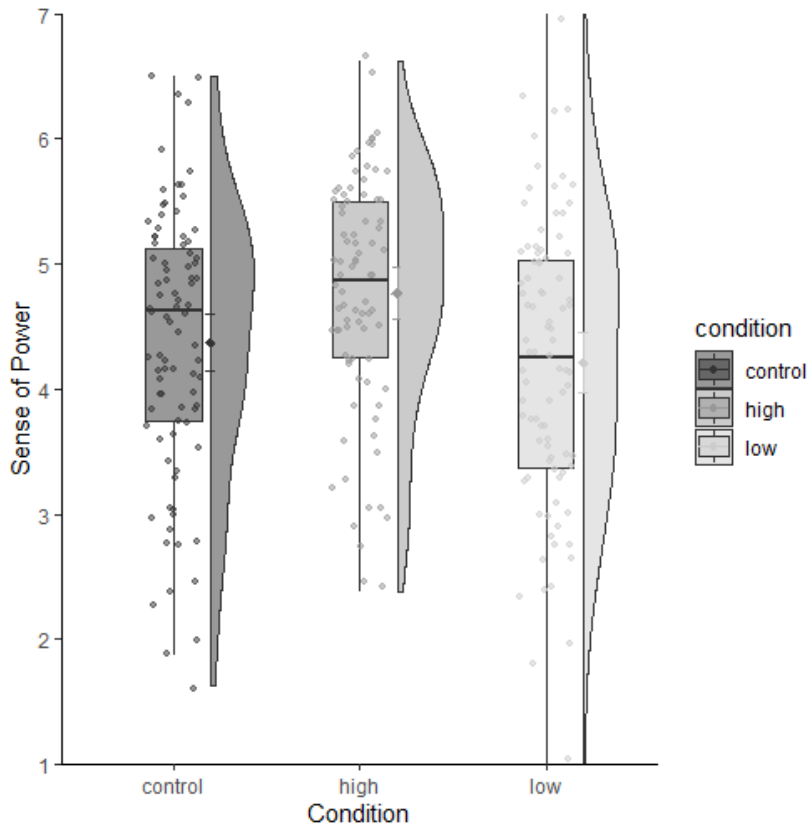
Results and Discussion

Following preregistration, I excluded 43 participants based on two criteria. Firstly, participants whose completion time was far from a median completion time by three median absolute deviations. Secondly, two independent coders examined text responses to the recall task and excluded those who did not recall an event involving social interactions. I also excluded those in the control condition who recalled an event involving power asymmetries (e.g., manager-subordinate interactions) and those in the high and low power conditions who recalled an event that did not involve holding power over others and lacking power, respectively. This left 87, 93, and 99 participants in the control, high power, and low power conditions, respectively. I conducted a sensitivity power analysis, and with the final sample size, I should be able to detect a small-to-medium effect of $\eta^2 = .04$.

First, I conducted a 1 x 3 (priming: control vs. high power vs. low power) between-subject ANOVA on a situational sense of power and found a significant effect, $F(2, 255) = 6.26$, $p = .002$, $\eta^2 = .05$ (see Figure 9 for descriptive statistics). As preregistered, I conducted planned comparisons using two dummy-coded variables: Contrast 1: high power vs. control; Contrast 2: low power vs. control. I found that while Contrast 1 was significant ($t = 2.44$, $p = .02$), Contrast 2 was not ($t = -1.01$, $p = .31$). Thus, participants in the high power priming condition ($M = 4.77$, $SD = 0.94$) felt significantly more powerful than those in the control condition ($M = 4.37$, $SD = 1.08$), and the high power manipulation was successful. Yet, those in the low power priming condition ($M = 4.21$, $SD = 1.14$) did not feel

significantly less powerful than those in the control condition, and the low power priming was again unsuccessful.

Figure 9. Descriptive Statistics of the Sense of Power by Condition



Note: Diamonds and their error bars indicate means and standard errors, respectively.

Next, I ran a 1 x 3 (priming: control vs. high power vs. low power) between-subject ANOVA on reputational concern. The effect of priming was not significant, $F(2, 255) = 0.22$, $p = .81$, $\eta^2 = .002$. Planned contrasts also revealed that Contrast 1 and Contrast 2 were not significant, $|t_s| < .06$, $p_s > .57$. Participants in the high power condition ($M = 5.10$, $SD = 1.17$) and in the low power condition ($M = 4.99$, $SD = 1.14$) did not experience significantly different levels of reputational concern compared to those in the control condition ($M = 5.00$, $SD = 1.25$). Overall, given that the high power manipulation was successful, the results did

not support H1. By contrast, the low power priming failed, and I could not sufficiently address H2.

I then computed a correlation between sense of power and reputational concern, and I did not find a significant relationship, $r = .05$, $p = .39$. Consistently with Studies 5 and 6, the results did not support my expectation that a sense of power is related to reputational concern. Ease of retrieval was not significantly correlated with reputational concern nor sense of power, $r_s < .10$, $p_s > .11$.

Finally, I included the main effect of ease of retrieval and its interaction with priming in the previous ANOVA models and examined the moderating role of ease of retrieval reported in Lammers et al. (2017). The interaction effect on sense of power was not significant, $F(2, 252) = 0.37$, $p = .70$, $\eta^2 = .003$. I then conducted the planned contrast analyses with the main effect of ease of retrieval and its interaction with the two contrasts included. Ease of retrieval did not significantly interact with Contrast 1 and Contrast 2 to predict the sense of power, $|t_s| < .09$, $p_s > .52$.

I found a significant interaction between ease of retrieval and priming on reputational concern, $F(2, 252) = 6.21$, $p = .002$, $\eta^2 = .05$. While the interaction between Contrast 1 and ease of retrieval was not significant ($t = -0.09$, $p = .58$), Contrast 2 x ease of retrieval interaction was significant, $t = 2.44$, $p = .02$. To further probe the interaction, I examined the simple effect of ease of retrieval in each priming condition. While it was not significant in the high power and control conditions ($|t_s| < .16$, $p > .11$), it was significant in the low power priming condition ($t = 3.14$, $p = .002$). More specifically, I found that the easier participants found it to recall an event, the more reputational concern they reported.

As a non-preregistered analysis, I compared estimated marginal means of reputational concern in the control condition with those in the high and low power priming conditions at three levels of ease of retrieval: $M = 5.66$, and 1 SD (1.25) above and below the mean.

However, I did not find significant comparisons, $p_s > .14$. Overall, while Lammers et al. (2017) found that the recall task would be ineffective when ease of retrieval was relatively low, I did not find such an effect on a sense of power and reputational concern.

In summary, in Study 7, I sought to overcome the methodological issues in Study 5, which arguably contributed to the failed manipulation. Namely, I encouraged participants to engage in the recall task in more depth and worded the sense of power scale items so that they explicitly reflected situational rather than trait power. In this study, the high power priming was successful. Yet, the low power manipulation was not. However, I would like to note that post-hoc pairwise comparisons revealed that those in the high power priming condition felt significantly more sense of power than those in the control condition and the low power priming condition, $|t_s| > 2.44$, $|p_s| < .04$. Thus, one could argue that the power manipulation was overall successful, and the source of the effect is those in the high power priming condition feeling more powerful rather than those in the low power priming condition less powerful. A majority of previous studies have predominantly focused on the high power vs. low power dichotomy, and the effect of lacking power is understudied (Schaerer et al., 2018). Correspondingly, previous studies that included both the control and low power condition are rare (Schaerer et al., 2018). Thus, given the paucity of the research on the influence of lacking power, my data would be a valuable addition to the existing literature and call for further research on the issue.

I failed to find support for the first hypothesis that the high power priming would reduce reputational concern. Yet, the low power manipulation was still unsuccessful, and I could not test the second hypothesis about the effect of the low power priming on reputational concern. Together with the absence of a significant correlation between reputational concern and a situationally induced sense of power across the three studies, the results, overall, suggest that one's own power would not be related to reputational concern.

General Discussion

In three studies with two commonly used power priming methods, I aimed to test the hypothesis that high and low power manipulation would reduce and increase reputational concern. Despite the widespread use, semantic priming in Study 6 failed to manipulate a sense of power, and it did not allow me to test the relationship between a sense of power and reputational concern. By contrast, while episodic manipulation in Study 5 was not successful, the modified version of high power episodic priming in Study 7 was partly successful, and I found that high power priming did not reduce reputational concern, inconsistently with my prediction. Overall, these three studies yielded valuable insights not only into the understanding of the relationship between reputational concern and power but also into the effectiveness of power priming methods.

Power and Reputational Concern

Across the three studies, I consistently found that sense of power was not significantly associated with reputational concern. In addition, experimentally induced high sense of power in Study 7 did not reduce reputational concern, inconsistently with my hypothesis. Overall, I have obtained evidence against the meaningful relationship between one's own power and reputational concern. However, I argue that it would be premature to conclude that power does not influence reputational concern.

Firstly, previous studies have pointed out that power can be construed as either an opportunity to control others or responsibility for others (Sassenberg et al., 2012; Scholl et al., 2018; Tost & Johnson, 2019). My rationale behind the hypothesized relationship between holding power and reputational concern was that powerholders are not susceptible to negative reputational consequences and, therefore, they would not be as concerned about their reputation as powerless counterparts. If participants in the high power condition construed

power as responsibility, the fact that they are relatively free from negative reputational consequences would not be so salient that their level of reputational concern decreased.

Secondly, I focused on one's own power (i.e., sense of power) and found no evidence for its link to reputational concern. I would like to point out that the effect of power can be broken down into two sources (also see Chapter 1, Section 1.3.4.3.): the effect of holding and lacking power (i.e., one's own power) and the effect of facing others holding and lacking power over oneself (target power). Given that I hypothesized that powerholders would be less concerned about their reputation because others could not punish them for their negative behaviour and reputation, it would be low target power rather than high one's own power that is more closely related to reputational concern. Likewise, I predicted that the powerless would be highly concerned about their reputation because they are subject to reputational consequences from powerholders, and it is likely that high target power rather than low one's own power would be associated with increased reputational concern. This perspective is in line with my previous studies (see Chapter 2) that suggested that it is target power that is strongly related to reputational concern as well as reputation-based prosocial behaviour. Strikingly, a recent systematic review by Feenstra et al. (2021) revealed that only 3.8% of the reviewed studies manipulated target power, and the potential role of target power is relatively understudied in the existing literature, calling for further studies examining the relationship between target power and reputational concern.

Overall, it is too early to draw any conclusions about the relationship between power and reputational concern. Given the ubiquity and the crucial role of reputation in social lives, the potential relationship between them deserves further scholarly investigation. More specifically, I argue that it is of vital importance to incorporate power construal and type of power (i.e., one's own power vs. target power) into future studies (an issue I come back to in Chapter 4).

Recently, scholars have started applying economic game paradigms to manipulate power (Gordon & Puurtinen, 2020; Harrell & Simpson, 2016; Sivanathan et al., 2008; van Dijk & De Dreu, 2021); in these studies, participants in the powerful condition are typically given the actual ability to control resources and punish others, whereas participants in the powerless condition were subject to asymmetric influence by the powerful. In other words, instead of manipulating participants' sense of power, this approach allows scholars to manipulate the actual power. In addition, such experimental settings would allow scholars to manipulate how power should be construed by participants. Thus, the hypothesized relationship between power and reputation would be better studied with these methods. As suggested by Sturm and Antonakis (2015), the manipulation of actual power with such methods also provides ecologically more valid evidence as to how power shapes human cognition and behaviour. Therefore, departing from the commonly used power priming methods would be a future avenue for research on the relationship between power and reputation.

Power Priming Manipulations

Episodic and semantic priming methods have been dominant research methods in the field of research on power for several reasons, and a number of studies, in fact, have reported that these methods successfully influenced a wide range of cognition, affects, and behaviours (Sturm & Antonakis, 2015). In Study 5, episodic power priming was unsuccessful, consistently with Heller and Ullrich (2017). Yet, it was successful when I overcame methodological limitations that presumably contributed to the failure of the manipulation (i.e., insufficient engagement in the recall task and wording of the scale items) in Study 7. Thus, my results, together with Heller and Ullrich (2017), place caveats on the use of the paradigm, suggesting that researchers should carefully design the task, especially when it is executed online.

To my knowledge, Heller and Ullrich (2017) were the first to publish a null effect of episodic power priming with a well-powered study. My studies were also sufficiently powered and preregistered. These recent findings suggest that the most commonly used methods to induce the sense of power do not always work. Given the ample discussions on the effectiveness of priming methods in general (Cesario, 2014; Hoogeveen et al., 2019; Stroebe & Strack, 2014; Van Elk & Lodder, 2018), my research calls for a comprehensive systematic review on the effect of the power priming manipulations..

I tested the moderating role of ease of retrieval in Study 7. Lammers et al. (2017) found that ease of retrieval moderated the influence of power priming (high vs. low power prime) on three dependent variables: confidence, obedience, and unethical behaviour. They found that the power priming was either ineffective or even reversed when power-related events were hard to recall. Crucially, however, they did not test the moderation effect on a sense of power. In Study 7, I tested it and revealed that ease of retrieval did not moderate the influence of episodic recall priming on a sense of power; my findings suggest that it does not moderate the effectiveness of episodic priming itself. Moreover, I found that ease of retrieval somehow had a moderating effect on reputational concern, and this suggests that the role of ease of retrieval would vary depending on the dependent measures. Further research is needed to better understand how ease of retrieval influences the effect of power recall priming on different outcomes.

Conclusions

In summary, I sought to establish the relationship between one's own power and reputational concern, but, overall, I did not find supporting evidence across the three preregistered studies. Having said that, my research has yielded valuable insights into the relationship between power and reputational concern and left promising future directions to further elucidate the relationship. Since power asymmetries are ubiquitous and reputation

plays a pivotal role in social lives, I believe that the current research will invite further studies and discussion on the issue. In addition, my preregistered studies added valuable data to the recent scholarly debate on the effectiveness of power priming methods and will contribute to cumulative science on the topic.

Across the three priming studies, I did not find evidence for the relationship between one's own power and reputational concern. In Chapter 2, I presented four correlational studies and they yielded converging evidence that it is target power rather than one's own power that was associated with reputational concern and reputation-based prosocial behaviour. Thus, it is not surprising that I did not find experimental evidence for the association between one's own power and reputational concern in this chapter. The results are rather in line with the findings from Chapter 2. Thus, in the following experimental chapters, I report several studies in which I directly manipulated target power, rather than one's own power, and aimed to offer experimental support to the reputational account of power.

Ch. 4: Intragroup Cooperation under a Power Hierarchy

Introduction

Power asymmetries are ubiquitous (e.g., Halevy, Chou, et al., 2011) and previous studies have documented their pivotal role in shaping diverse social behaviours (Galinsky et al., 2006; Gilbert, 2000; Gruenfeld et al., 2008; Kipnis, 1972; Lammers et al., 2010; Lammers & Stapel, 2011; Schilke et al., 2015). A significant body of work has focused on how power influences cooperation and prosocial behaviour because of their practical implications for a wide range of societal issues such as environmental problems (Joireman, 2005; Van Vugt, 2009). While previous studies have yielded ample evidence pointing to the association between power and cooperation, it remains unclear when and how power affects cooperation (Fouk et al., 2020; Williams, 2014, also see Chapter 1).

Synthesizing the social psychological literature on power with the evolutionary psychological literature on cooperation, I proposed the reputational account of power (Chapter 1). Namely, I expected that when people face others who hold power over themselves, they would experience an increased level of reputational concern and, correspondingly, display increased prosocial behaviour. In other words, I hypothesized that power asymmetry functions as a reputational cue and power influences prosocial behaviour via reputational concern.

To test the prediction, I conducted four correlational studies (Studies 1 – 4, Chapter 2) and found that higher target power (i.e., power that others hold over oneself) was associated with higher level of reputational concern and prosocial behaviour. While I originally hypothesised that power asymmetries might influence reputational concern, these studies yielded converging evidence that target power, rather than power asymmetries and one's own power, influenced reputational concern and reputation-based prosociality. In Chapter 3, power priming studies (Studies 5 – 7) found that an experimentally induced sense of power

(i.e., one's own power) was not significantly correlated with reputational concern, which further suggests that target power rather than one's own power may play a crucial role in shaping reputational concern. In this chapter, I present four experimental studies designed to further validate the reputational account of power, by manipulating target power in an experimental power hierarchy.

In Studies 1 – 4, there were three major methodological limitations that need to be overcome in order to ensure the generalizability of the findings. First, the dependent measure of prosocial behaviour was the self-report prosocial intention rather than behaviour. Given that self-report measures are susceptible to social desirability biases (Lavrakas, 2012), it would be desirable to employ behavioural measurements of prosocial behaviour. Second, I focused on organizational and friendship contexts, and the observed relationship between power and reputation-based prosociality may be limited to the specific contexts. To warrant the generalizability, it would be important to test the relationship in more abstract contexts. Third, given the correlational nature of the findings, I cannot draw a robust causal inference about the relationship between power, reputation, and cooperation. Fourth, while Studies 1 – 7 together suggest that target power may be associated with reputational concern, these studies have not yet offer direct evidence for the claim. In other words, I should experimentally manipulate target power and explore whether individuals would experience differing levels of reputational concern depending on how much power another holds power over themselves. To this end, I established a novel experimental paradigm that allowed me not only to overcome these limitations but also to examine the role of power in shaping cooperation in an important context, a group context.

Individuals belong to diverse social groups, and hierarchical structure with power asymmetries is ubiquitous (Halevy et al., 2011). In groups with a power hierarchy, some group members have more power and control over others, and individuals interact with others

who hold higher, same, and lower power in their everyday interaction (Magee & Galinsky, 2008). Thus, it is imperative and of practical importance to elucidate how individuals behave towards others varying in their power in a hierarchically structured group context. That being said, previous studies have predominantly focused on dyadic power relationships or a situation where there is one power holder and the others have no power (i.e., leadership research; e.g., Harrell & Simpson, 2016), and there are no studies examining how hierarchically structured power asymmetries among more than two individuals would shape within-group cooperation.

Assuming that power asymmetry influences reputation-based cooperation, I should observe power-based within-group discrimination in cooperation; individuals would be more prosocial towards higher power group members than they would towards equal and lower power in-group members.

Study 8: Experimental Power Hierarchy Manipulation

The present study was designed to establish a novel experimental paradigm in which I could directly manipulate target power in a hierarchical group. Namely, the experimental paradigm involved a 6-person group with a power hierarchy of a pyramid shape (one on the top, two in the middle, and three on the bottom), and I placed participants in the middle layer such that participants would have a higher power group member (one on the top), a same power group member (the other person in the middle layer), and lower power group members (three on the bottom). Study material, data, and analysis code are available at https://osf.io/hztpa/?view_only=aa8b0f34b8d14fecb6157525c825841e. This study was not preregistered.

Methods

The present study followed a 1 x 3 (target power: higher vs. same vs. lower) within-subject design with two dependent variables: a sense of power and perceived power. A priori

power analysis using G*Power (Erdfelder et al., 2009) revealed that 53 participants would be sufficient to detect a small-to-medium effect size of $\eta_p^2 = .04$ with 90% statistical power at $\alpha = .05$. Thus, I recruited 80 undergraduate students and had 79 completed responses.

After giving consent, participants were asked to imagine they were working in a group of six individuals. They were instructed that each member was given a unique ID (P1, P2, P3, P4, P5, and P6), and participants would complete several tasks as P2. To ensure that this experimental manipulation would work for any economic games and tasks, I only informed participants that they would complete several tasks. They were further told that while completing the tasks, P1 could decide whether to ostracize other group members (P2, P3, P4, P5, and P6) without indicating any reasons, and P2 (participants) and P3 could decide whether to ostracize P4, P5, and P6. Contrastingly, P4, P5, and P6 could not ostracize anybody. These instructions were accompanied by an illustration that depicts the group as a hierarchy. A1 and A3 corresponded with a higher power and the same power group member, respectively. A4, A5, and A6 were lower power group members.

I introduced a scale to measure relative perceived power to ostracize others (Molho et al., 2019). The scale consisted of five items (e.g., who do you feel has more power to keep and exclude group members?), and participants answered them using a 5-point scale from 1 = *Definitely [P1, P3, or P6]* and 5 = *Definitely myself*. Participants completed the scale for A1 ($\alpha = .84$), A3 ($\alpha = .83$), and A6 ($\alpha = .90$). The higher they scored on the scale, the more power they thought they had over a target person. I also measured participants' sense of power over A1, A3, and A6. I administered the same scale as I did in Studies 1 – 4 (A1: $\alpha = .81$; A3: $\alpha = .78$; A6: $\alpha = .90$).

Results and Discussion

A 1 x 3 (target power: higher vs. same vs. lower) within-subject ANOVA yielded a significant main effect of target power on the perceived power to ostracize (see Table 7 for

descriptive statistics), $F(1.79, 139.98) = 336.45$, $p < .001$, $\eta_p^2 = .81$. Post-hoc pairwise comparisons showed that perceived power to ostracize in the three conditions significantly differ from one another, $t_s > 7.21$, $p_s < .001$. Similarly, the 1 x 3 within-subject ANOVA on the sense of power revealed a significant effect, $F(1.37, 106.68) = 75.25$, $p < .001$, $\eta_p^2 = .49$. Consistently with the other power measure, the sense of power in the three conditions significantly differed from one another, $t_s > 5.66$, $p_s < .001$. Overall, the experimental hierarchy successfully manipulated the power of three hypothetical group members.

Table 7. Means and Standard Deviations of the Dependent Variables by Condition

	Higher Power (A1)	Same Power (A3)	Lower Power (A6)
Power to Ostracise Relative to Target	1.84 (0.61)	2.64 (0.64)	4.63 (0.68)
Sense of Power Over Target	4.11 (0.83)	4.78 (0.75)	5.36 (0.95)

Study 9: Intragroup Cooperation under a Power Hierarchy I

In the present study, I incorporated the experimental power hierarchy manipulation developed in Study 8 into an economic game paradigm so that I could investigate cooperation with in-group members varying in their power. I hypothesized that individuals would cooperate more with an in-group member with a higher level of power than they would with in-group members with the same and lower level of power. In addition, I expected that such power-based discrimination would be predicted by reputational concern. To control for potential influences of group contexts, I employed the minimal group paradigm (Tajfel et al., 1971).

Reputational concern was the main candidate for explaining power-based within-group discrimination in cooperation, but I measured three other variables which might be relevant to power-based discrimination: expectation about cooperation, group identification, and individuation of other in-group members. Terrizzi et al. (2020) revealed that adults and

six- and seven-year-old children expected the powerful to be less prosocial compared to the powerless. Thus, given that group cooperation was found to be driven by expected cooperation from other group members (e.g., Yamagishi et al., 1999), it would be likely that power-based discrimination in cooperation could be partly explained by expectations about other group members varying in their power.

Previous studies also showed that cooperation with in-group members was related to social identification (Hogg & Abrams, 1988; Tajfel & Billic, 1974; Tajfel & Turner, 1979). Namely, when individuals are put in an intergroup context, people identify with the most relevant group, and their personal identity is merged with the collective self. This process further encourages them to establish a positively distinct social identity, often leading to increased favourable treatment, including increased cooperation, towards in-group members. I presume that when a power hierarchy is introduced, the most relevant intergroup context might be powerful vs. the powerless, within-group sub-groups. In line with this, Magee and Smith (2013) argued that the perceived similarity to others would be reduced for those with power as compared to those without power. Thus, power would influence to what extent individuals see other in-group members as their in-group members. In other words, individuals would be less cooperative towards other in-group members who are in a different position in the power hierarchy than those who hold the same power because of the individuating process. Thus, I measured to what extent individuals identified with the group and saw other group members varying in their power as a typical group member to account for this perspective.

Data, study material, analysis code, and supplementary results are available at https://osf.io/hztpa/?view_only=aa8b0f34b8d14fecb6157525c825841e. This study was not preregistered.

Methods

The present study followed a 1 x 3 (target power: higher vs. same. vs. lower) within-subject design. A priori power analysis using G*Power (Erdfelder et al., 2009) revealed that 53 participants would be sufficient to detect a small-to-medium effect size of $\eta_p^2 = .04$ with 90% statistical power at $\alpha = .05$. Thus, I recruited 70 participants via Prolific.

After giving consent, participants completed an online survey that consisted of two main parts: minimal group induction and an economic decision making scenario. To avoid distorting their responses, I informed them that as a cover story, the study was designed to investigate the relationship between artistic preferences and economic behaviour.

In the minimal group induction phase, participants were first instructed that they would complete an artistic preference task where they were presented with six pairs of pictures and asked to indicate which one they preferred. Once they finished the task, they received feedback that they were categorized into one of two groups (Group A or Group B) based on their artistic preference. However, in actuality, the feedback was fake, and all participants were assigned to Group A, and this task served to create experimental groups. To reinforce the manipulation, I gave them a short script describing the characteristics of typical members of Group A and Group B. Participants were further asked to provide one example where they had behaved in a way that members of Group A usually would. This minimal group induction was adapted from Everett et al. (2015). Participants then answered six questions measuring the strength of social identification with their group (Leonardelli & Brewer, 2001; e.g., I feel that Group A is an important reflection of who I am, $\alpha = .79$), using a 6-point scale from 1 = *Strongly disagree* to 6 = *Strongly agree*.

Participants were then told that 12 participants, including themselves, were matched online for subsequent tasks. More specifically, they were instructed that six participants from Group A and six from Group B were gathered, and each individual got an ID indicating their group membership and a unique number (A1, A2, A3, ..., A6, B1, B2, B3, ..., B6). Despite

that I instructed that they were completing the rest of the survey with other participants, they were not, in fact, matched online. In addition, all participants were told that they would complete the study as A2. To minimise participants' suspicion, I inserted a waiting time when the online matching system ostensibly recruited other participants. Thus, the current study involved deception.

After the ID assignment, participants read instructions about the economic decision making scenario, which consisted of three parts: prisoners' dilemmas (PDs), member selection, and group decision making task. The basic structure of the PD was as follows; two players were each endowed with 500 pence and were asked to decide how much money they would like to transfer to the other player, knowing that each pence they sent would be doubled by the experimenter. Participants were instructed that they would complete the task several times with different participants, and it was emphasized that during the task, they and their partners knew each other's unique ID. In the member selection phase, participants could exclude other group members to prepare for the last part, the group decision making task, where they should cooperate to maximize the group's payoff. I introduced the hierarchical structure to the group and gave the instruction from Study 8.

After reading the instructions about the economic decision making scenario, participants answered a few comprehension check questions to make sure they correctly understood the scenario, and then they proceeded to play the PDs. When they failed to correctly answer them, they were redirected to the previous page and read the instruction again. They had to correctly answer all the comprehension check questions so that they could proceed. They completed the PD with A1 (a higher power group member), A3 (a same power group member), and A6 (a lower power group member) in a randomized order. Before finalizing their transfer decision, they had to indicate the correct ID of their partner. Because

of our limited budget and deception, I incentivized participants that 10 participants would be randomly selected to receive the actual payment they earned in the game.

After they made the decision, they answered five items measuring reputational concern (Wu et al., 2015; e.g., I did not consider what [A1, A3, or A6] would say about me) using a 5-point scale, one question measuring how much they expected their partner to transfer to themselves, and three questions to what extent individuals perceive their partner as a group member (i.e., individuation; e.g., How similar do you think [A1, A3, or A6] is to other members of the same group?) using a 6-point scale. The higher the individuation score is, the more people think the target is a typical group member. Therefore, participants answered nine questions in total for the three targets (A1, A3, and A6). All measures had satisfactory reliability ($\alpha_s > .75$).

After completing the PDs, participants indicated their estimation of the probability that A1 would exclude them from the group and the amount of money they think A6 should transfer to themselves so that they would not exclude A6 from the group. These items were included for an exploratory purpose. Finally, participants were debriefed and thanked.

Results and Discussion

Cooperation

To test my hypothesis, I dummy-coded target power as follows; Contrast 1: Higher power vs. (Same + Lower power) and Contrast 2: Same power vs. Lower power. I then built a linear mixed model in which cooperation was predicted by the dummy-coded variables, and the intercept was allowed to vary across participants (see Table 8 for descriptive statistics). Planned contrasts revealed that Contrast 1 was significant, indicating that individuals cooperated more with the higher power group members compared to the same and the lower power group members, $B = 10.02$, 95% CI [1.85, 18.19], $p = .02$. Contrastingly, Contrast 2 was not significant, $B = -2.06$, 95% CI [-16.20, 12.09], $p = .78$. Therefore, I observed power-

based discrimination such that individuals favoured the higher power individual over others. Strikingly, however, individuals did not cooperate significantly less with the lower power group member than they did with the same power group member. In other words, these results suggested that power did not disrupt downward cooperation (i.e., cooperation towards lower power individuals), but power asymmetry encourages upward cooperation (i.e., cooperation towards higher power individuals). With the newly created experimental paradigm where I could simultaneously examine cooperation towards higher, equal, and lower power others (i.e., manipulation of target power), I have demonstrated that target power does shape reputation-based cooperation.

Table 8. Means and Standard Deviations of the Dependent Variables by Condition

	Higher Power (A1)	Same Power (A3)	Lower Power (A6)
Cooperation	352.44 (146.43)	324.44 (155.64)	320.33 (169.01)
Reputational Concern	3.76 (0.95)	3.60 (0.85)	3.25 (0.91)
Expected Cooperation	245.91 (154.66)	285.44 (160.75)	311.53 (162.58)
Individuation	4.55 (1.09)	4.83 (0.95)	4.67 (0.89)

Predictors of Power-based Discrimination

I sought to test the hypothesis that reputational concern would explain the increased cooperation towards the higher power in-group member. I first computed difference scores for cooperation, reputational concern, expected cooperation, and individuation (e.g., cooperation towards the higher power individual – cooperation towards the lower power individual) and regressed a difference score for cooperation onto difference scores for the remaining variables. I first compared the higher power with the lower power group member. Difference in reputational concern significantly predicted difference in cooperation level, $B = 38.64$, 95% CI [7.52, 69.77], $p = .02$. However, expected cooperation and individuation did not, $B_s < 28.19$, $p_s > .18$. I ran the analysis to compare the higher power with the same power

targets and found the same pattern where reputational concern, but not expected cooperation and individuation, significantly predicted the difference in the level of cooperation (reputational concern: $B = 66.43$, 95% CI [27.73, 105.12], $p < .001$; expected cooperation and individuation: $B_s < 13.50$, $p_s > .36$). These results suggest that power-based discrimination in cooperation would be explained by different levels of reputational concern they experience while interacting with others varying in their power. The significant effects of reputational concern remained significant when controlling for the estimated probability of getting ostracised by A1 (see supplementary results for more detail).

Reputational Concern

I built a linear mixed model where Contrast 1 and Contrast 2 predicted reputational concern, and the intercept was allowed to vary across participants. Contrast 1 was significant, $B = 0.11$, 95% CI [0.06, 0.17], $p < .001$. Contrast 2 was also significant, $B = -0.17$, 95% CI [-0.27, -0.08], $p < .001$. Thus, individuals experienced more reputational concern with the higher power individuals than the rest, and they felt less reputational concern with the lower power group member than the same power group member. See Table 8 for descriptive statistics.

Expected Cooperation and Individuation

I did not have a specific hypothesis as to expected cooperation (see Table 8 for descriptive statistics). Thus, I first conducted a 1 x 3 (target power: higher vs. same. vs. lower) within-subject ANOVA on expected cooperation and found a significant effect, $F(1.80, 124.28) = 8.07$, $p < .001$, $\eta_p^2 = .11$. Next, post-hoc pairwise comparisons revealed that individuals expected the higher power group member to cooperate with themselves less than the same and lower power group members, $t_s > 2.20$, $p_s < .045$. However, individuals' expectations about cooperation from the lower and the same power group members did not significantly vary, $t = .16$, $p = .25$. Similarly, I carried out a 1 x 3 (target power: higher vs.

same vs. lower) within-subject ANOVA on individuation and detected a significant effect, $F(1.49, 102.85) = 4.56$, $p = .02$, $\eta_p^2 = .06$. Post-hoc comparisons revealed that people perceived the higher power group member as a group member to less extent compared to the same power group member, indicating that they individuated the higher power member more than the same power group member. However, the other comparisons did not reach statistical significance, $t_s < 1.73$, $p_s > .20$.

Summary

With the economic game paradigm with the experimental power hierarchy, I showed that there was power-based discrimination in cooperation within a group. More specifically, I demonstrated that individuals were more cooperative with the higher power group member compared to others, and such differential treatment was explained by reputational concern rather than expected cooperation and individuation. Importantly, they did not discriminate between the same and lower power in-group members. These results suggested that high target power induces reputational concern and leads to increased upward cooperation (cooperation towards a higher power individual).

Study 10: Intragroup Cooperation under a Power Hierarchy II

In Study 10, I aimed to replicate the finding using a preregistered study with a between-subject design. I dropped the same power condition and focused on the comparison between the higher and lower power group members. My main preregistered hypotheses were as follows; (1) individuals would cooperate more with the higher power group member than they would with the lower power group member, and (2) reputational concern would mediate the relationship between power and cooperation. I also preregistered to replicate other findings from Study 9. Preregistration, including the hypotheses, a target sample size, study procedure, and data exclusion criteria, can be found at https://osf.io/ywpb2/?view_only=574e8b191b0f4cf391746d4aa4a135c9. I have study

material, data, and analysis code available at

https://osf.io/hztpa/?view_only=aa8b0f34b8d14fecb6157525c825841e.

Methods

The current study employed a 1 x 2 (target power: higher vs. lower) between-subject design. In the previous study, the effect size for power-based intragroup discrimination was $\eta_p^2 = .04$ and a priori power analysis revealed that 256 participants would be sufficient to detect the effect size with 90% power. Thus, I recruited 280 British participants via Prolific academic to be accountable for any data exclusion. I had 278 completed responses. I preregistered to exclude participants whose completion time is extremely long or short ($\pm 2SD$ from a median completion time) and did not seriously complete the minimal group induction and who correctly guessed the purpose of the study. This left 215 participants for subsequent analyses. I conducted the analyses without data exclusion, but there were not any meaningful differences.

The basic structure of the present study was identical to Study 9. Given that the present study followed a between-subject design, participants were randomly assigned to the higher power or lower power condition and completed the PD only once. Reputational concern, individuation, and social identification measures all had satisfactory reliability, $\alpha_s > .78$.

Results and Discussion

Cooperation

I conducted a 1 x 2 (target power: higher vs. lower) between-subject ANOVA on cooperation (see Table 9 for descriptive statistics). Contrary to my preregistered hypothesis, the effect of target power was not significant, $F(1, 213) = 1.16$, $p = .28$, $\eta_p^2 = .01$. Thus, the finding from Study 9 was not replicated.

Reputational Concern

A 1 x 2 (target power: higher vs. lower) between-subject ANOVA on reputational concern yielded a nonsignificant effect, $F(1, 213) = 0.33$, $p = .57$, $\eta_p^2 = .002$ (see Table 9 for descriptive statistics). Thus, my hypothesis was not supported, inconsistently with Study 9.

Table 9. Means and Standard Deviations of the Dependent Variables by Condition

	Higher Power (A1)	Lower Power (A6)
Cooperation	339.85 (143.81)	319.14 (137.98)
Reputational Concern	3.78 (0.89)	3.71 (0.83)
Expected Cooperation	250.54 (151.91)	263.20 (144.11)
Individuation	4.61 (1.21)	4.64 (1.13)

Mediation Analysis: Power, Reputational Concern, and Cooperation

Although I did not find a significant difference between cooperation with the higher and lower power group members, I carried out a mediation analysis where target power had indirect effects via reputational concern, expected cooperation, and individuation. None of the indirect effects were significant, $p_s > .53$, and confidence intervals for them crossed zero. Thus, my hypothesis was not supported.

Other Preregistered Hypotheses: Expected Cooperation and Individuation

On the preregistration, replicating the previous study, I hypothesized that individuals would expect the lower power group member to be more cooperative than the higher power group member, and individuation of the higher and lower power group members would not significantly differ from each other. To address the former hypothesis, I ran a 1 x 2 (target power: higher vs. lower) between-subject ANOVA on expected cooperation. Contrary to the prediction, the effect of target power was not significant, $F(1, 213) = 0.39$, $p = .53$, $\eta_p^2 = .002$. I ran the same analysis on individuation, and revealed nonsignificant effect, $F(1, 213) = 0.04$, $p = .85$, $\eta_p^2 < .001$. Given that the hypothesis about individuation was a null hypothesis, I further conducted a Bayesian t-test. The Bayes factor indicated that the data was

in favour of the null hypothesis, $B_{10} = 0.15$, the error percentage = .002, the median posterior distribution of $\delta = -0.02$, 95% credible interval [-0.28, 0.24]. See Table 9 for descriptive statistics. Therefore, while I did not replicate the finding on expected cooperation, the present study collated consistent results with the previous study regarding individuation.

Summary

Overall, I failed to replicate the key findings from Study 9. However, this could be attributed to the shrunk effect sizes due to the nature of the experimental design. Thus, the results of the present study called for further examination of the role of the power hierarchy in reputation and in-group cooperation.

Study 11: Conceptual Replication of Study 9

Given that I had conflicting results across the previous two studies, I aimed to conduct a preregistered, well-powered conceptual replication study of Study 9. The present study differed from Study 9 in two ways; I dropped the minimal group induction and individuation measure. In addition, I did not have an actual economic incentive for participants, and participants were asked to imagine completing PDs. My main preregistered hypotheses were as follows; (1) individuals would cooperate more with the higher power group member than they would with the same and lower power group members, (2) individuals would experience more reputational concern towards the higher power individuals than they would with the same and lower power group members, (3) the difference between cooperation towards the higher power and the same power group members would be explained by reputational concern, and (4) the difference between cooperation towards the higher power and the lower power group members would be explained by reputational concern. I also preregistered to replicate the findings on expected cooperation.

Preregistration, including study procedure, the hypotheses, a sample size termination, data exclusion criteria, and analytic strategies, can be found at

https://osf.io/cwzmp/?view_only=0d3f84828f43427d82f7e0ce283a413e, and I have study material, data, and analysis code available at

https://osf.io/hztpa/?view_only=aa8b0f34b8d14fecb6157525c825841e.

Methods

The present study followed a 1 x 3 (target power: higher vs. same. vs. lower) within-subject design, as in Study 9. I had 70 participants from Study 9. Following Simonsohn's (2015) recommendation, I aimed to collect at least 175 (70 x 2.5) participants. I recruited undergraduate students from a university research participation scheme, and I preregistered that I would have the study available for voluntary participation till the end of an academic year to maximize the final sample size. I obtained 204 completed responses. Following the preregistration, I excluded participants based on their completion time, leaving 184 participants for subsequent analyses. The structure of the study followed that of Study 9, but I omitted the minimal group induction part and the individuation measure. All measures had satisfactory reliability $\alpha_s > .83$.

Results and Discussion

Cooperation

Following the analytic strategy in Study 9, I conducted planned contrasts. Supporting my hypothesis, Contrast 1 (higher power vs. same + lower power) was significant, indicating that individuals cooperated more with the higher power group member than the lower and the same power group members, $B = 14.41$, 95% CI [9.59, 19.23], $p < .001$. While individuals did not discriminate between the lower and same power individuals in Study 9, I found that Contrast 2 (same power vs. lower power) was significant, and individuals cooperated less with the lower power member than they did with the same power member, $B = -12.11$, 95% CI [-20.44, -3.79], $p < .001$. See Table 10 for descriptive statistics.

Table 10. Means and Standard Deviations of the Dependent Variables by Condition

	Higher Power (A1)	Same Power (A3)	Lower Power (A6)
Cooperation	295.96 (139.37)	263.60 (138.52)	239.67 (144.92)
Reputational Concern	3.67 (0.99)	3.29 (1.01)	3.04 (1.03)
Expected Cooperation	209.95 (144.83)	254.80 (132.29)	271.98 (23432)

Reputational Concern

Contrast 1 and Contrast 2 were both significant for reputational concern, $|B_s| > 0.13$, $p_s < .001$. The results revealed that individuals felt more reputational concern with the higher power group member than they did with the same and lower power group members, replicating the previous finding. However, unlike Study 9, I found that individuals experienced more reputational concern with the same power group member than they did with the lower power group member. See Table 10 for descriptive statistics.

Predictors of Power-based Discrimination

As in Study 9, I computed difference scores for cooperation, reputational concern, and expected cooperation. I first regressed the difference score for cooperation (the higher power member vs. the lower power member) onto the difference scores for reputational concern and expected cooperation. The analysis revealed that reputational concern significantly predicted cooperation, $B = 67.02$, 95% CI [51.46, 82.57], $p < .001$. By contrast, expected cooperation did not, $B = -0.04$, 95% CI [-0.17, 0.08], $p = .49$. Regarding the discrimination between the higher and the same power group members, both reputational concern and expected cooperation significantly predicted cooperation, $B_s > 58.82$, $p_s < .001$. Overall, these results supported my hypothesis, replicating Study 9.

Expected Cooperation

In Study 9, I found that individuals expected the higher power group member to be less cooperative than the lower and the same power members. To replicate this, I dummy-coded target power such that I first compare the higher power with the lower and the same group members and then contrast the lower power with the same power group members. These contrasts were both significant, $\beta_s > 17.17$, $p_s < .047$. See Table 10 for descriptive statistics.

Summary

In sum, the present study successfully replicated major findings from Study 9 and provided evidence for the power-based within-group discrimination in cooperation. In addition, I obtained evidence that reputational concern would explain such differential treatments of other group members varying in their power. However, it should be noted that while individuals did not discriminate between the lower and the same power group members in Study 9, the present study demonstrated that they would be less cooperative towards the lower power group member than they would towards the same power group member.

Mini Meta-Analyses

Methods

Since I had inconsistent results across three studies (i.e., null results in Study 10), I conducted mini meta-analyses. Using data from Studies 9 – 11, separate meta-analyses were conducted for the following comparisons: cooperation towards the higher power group member vs. cooperation towards the lower power group member; cooperation towards the higher power group member vs. cooperation towards the same power group member; reputational concern towards the higher power group member vs. reputational concern towards the lower power group member; reputational concern towards the higher power group member vs. reputational concern towards the same power group member. I used the fixed-effect approach, as there were only three studies for the meta-analyses. Analysis code,

data, and supplementary results can be found at

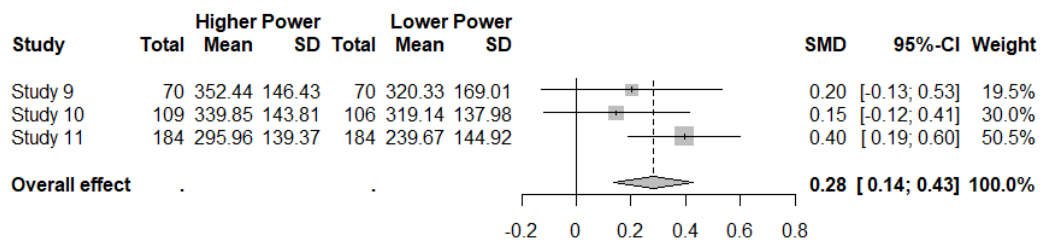
https://osf.io/hztpa/?view_only=aa8b0f34b8d14fecb6157525c825841e.

Results and Discussion

Cooperation: Higher Power vs. Lower Power

The overall effect of the comparison was significant, standardized mean difference (*SMD*) = 0.28, 95% CI [0.14, 0.43], $p < .001$ (Figure 10). The results suggest that individuals cooperate more with the higher power group member than they would with the lower power group member.

Figure 10. Forest Plot of Standardized Mean Differences between Cooperation with the Higher Power and Lower Power Group Members.

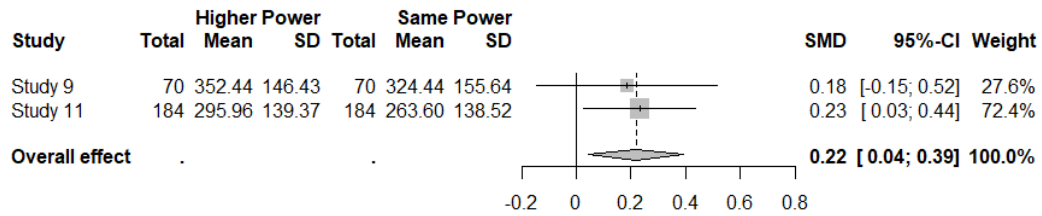


Note: SMD: standardized mean difference.

Cooperation: Higher Power vs. Same Power

The meta-analysis revealed the significant overall effect, $SMD = 0.22$, 95% CI [0.04, 0.39], $p = .01$, $I^2 = 0.0\%$ [0.0%, 91.2%] (Figure 11). Thus, across the two studies, individuals cooperated more with the higher power group member than they did with the same power group member.

Figure 11. Forest Plot of Standardized Mean Differences between Cooperation with the Higher Power and Same Power Group Members.

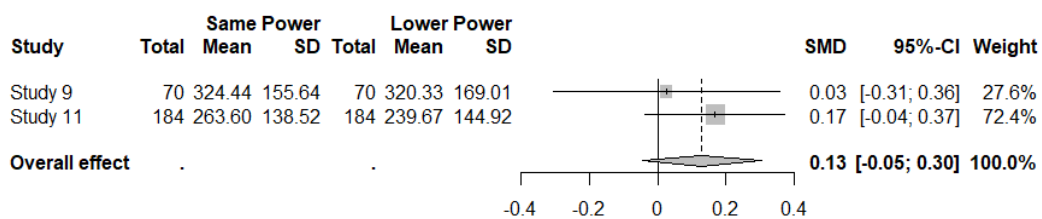


Note: SMD: standardized mean difference.

Cooperation: Same Power vs. Lower Power

I meta-analysed the level of cooperation with the same and lower power group members in Studies 9 and 11. The overall effect of the comparison was not significant, $SMD = 0.13$, 95% CI [-0.05, 0.30], $p = .15$ (Figure 12). This suggests that individuals, in general, do not discriminate between group members who have the same and lower power; power asymmetry encourages individuals to cooperate with others with more power, rather than having power discourages cooperation.

Figure 12. Forest Plot of Standardized Mean Differences between Cooperation with the Same Power and Lower Power Group Members.

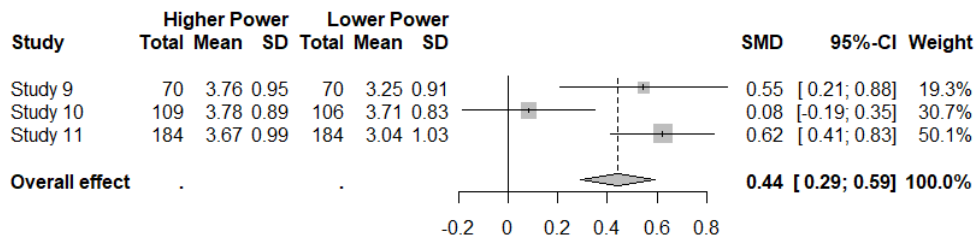


Note: SMD: standardized mean difference.

Reputational Concern: Higher Power vs. Lower Power

The meta-analysis on the level of reputational concern that participants felt showed that they experienced more reputational concern while interacting with the higher power group member than they did while interacting with the lower power group member, $SMD = 0.44$, 95% CI [0.29, 0.59], $p < .001$ (Figure 13).

Figure 13. Forest Plot of Standardized Mean Differences between Reputational Concern with the Higher Power and Lower Power Group Members.

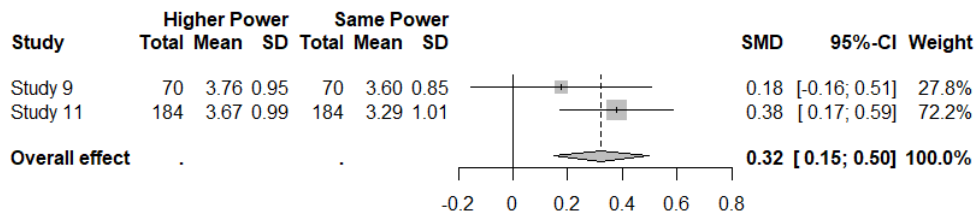


Note: SMD: standardized mean difference.

Reputational Concern: Higher vs. Same Power

The overall effect for the comparison between reputational concern that participants experienced with the higher power and same power group members were significant, $SMD = 0.32$, 95% CI [0.15, 0.50], $p < .001$ (Figure 14). Across the two studies, individuals felt more reputational concern towards the higher power group member than the same power group member.

Figure 14. Forest Plot of Standardized Mean Differences between Reputational Concern with the Higher Power and Same Power Group Members.

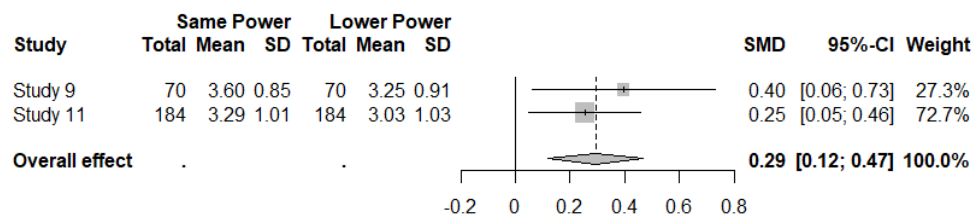


Note: SMD: standardized mean difference.

Reputational Concern: Same Power vs. Lower Power

Finally, the meta-analysis revealed that reputational concern towards the same power group member was significantly higher than that towards the lower power group member, $SMD = 0.29$, 95% CI [0.12, 0.47], $p = .001$ (Figure 15). Strikingly, while individuals did not display different levels of cooperation towards these targets, the meta-analytic evidence suggests that they experience different levels of reputational concern when interacting with the same and lower power group members.

Figure 15. Forest Plot of Standardized Mean Differences between Reputational Concern with the Same Power and Lower Power Group Members.



Note: SMD: standardized mean difference.

Summary

Overall, the meta-analyses suggested the presence of within-group discrimination in cooperation; a power hierarchy promoted upward cooperation (cooperation towards the

higher power in-group member) but did not reduce downward cooperation (cooperation towards the lower power in-group member). Also, the analyses on reputational concern revealed that individuals experienced different levels of reputational concern depending on target power.

General Discussion

Studies 8 – 11 served to offer experimental evidence to the reputational account of power, which posits that when faced with power holders, individuals would feel an increased level of reputational concern and, correspondingly, display increased prosociality. Based on the results from studies reported in Chapters 2 and 3, this theory places target power, rather than one's own power, as a key driver of reputation-based cooperation. Using partially incentivised economic games (Studies 9 and 10) and imagined economic games (Study 11), I examined how much individuals would cooperate with in-group members who had higher, equal, and lower power in the group. Overall, these studies have yielded converging evidence that people are more cooperative towards higher power in-group members compared to equal and lower power in-group members. Moreover, they have revealed that people did not discriminate between equal and lower power in-group members. These results support the reputational account of power; *target power (rather than asymmetry) acts as a reputation cue and encourages individuals to display cooperation towards others when target power is high.*

Ch. 5: In-group Favouritism under a Power Hierarchy

Introduction

In-group favouritism, the tendency to favour in-group members over out-group members, has been documented in a number of studies using the economic game paradigm (for a review, see Balliet et al., 2014) as well as field experiments (Levine et al., 2005; Platow et al., 1999). Previous studies have demonstrated such a tendency in diverse intergroup contexts, including minimal groups (e.g., Everett et al., 2015; Yamagishi et al., 1999; Yamagishi & Mifune, 2008), university affiliation (e.g., Hackel et al., 2017; Ockenfels & Werner, 2014), political groups (Rand, Pfeiffer, et al., 2009), nationality (Romano et al., 2017), and morally conflicted groups (Imada, Codd, et al., 2021). Moreover, in-group favouritism has been observed in diverse cultures (Fiedler et al., 2018; Romano et al., 2017, 2021; Ruffle & Sosis, 2006; Yamagishi et al., 2008). In addition, previous studies have documented in-group favouritism in a variety of forms of prosocial behaviour, such as prosocial giving (Fowler & Kam, 2007; Güth et al., 2009; Kogut & Ritov, 2007; Platow et al., 1999; Rachlin & Jones, 2008; Ruffle & Sosis, 2006; Whitt & Wilson, 2007) and cooperation (Aaldering et al., 2018; Ahmed, 2007; Goette et al., 2012; Guala et al., 2013; Koopmans & Rebers, 2009; Krupp et al., 2008; Wit & Wilke, 1992). Thus, in-group favouritism is a universal and robust phenomenon.

Recent studies have pointed to the important role of reputational concern in in-group favouring behaviour. Reputation information helps group members distinguish between altruists and egoists, and based on reputation information of others, group members can selectively interact with other members. As such, it is crucial for group members to maintain a positive, cooperative reputation particularly within their group. This further leads to in-group favouritism; individuals display more prosocial behaviour towards in-group members than out-group members because they experience more reputational concern when they

interact with in-group members (Kajiwara et al., 2022; Mifune et al., 2010; Mifune & Yamagishi, 2015; Yamagishi & Mifune, 2008). In line with this, previous experiments using economic games have shown that individuals do not discriminate between in-group and out-group members when their reputation is not at stake; previous studies, for instance, have found that in-group favouritism was absent when an in-group recipient of prosocial behaviour was not aware of the shared group membership, (i.e., when their reputation does not matter; Yamagishi et al., 1999; Yamagishi & Mifune, 2008; but see Everett et al. 2015). Moreover, Mifune et al. (2010) found that when a mere reputational cue (an image of watching eyes) was presented, individuals displayed in-group favouritism under anonymity. Taken together, these studies suggest that in-group favouritism can be explained by differing levels of reputational concern that individuals experience while interacting with in-group members and out-group members.

Despite that the empirical literature has gained ample evidence for the presence of in-group favouritism and the crucial role of reputational concern, past research predominantly employed social dilemmas and economic games with a simplistic in-group vs. out-group dichotomy; previous studies often overlooked potential influences of within-group variations, such as power asymmetries (Magee & Galinsky, 2008; Sturm & Antonakis, 2015), assuming that all in-group members are similar to one another.

Previous studies of mine have consistently shown that power asymmetries in a hierarchically structured group engender power-based within-group discrimination in cooperation (Chapter 4). More specifically, I found that people were more cooperative towards higher power in-group members than lower power in-group members (Chapter 4, Studies 9 – 11). These studies predominantly focused on intragroup cooperation, and it remains unclear if individuals still favour lower power in-group members over out-group members; does a power hierarchy undermine in-group favouritism? Do people still favour

same and lower power in-group members over out-group members? Or, is in-group favouritism targeted only at higher power in-group members, equally treating out-group members and same and lower power in-group members? Based on the results of the previous studies reported in the thesis, people may not favour all in-group members, but they may favour high power in-group members, but not low power in-group members over out-group members. In this chapter, I present three studies designed to explore intergroup prosocial behaviour under a power hierarchy, addressing these questions. More specifically, I aimed to compare prosocial behaviour towards higher and lower power in-group members with that towards an out-group member.

Study 12: In-group Favouritism under a Power Hierarchy I

In this study, I made several changes to the empirical procedures employed in Study 9. First, while the experimental hierarchy in Study 9 consisted of six individuals, I employed a three-person group in the present study. More specifically, participants were placed in the middle of the vertical hierarchy, and they had one higher power group member and one lower power group member. I implemented this change to reduce the complexity and length of the experimental instruction and help participants easily understand the study procedure.

Second, while I employed prisoners' dilemma games in Study 9, I used dictator games in the present study. In the prisoners' dilemma game, two players are each endowed with some money, and one's expectation about their partner's cooperation is one of the crucial factors in determining intergroup cooperation (e.g., Balliet et al., 2014); the more cooperation people expect from their partner in such a game, the more cooperative they are towards the partner. Contrastingly in the dictator game, one person (i.e., giver) is endowed with some money, and the other (i.e., receiver) is not. Because of the unilateral nature of the game, the giver's prosocial decision is not influenced by the expectation about their partner's cooperation. As such, by using the dictator game, I could structurally exclude the influence of

expectation about cooperation (Yamagishi & Mifune, 2008), and, thus, I could closely examine the role of reputational concern in shaping the relationship between power hierarchies and intergroup prosocial behaviour. Overall, the use of the dictator game served to (1) extend the previous findings from Studies 9 – 11 to prosocial giving and (2) investigate the effect of reputational concern in the absence of the effect of expected cooperation.

Finally, given that the focus of the chapter is in-group favouritism, participants played the game with in-group members of different power and out-group members. This allowed me to examine whether they would favour in-group members over out-group members regardless of power.

Study material, analysis code, data, and supplementary results are available at https://osf.io/ya64v/?view_only=c19f67ce11ee41e69f33999e995768e5. This study was not preregistered.

Methods

The study followed a 2 (group: in-group vs. out-group) x 2 (power: higher vs. lower) within-subject design. An a priori power analysis using pwr package (Helios & Rosario, 2020) indicated that a sample size of 53 would have a statistical power of 0.80 to detect a medium effect size of $f^2 = 0.15$. To account for any data exclusion, 60 participants were recruited via Amazon Mechanical Turk.

After giving consent, participants took an online survey which consisted of four parts: minimal group induction, power imbalance manipulation, dictator games (DGs) where they completed the game with four different hypothetical players, and a post-experiment questionnaire.

Participants were first informed that the study investigated the relationship between artistic preference and economic decision making, and, thus, the minimal group induction was framed as an artistic preference task. Following the procedure used in previous studies

(Everett et al., 2015b; Tajfel et al., 1971), they were presented with six pairs of pictures and asked to indicate their preference. Then, they received bogus feedback on their artistic preference, and they were told that they were categorized into one of two groups (Group A or Group B) based upon their responses to the previous task. However, in reality, all participants were assigned to Group A. To reinforce the reality of the manipulation, participants read a description of their group and were asked to provide an example of when they behaved in accordance with the description, following (Everett et al., 2015b).

After completing the minimal group induction, participants were asked to wait for a couple of minutes until online participant matching was done for subsequent decision making tasks. Then, they were told that there were six participants, including themselves, matched online: three from Group A and the other three from Group B. Participants and these ostensible other participants were each given a unique participant ID (A1 to A3 for members of Group A and B1 to B3 for members of Group B), and participants were always A2. While they were told that they would interact with these randomly matched participants in the following sections, they completed games with hypothetical persons, in actuality.

They were then instructed to complete three tasks as part of the economic decision making task: DGs, member selection, and a public goods game (PGG). In DGs, they were told to act as an allocator who would decide the division of \$5 between themselves and a randomly paired receiver. They were also instructed to complete the DG with different participants several times and, thus, pay attention to who they were interacting with each time. Most importantly, it was emphasized that their decision and ID were communicated to the receiver, ensuring that their reputation was at stake.

Participants were informed that after the DGs, they would engage in a group decision making task (public goods game, PGG) where they had to cooperate with their group members in order to maximize the payoff for the group. They were further instructed that

before proceeding to the PGG, they had a chance to choose whom to work with in the PGG; they could exclude some group members from the group. The rules about the member selection were as follows; (1) A1 can decide whether to exclude A2 (participants) and A3, (2) A2 can decide whether to exclude A3, (3) A3 cannot exclude anyone from the group, (4) if they were excluded, they could not participate in the PGG and could not earn a bonus, and (5) the same rules apply to Group B. This was the target power manipulation, and A1 and A3 corresponded with High-In and Low-In, respectively. Similarly, B1 and B3 were High-Out and Low-Out. Importantly, regardless of their power in the in-group, none of the players was able to exert power over members of the out-group.

After participants read the instructions, they answered a couple of comprehension check questions to make sure they understood the structure of the scenarios and then completed manipulation check questions measuring perceived relative power (Molho et al., 2019). This consisted of three 5-point Likert scales (e.g., “Who has the most impact on what happens in the member selection task?”). They were asked to answer these questions for four different dyads: A1 and themselves (A2), A3 and themselves, B1 and B2, and B3 and B2. The reliability analyses yielded the following standardized alphas; High-In: $\alpha = .66$ (one item dropped); Low-In: $\alpha = .89$; High-Out: $\alpha = .73$; Low-Out: $\alpha = .88$. They were scaled so that high scores indicated that they thought that they or B2 had relatively less power compared to the other person.

They then proceeded to DGs, and they completed it four times with different targets: A1 (High-In), A3 (Low-In), B1 (High-Out), and B3 (Low-Out). The order was randomized, and they always had to correctly indicate the ID of the currently paired participant before making decisions. Besides, they did not know how many times and with whom they would play the game. The amount of money they decided to leave for the receiver in the DG was treated as a measurement of prosocial behaviour. After each DG, they answered eight follow-

up questions that included five items for reputational concern (adopted by Wu et al., 2015). These were measured with 5-point scales from 1 = “Totally disagree” to 5 = “Totally agree” (High-In: $\alpha = .82$; Low-In: $\alpha = .81$; High-Out: $\alpha = .76$; Low-Out: $\alpha = .83$). I inserted three filler questions (e.g., “During the task, I thought about pictures that I saw in the artistic preference task”) so that they did not figure out the purpose of the study.

After completing the DGs, they were asked to complete social identification measurement while ostensibly waiting for A1 finishing the member selection task. I employed the social identification scale used in Leonardelli and Brewer (2001), which comprised six 6-point Likert scales ($\alpha = .86$). They also answered two suspicion probe questions; “What do you think was the purpose of this survey?” and “Do you think we deceived you about anything?” Then, they were debriefed that the member selection and the PGG would not take place and thanked.

Results and Discussion

I first excluded one participant who did not seriously complete the minimal group induction and eight participants who correctly guessed that there were no other participants matched online. I further excluded 11 participants who failed to correctly answer comprehension questions about the member selection process, leaving 40 participants for the subsequent analyses. After the exclusion, a sensitivity power analysis revealed that our main analyses with the 2 x 2 design had 80% power to detect an effect size of $f^2 = .20$.

Manipulation Check

Participants indicated that their perceived power relative to High-In ($M = 1.19$, $SD = 0.39$) was significantly lower than the scale centre, $t(39) = -29.61$, $p < .001$, $d = 4.68$. The perceived power compared with Low-In ($M = 4.68$, $SD = 0.64$) was significantly higher than the scale centre, $t(39) = 16.63$, $p < .001$, $d = 2.63$. A paired Welch’s t -test revealed that these

two means were significantly different, indicating that their perceived power relative to High-In was significantly lower than that of Low-In, $t(64.15) = -29.55, p < .001, d = 0.30$.

I conducted the same analyses for the out-group. Participants indicated that the out-group member positioned in the middle of the power imbalance (B2) had more power against Low-Out ($M = 4.74, SD = 0.43$) and less power against High-Out ($M = 1.18, SD = 0.43$), $t(39) = 25.62, p < .001, d = 4.74$; $t(39) = -26.72, p < .001, d = 4.23$. These means were also significantly different from each other, $t(78.00) = -37.00, p < .001, d = 0.17$. Therefore, the power manipulation was successful for both in-group and out-group.

The mean score on the social identity scale was below the scale centre ($M = 3.33, SD = 1.00$), although it did not significantly differ from the scale mid-point, $t(39) = -1.10, p = .28, d = 0.17$. The minimal group induction might not be sufficiently done.

Reputational Concern

Given that I had the within-subject design, I used a linear mixed model. In the model, I had the two main effects (group and power) and the interaction between them as fixed effects, and I further added a random intercept for each participant. There was a significant main effect of group, indicating that participants felt significantly more reputational concern during interactions with in-group members, compared to out-group members, $B = -0.70, t(117) = -5.18, p < .001$. Furthermore, the significant main effect of power indicated that reputational concern was higher when interacting with higher power individuals than when interacting with lower power individuals, $B = -0.68, t(117) = -5.00, p < .001$. There was a significant interaction effect, $B = 0.76, t(117) = 3.96, p < .001$. Simple effect analyses revealed that the effect of power was only significant for the in-group; for the in-group, $B = -0.68, t(39) = -4.47, p < .001$; for the out-group, $B = 0.08, t(39) = 0.60, p = .55$. Pairwise comparisons revealed that people felt more reputational concern towards the higher power in-group member compared to lower power in-group members and out-group members, p_s

< .001. The results suggested that the lower power in-group member and the out-group members did not elicit significantly different levels of reputational concern. Means and standard deviations are summarized in Table 11.

Table 11. Means and standard deviations of reputational concern and prosocial behaviour

	High_In	Low_In	High_Out	Low_Out
Prosocial Behaviour	249.40 (44.98)	207.28 (102.24)	213.03 (106.09)	213.15 (106.10)
Reputational Concern	3.41 (0.99)	2.73 (1.00)	2.71 (1.07)	2.79 (1.11)

Prosocial Behaviour

The same analyses were conducted on prosocial behaviour in the DGs. It was found that the main effect of group was significant, $B = -0.40$, $t(117) = -36.38$, $t(117) = -2.58$, $p = .001$. The main effect of power was also significant, $B = -42.12$, $t(117) = -2.99$, $p < .001$. The interaction effect was significant, $B = 42.25$, $t(117) = 2.12$, $p = .04$. Simple effect analyses revealed that the effect of power was significant in the in-group, but not in the out-group; for the in-group, $B = -42.12$, $t(39) = -2.79$, $p = .01$; for the out-group, $B = 0.12$, $t(39) = 0.01$, $p = .99$. Moreover, pairwise comparisons revealed that participants were more prosocial towards the higher power in-group member compared to the lower power in-group member, $p = .01$. Yet, the differences between prosociality towards the higher power in-group member and out-group members were only marginally significant, $p_s < .053$. Overall, these results replicate the finding from Studies 9 – 11 and yielded supporting evidence for the reputational account of power. These results suggest that in-group favouritism is not directed to lower power in-group members as people would not feel as much reputational concern as they would towards higher power in-group members.

I would like to note that some previous studies used the dictator game as manipulation of power (e.g., Handgraaf et al., 2008; Molho et al., 2019), and one can claim that when

participants played the dictator game as a giver, they might feel powerful whoever the receiver of the allocation was. Given that I observed the increased prosociality towards higher power in-group members and replicated previous studies with prisoners' dilemma games, participants' sense of power should not be inflated by holding the giver role in the game. Thus, the use of the asymmetric game (i.e., the DGs) in the present study should not confound the results.

Summary

In sum, I found that individuals felt more reputational concern towards the higher power in-group members compared to the lower power in-group members and out-group members. Correspondingly, I found that individuals favoured the higher power in-group member over the others. Strikingly, they did not discriminate between the lower power in-group members and out-group members. In other words, in-group favouritism was targeted at higher power in-group members, but not at lower power in-group members. In addition, I found that individuals were not sensitive to power structures in an out-group; they did not discriminate between out-group members with and without power.

The current study extends the previous studies on in-group favouritism and reputation, by showing that individuals feel different levels of reputational concern towards other in-group members depending on their power in the group. The study is in line with the view that in-group favouring behaviours is a mere reputation management strategy (Mifune et al., 2010; Mifune & Yamagishi, 2015; Yamagishi & Mifune, 2008), and this further suggests that people do not favour in-group members because they belong to the same group, but because they believe that doing so leads to reputational benefits.

Study 13: In-group Favouritism under a Power Hierarchy II

Study 12 aimed to explore how power asymmetry would affect intra- and intergroup prosocial behaviour. It demonstrated that individuals were more prosocial towards

higher power in-group members than lower-power in-group members and out-group members. In addition, participants felt more reputational concern when interacting with a higher-power in-group member than when interacting with a lower-power in-group member and out-group members. However, it remained unclear whether this discrimination (higher power in-group members vs. lower power in-group members and out-group members) was, in fact, due to reputational concern. Therefore, using a between-subject design, I sought to replicate Study 12 and further test the mediating role of reputational concern in the observed discrimination. Study material, data, analysis code, and supplementary results can be found at https://osf.io/ya64v/?view_only=c19f67ce11ee41e69f33999e995768e5. This study was not preregistered.

Methods

As there was no significant difference both in reputation and prosocial behaviour between High-Out and Low-Out conditions in Study 12, I merged them into one condition. Thus, the study followed a 1 x 3 (target: High-In vs. Low-In vs. Out) between-subject design, which allowed mediation analyses. An a priori power analysis revealed that 177 participants would be enough to have a statistical power of .90 to detect the effect size of $d = 0.54$ (the effect size of Contrast 1 for prosocial behaviour in Study 12). I recruited 210 participants via Amazon Mechanical Turk to account for data exclusion.

The basic structure of the present study followed Study 12, but there were a few modifications; as this study employed a between-subject design, participants played the DG only once with one of the three targets: High-In, Low-In, or Out. In this study, we had six items originally used in Molho et al. (2019) for the power manipulation check instead of three in Study 12 (for High-In: $\alpha = .83$; for Low-In: $\alpha = .92$). Except for this, all measurements and instructions were identical to those of Study 12. The reputational concern scale and social identity scale were both reliable, $\alpha = .81$ and $\alpha = .76$, respectively.

Results and Discussion

I excluded 10 participants who did not seriously complete the minimal group induction and 24 who doubted that they were not matched with anybody throughout the study. In addition, 28 participants were excluded because they did not correctly answer comprehension questions about the member selection process. Only were 148 participants left for the analyses. After the exclusion, a sensitivity power analysis revealed that our main analyses with the 1 x 3 design had 80% power to detect an effect size of $f = .25$.

Manipulation Check

As in Study 12, the perceived power relative to High-In was significantly lower than the scale centre, $M = 1.86$, $SD = 0.78$, $t(147) = 17.85$, $p < .001$, $d = 1.47$. Similarly, that to Low-In was significantly higher than the scale centre, $M = 4.33$, $SD = 0.95$, $t(147) = 17.13$, $p < .001$, $d = 1.41$. The difference between these means was also significant, $t(287.13) = -24.56$, $p < .001$, $d = 1.61$. A one sample t-test revealed that the mean of social identification scores was significantly higher than the scale mid-point of three, $M = 3.77$, $SD = 0.87$, $t(147) = 3.74$, $p < .001$, $d = 0.31$. Overall, these manipulations were successful.

Reputational Concern

A 1 x 3 between-subject ANOVA revealed that the main effect of the target condition was significant, $F(2, 145) = 3.81$, $p = .02$, $\eta^2 = .05$. Means and standard deviations of each condition are summarized in Table 12. In addition, hypothesis-relevant contrasts were created: Contrast 1: High-In vs. (Low-In and Out), and Contrast 2: Low-In vs. Out. Planned comparisons found that Contrast 1 was significant, but Contrast 2 was not, Contrast 1: $F(1, 145) = 7.59$, $p = .01$, $\eta^2 = .05$; Contrast 2: $F(1, 145) = 0.03$, $p = .86$, $\eta^2 < .001$. To put it concretely, participants felt more reputational concern towards the higher power in-group members compared to the lower power in-group member and the out-group member. Yet they did not experience significantly different levels of reputational concern towards the

lower power in-group member and the out-group member. Overall, the present study replicated Study 12.

Table 12. Mean and standard deviation of reputational concern and prosocial behaviour

	High_In	Low_In	Out
Prosocial Behaviour	241.16 (98.98)	215.07 (106.12)	215.62 (85.87)
Reputational Concern	3.73 (0.92)	3.31 (0.83)	3.28 (1.06)

Prosocial Behaviour

A 1 x 3 ANOVA on prosocial behaviour was conducted. However, the main effect of the target condition did not reach statistical significance, $F(2, 145) = 1.23, p = .30, \eta^2 = .02$. Means and standard deviations for each condition are summarized in Table 12. Planned contrast found that neither Contrast 1 nor Contrast 2 was significant, Contrast 1: $F(1, 145) = 2.45, p = .12, \eta^2 = .02$; Contrast 2: $F(1, 145) = 0.001, p = .98, \eta^2 < .001$. I based the power analysis on the effect size obtained in Study 12, and the non-significant effect could be arguably due to the reduced effect size in the between-subject design (Baguley, 2009).

Mediation Analysis

I found a significant positive correlation between reputational concern and prosocial behaviour, $r = .34, p < .001$. As the main effect of the target condition on prosocial behaviour was not significant, I tested a full mediation model where Contrast 1 had an indirect effect via reputational concern. The model fit the data, $\chi^2(1) = 0.49, p = .49$. The indirect path was bootstrap tested, and the effect was significant, $B = 5.09$, bias-corrected 95% CI [0.86, 9.33]. Therefore, the present study provided evidence of the mediating role of reputational concern in the relationship between target power and prosocial behaviour.

Summary

While I did not fully replicate the findings from Study 12, presumably due to the lack of statistical power, the mediation analysis revealed the indirect effect of reputational concern. The result is in line with the findings from Studies 3 and 4 that reputational concern plays a pivotal role in influencing the relationship between target power and prosociality and the present study further adds evidence to the mediating role of reputational concern between target power and prosocial behaviour.

Study 14: In-group Favouritism under a Power Hierarchy III

The mediation analysis in Study 13 suggested that favouritism towards higher power in-group members was due to reputational concern. However, given that the nature of the analysis did not provide a solid basis to argue the causality (Fiedler et al., 2018), I conducted Study 14 to further examine the role of reputational concern in bridging between target power and intergroup prosocial behaviour. In the present study, I experimentally manipulated reputational concern so that I could draw a more valid causal inference. I hypothesized that the role of the power hierarchy in prosocial behaviour exerted its influence via reputational concern, and, therefore, I specifically expected that increased prosocial behaviour towards higher power in-group members would emerge only when prosocial decisions are known to others (i.e., when one's reputation is at stake). Data, analysis code, supplementary results, and study material are available at https://osf.io/ya64v/?view_only=c19f67ce11ee41e69f33999e995768e5. The present study was not preregistered.

Methods

The study followed a 2 (decision setting: anonymous vs. public) x 3 (target: High-In vs. Low-In vs. Out) mixed design, with the latter being a within-subject factor. An a priori power analysis indicated that a sample size of 81 would have a statistical power of 0.90 to detect an interaction effect of small-to-medium effect size ($\eta^2 = .04$). As I had to exclude

roughly 60 participants in Study 13, I recruited 130 participants who were fluent in English via Amazon Mechanical Turk for the present study.

Participants were randomly assigned to one of the two experimental conditions varying in the anonymity of their decision in the DGs. In the anonymous condition, their ID and allocation were completely anonymous. By contrast, in the public condition, as in Studies 12 and 13, their ID and allocation were communicated to the receiver. The anonymous condition allowed me to experimentally suppress reputational concern, which was hypothesized to contribute to power-based discrimination in prosocial behaviour. Besides the instruction about the DGs, participants completed the same tasks as in Study 12. Scales for power manipulation were reliable, for High-In: $\alpha = .82$ and for Low-In: $\alpha = .88$. Alphas for reputational concern and social identity scales were the followings; reputational concern: High-In: $\alpha = .83$; Low-In: $\alpha = .82$; Out: $\alpha = .78$, and social identity: $\alpha = .78$.

Results and Discussion

I excluded two participants who did not seriously complete the minimal group induction and 13 who did not believe they were matched with other participants online. I then excluded 17 participants who did not correctly answer comprehension questions about the member selection, leaving 98 participants for the analyses. After the exclusion, a sensitivity power analysis revealed that the main analyses (a 2 x 3 mixed-design ANOVA) had 80% power to detect an effect size of $f^2 = .15$ for prosocial behaviour (the average correlation coefficients among measurements = .53) and $f^2 = .14$ for reputational concern (the average correlation coefficients among measurements = .64).

Manipulation Check

The perceived power relative to High-In was significantly lower than the scale centre, $M = 1.76$, $SD = 0.64$, $t(97) = 19.06$, $p < .001$, $d = 1.92$. The perceived power relative to Low-In was higher than the scale centre, $M = 4.62$, $SD = 0.66$, $t(97) = 24.15$, $p < .001$, $d = 2.43$.

These means were significantly different from each other, $t(193.8) = 30.60, p < .001, d = 2.45$. The mean of social identification was significantly higher than the scale centre, $M = 3.83, SD = 0.96, t(97) = 3.38, p = .001, d = 0.34$. Overall, the manipulations were successful.

Reputational Concern

I again created the following contrasts: Contrast 1: High-In vs. (Low-In and Out), and Contrast 2: Low-In vs. Out. Planned contrasts revealed that Contrast 1 was significant, $B = 0.20, t = 4.87, p < .001$. This suggested that participants experienced more reputational concern in the High-In condition than in the Low-In and Out conditions. As expected, Contrast 2 was not significant, $B = 0.07, t = 1.01, p = .31$. The main effect of the decision making setting was also significant, indicating that participants felt more reputational concern when their decision was public compared to when it was anonymous, $B = -0.63, t = -3.28, p = .001$. Thus, the manipulation was successful. However, the effect of the interaction between Contrast 1 and the decision setting did not reach significance, $B = -0.09, t = -1.64, p = .10$. The decision setting condition did not significantly interact with Contrast 2 either, $B = 0.01, t = 0.07, p = .95$. See Table 13 for means and standard deviations by conditions.

Table 13. Means and standard deviations of reputational concern and prosocial behaviour.

	Public			Anonymous		
	High_In	Low_In	Out	High_In	Low_In	Out
Prosocial Behaviour	247.30 (102.70)	196.72 (136.09)	207.21 (140.10)	180.61 (132.99)	187.84 (132.89)	159.96 (134.53)
Reputational Concern	3.89 (1.00)	3.37 (1.23)	3.22 (1.15)	3.07 (1.18)	2.83 (1.07)	2.68 (1.07)

Prosocial Behaviour

Planned contrasts revealed that the significant effect of Contrast 1 ($B = 15.11, t = 3.10, p = .002$) and its interaction with the decision setting was only marginally significant (B

= -12.88, $t = 1.91$, $p = .06$). See Table 13 for descriptive statistics. Supporting the hypothesis, simple effect analyses revealed that individuals favoured High-In only when their decision making was public ($B = 15.11$, $t = 3.10$, $p = .003$), but not when it was anonymous ($B = 2.24$, $t = 0.47$, $p = .64$). As predicted, Contrast 2 and its interaction were not significant: Contrast 2: $B = -5.25$, $t = -0.62$, $p = .54$; Contrast 2 x decision setting: $B = 19.19$, $t = 1.64$, $p = .10$. Thus, the results suggest that the favourable treatments towards higher power in-group members should be explained by reputational concern.

The simple effect analysis detected the tendency for participants in the anonymous condition to be less generous towards the out-group target, compared to Low-In, $t = 13.94$, $t = 1.69$, $p = .09$. Previous studies have suggested that intergroup prosocial behaviour under anonymity could be explained by social identification (Hackel et al., 2017). I examined the target x identification interaction on prosocial behaviour. However, the interaction was not significant, and I currently lack quantitative evidence explaining the out-group derogation observed in the anonymous condition, $B = -2.13$, $t = -0.25$, $p = .81$ (see supplementary results for more detail).

Summary

In this study, I experimentally manipulated reputational concern and hypothesized that individuals would favour higher power in-group members over lower power in-group members and out-group members only when their reputation is at stake (i.e., when their behaviour is known to others). I have found support for the hypothesis, and the study complements the mediation effect found in Study 13 and offers experimental evidence of the causal relationship between power, reputational concern, and prosocial behaviour. Together with Studies 12 and 13, I conclude that in-group favouritism is a consequence of reputation management and power hierarchies change within-group reputation management strategies (i.e., to what extent one should be prosocial towards lower power in-group members);

because of the limited reputational benefits of favouring lower power in-group members, people no longer favour them over out-group members.

Mini Meta-Analyses

Methods

First, using data from Studies 12 – 14, separate meta-analyses were conducted for the following comparisons: prosocial behaviour towards the higher power in-group member vs. prosocial behaviour towards the out-group member; prosocial behaviour towards the lower power in-group member vs. prosocial behaviour towards the out-group member; reputational concern towards the higher power in-group member vs. reputational concern towards the out-group member; reputational concern towards the lower power in-group member vs. reputational concern towards the out-group member. Although I only had one study where I manipulated decision anonymity, I included it as a moderator. I used the fixed-effect approach.

Second, using data from Studies 9 – 14, I conducted meta-analyses examining the following comparisons: cooperation (prosocial behaviour) towards the higher power group member vs. cooperation towards the lower power group member; reputational concern towards the higher power group member vs. reputational concern towards the lower power group member. These analyses were conducted to further test the robustness of the power-based within-group discrimination in prosociality between higher and lower power group members observed across the six studies. I included decision anonymity as a moderator and used the fixed-effect approach.

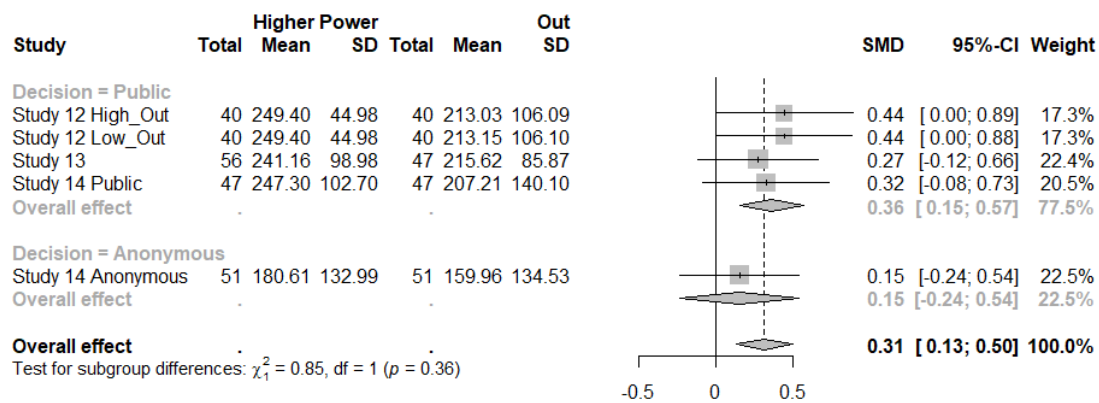
Data, analysis code, and supplementary results can be found at https://osf.io/ya64v/?view_only=c19f67ce11ee41e69f33999e995768e5.

Results and Discussion

Prosocial Behaviour: Higher Power In-group Member vs. Out-group Member

Overall, individuals are more prosocial towards higher power in-group members than out-group members (Figure 16), $SMD = 0.31$, 95% CI [0.13, 0.50], $p < .001$, $I^2 = 0\%$ [0%, 79.2%]. The overall $SMDs$ under public decision making and anonymous decision making are 0.36, 95% CI [0.15, 0.57] and 0.15, 95% CI [-0.24, 0.54]. Yet, the difference did not reach statistical significance, $p = .36$.

Figure 16. Forest Plot of Standardized Mean Differences between Prosocial Behaviour with the Higher Power In-group and Out-group Members.



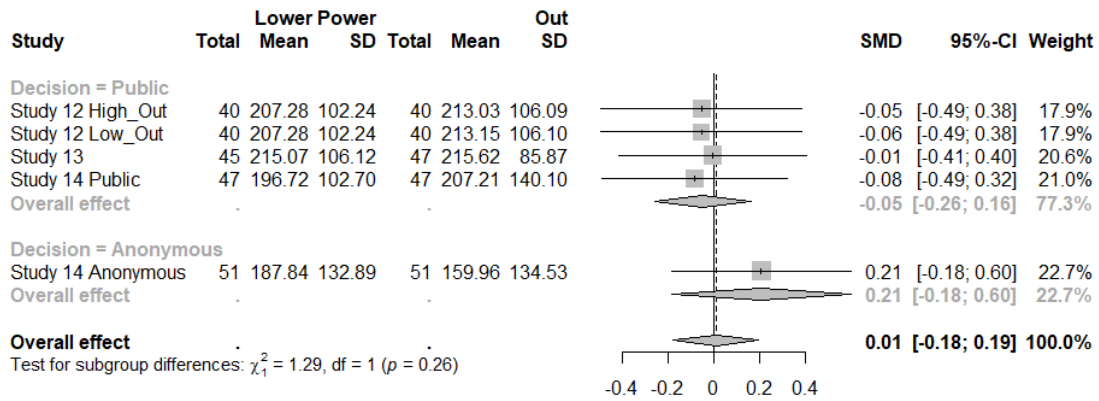
Note: SMD: standardized mean difference.

Prosocial Behaviour: Lower Power In-group Member vs. Out-group

Member

Overall, the meta-analysis suggested that people do not display significantly more prosocial behaviour towards lower power in-group members than out-group members (Figure 17), $SMD = 0.01$, 95% CI [-0.18, 0.19], $p = .93$, $I^2 = 0\%$ [0%, 79.2%]. Thus, the results indicate that people would not favour all in-group members over out-group members.

Figure 17. Forest Plot of Standardized Mean Differences between Prosocial Behaviour towards the Lower Power In-group and Out-group Members.

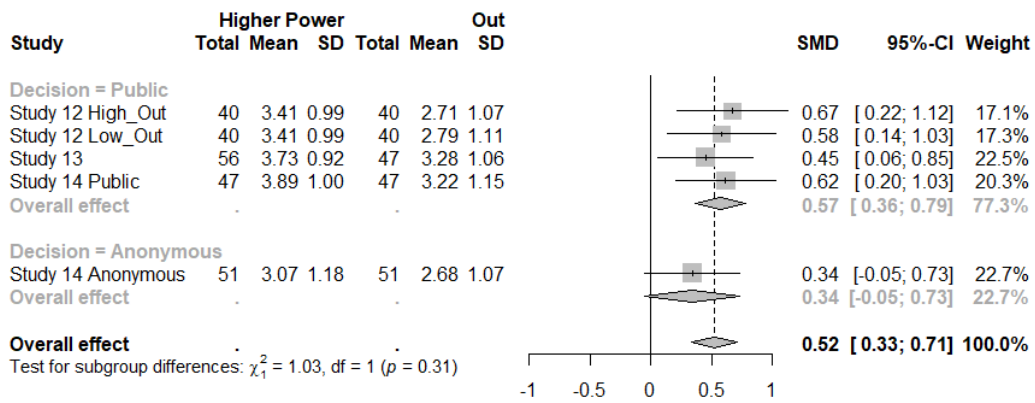


Note: SMD: standardized mean difference.

Reputational Concern: Higher Power In-group Member vs. Out-group Member

The analysis revealed that individuals generally feel more reputational concern towards higher power in-group members than out-group members (Figure 18), $SMD = 0.52$, 95% CI [0.33, 0.71], $p < .001$, $I^2 = 0\%$ [0%, 79.2%]. Nevertheless, I did not find a statistically significant difference in the effect size between anonymous and public decision making, likely due to statistical power, $p = .31$.

Figure 18. Forest Plot of Standardized Mean Differences between Reputational Concern towards the Higher Power In-group and Out-group Members.



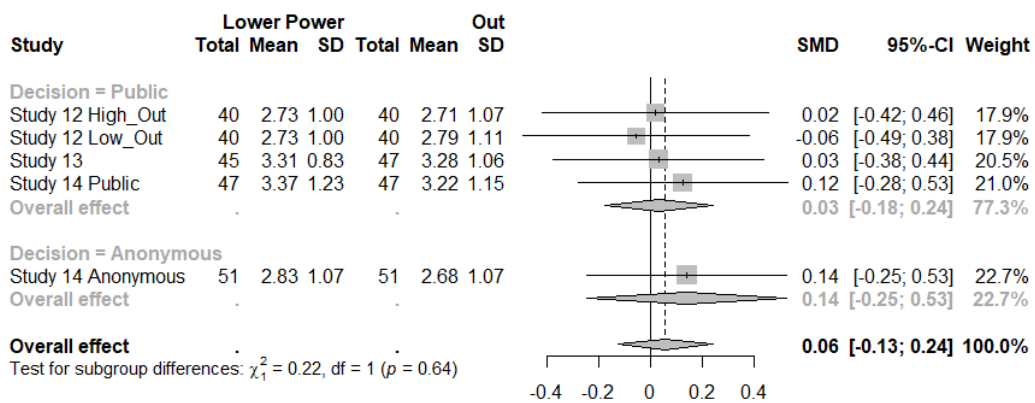
Note: SMD: standardized mean difference.

Reputational Concern: Lower Power In-group Member vs. Out-group

Member

Finally, I compared reputational concern towards lower power in-group members with that towards out-group members. Overall, people do not feel significantly more reputational concern towards lower power in-group members than out-group members (Figure 19), $SMD = 0.06$, 95% CI [-0.13, 0.24], $p = .54$, $I^2 = 0\%$ [0%, 79.2%].

Figure 19. Forest Plot of Standardized Mean Differences between Reputational Concern towards the Lower Power In-group and Out-group Members.

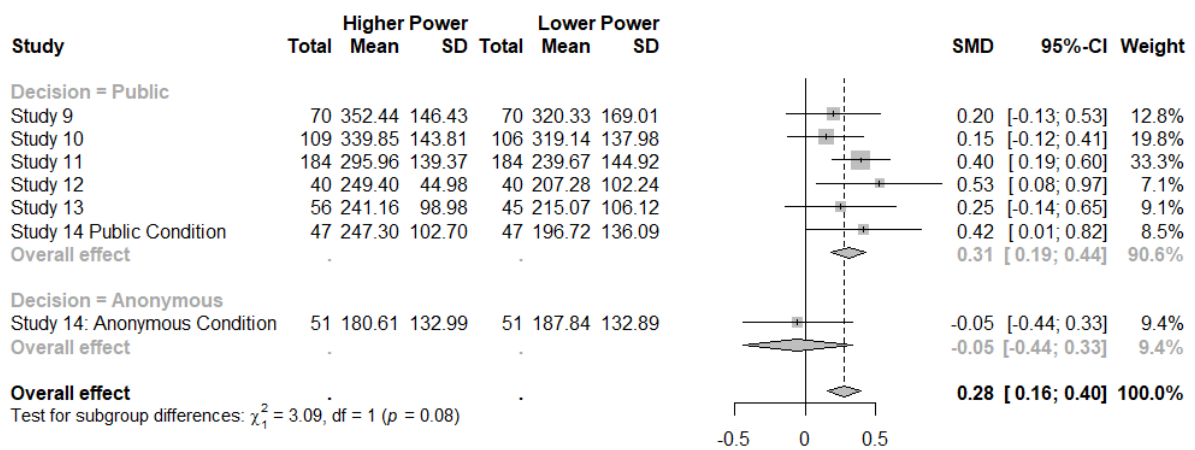


Note: SMD: standardized mean difference.

Prosociality: Higher Power In-group Member vs. Lower Power In-group member

The meta-analysis revealed that the overall effect of the comparison between public prosocial behaviour towards higher power and lower power in-group members was significant (Figure 20), $SMD = 0.36$, 95% CI [0.15, 0.57]. Including one effect under anonymous decision making (Study 14), the overall effect was still significant, $SMD = 0.28$, 95% CI [0.16, 0.40], $p < .001$, $I^2 = 12.2\%$ [0%, 74.4%]. Despite the lack of statistical power, I observed a marginally significant difference in the effect size between public and anonymous decision making, $p = .08$.

Figure 20. Forest Plot of Standardized Mean Differences between Prosociality towards the Higher Power In-group and Lower Power In-group Members.

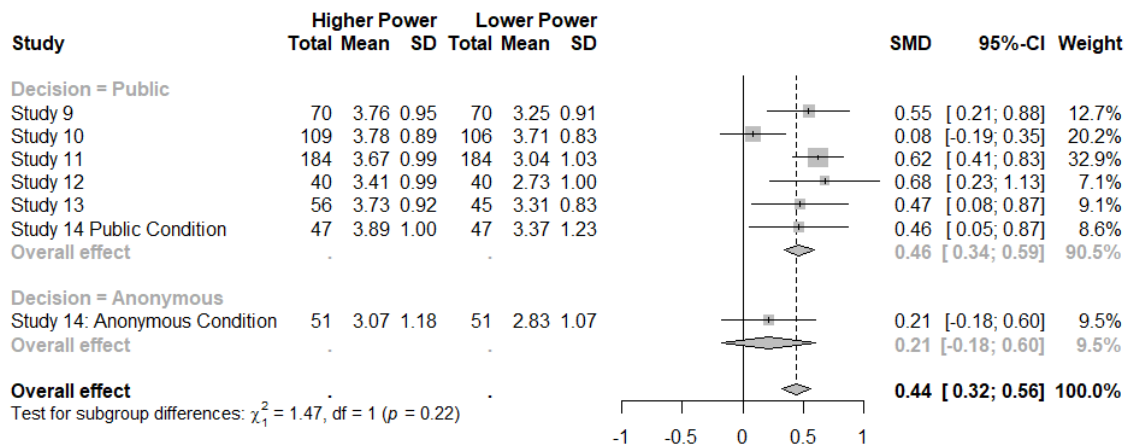


Note: SMD: standardized mean difference.

Reputational Concern: Higher Power In-group Member vs. Lower Power In-group Member

The analysis showed that individuals experience more reputational concern towards higher power in-group members compared with lower power in-group members (see Figure 21), $SMD = 0.44$, 95% CI [0.32, 0.56], $p < .001$, $I^2 = 52.5%$ [0%, 79.8%]. While the SMD in public decision making ($SMD = 0.31$, 95% CI [0.19, 0.44]) was larger than that in anonymous decision making ($SMD = -0.05$, 95% CI [-0.44, 0.33]), the difference was not significant likely due to the lack of statistical power, $p = .22$.

Figure 21. Forest Plot of Standardized Mean Differences between Reputational Concern towards the Higher Power In-group and Lower Power In-group Members.



Note: SMD: standardized mean difference.

Summary

The series of meta-analyses have indicated that people are more prosocial towards higher power in-group members compared with out-group members. However, consistently with the experimental results obtained in Studies 12 – 14, I did not find evidence for an overall effect for in-group favouritism towards lower power in-group members. In addition, the meta-analyses further point to the robustness of the discrimination between higher and lower power in-group members. Consistently with Ch. 4, the results have indicated that

individuals experience more reputational concern and display more prosocial behaviour when they interact with higher power in-group members than when they do with lower power in-group members, supporting the reputational account of power.

General Discussion

In the present chapter, I aimed to elucidate in-group favouritism under a power hierarchy. Overall, the results from the three experiments and follow-up meta-analyses have shown that individuals feel more reputational concern and are more prosocial towards higher power in-group members than out-group members. Moreover, they did not favour lower power in-group members over out-group members. Participants reported that they did not feel significantly more reputational concern towards lower power in-group members compared with out-group members. Overall, I found that people do not favour all in-group members over out-group members under a power hierarchy; in-group favouritism is directed only to higher power in-group members when an in-group involves a power hierarchy. In line with the reputational account of power, the three studies together demonstrated that an intragroup power hierarchy shapes in-group prosocial behaviour via altering within-group reputation management strategies and this results in the absence of favourable treatments towards lower power in-group members over out-group members.

Mifune and colleagues (Kajiwara et al., 2022; Mifune et al., 2010; Mifune & Yamagishi, 2015; Yamagishi & Mifune, 2008) have posited that people are more cooperative towards in-group members than out-group members because cooperation can earn a positive reputation within the in-group and this, in turn, leads to desired reputational consequences (e.g., indirect reciprocity and avoidance of ostracism). My studies have provided further support for the pivotal role of reputational concern in intergroup cooperation and extended the previous studies by showing that in-group favouritism is only directed at higher power in-group members. The absence of significant discrimination between lower power in-group

members and out-group members apparently reflects the relatively low reputational benefits of prosocial behaviour towards lower power in-group members. In my studies, lower power in-group members could not exert any reputational consequences, but participants could unilaterally do so on them. Thus, they expect to receive little negative reputational consequences even if they did not treat lower power in-group members in a prosocial way. Previous studies have robustly documented in-group favouritism in several cultures and contexts (for reviews, see Balliet et al., 2014; Everett et al., 2015a), but when an in-group involves a power hierarchy, people only favour power holders in their group because of reputation management.

It is worth noting that the finding that individuals tend not to discriminate between lower power in-group members and out-group members might not be generalizable to situations involving outcome interdependence between two parties, such as prisoners dilemmas. In the dictator games employed in my studies, participants had an opportunity to unilaterally benefit their partner, and their outcome was not dependent on their partner's behaviour. In games in which outcome interdependence is present between two parties (e.g., prisoners' dilemma games), in-group favouring tendencies have been reported to be stronger than when that is not (Balliet et al., 2014). One of the reasons for this is that in the former games, expectation about a partner's cooperation increases in-group favouritism (e.g., Romano et al., 2017; Yamagishi et al., 1999). More specifically, people expect in-group members to be more cooperative than out-group members, and this leads to an increased level of cooperation towards in-group members. Thus, while participants did not discriminate between lower power in-group members and out-group members in the DGs, they may be more prosocial towards lower power in-group members than out-group members in situations where expected cooperation can drive cooperation.

Previous studies on intergroup cooperation relatively understudied the role of within-group variabilities such as power. My studies thus extend the existing literature, firstly by pointing to the importance of incorporating within-group differences and secondly by offering experimental evidence that favourable treatments towards in-group members are conditional to power. Given the ubiquity of power hierarchies in diverse institutions and groups (Fiske, 1992; Gruenfeld & Tiedens, 2010; Halevy, Chou, et al., 2011; Magee & Galinsky, 2008), my findings that a within-group power hierarchy results in “power holder favouritism” is of practical importance. Namely, they suggest that in-group favouritism may not emerge among individuals who hold power in their groups and, thus, in-group favouritism in actual social lives may be less prevalent than previous studies suggested.

Ch. 6: General Discussion and Conclusions

In this thesis, synthesising the social psychological literature on power with the evolutionary psychological literature on cooperation, I have proposed the reputational account of power. More specifically, drawing upon previous studies on power, reputation, and cooperation, I hypothesized that power asymmetry between individuals functioned as a cue that informs people of how much they should be concerned about their reputation. To test the novel theoretical framework, I conducted 14 studies with diverse research and statistical approaches (e.g., correlational research, experimental studies with power priming, behavioural experiments with economic games, and meta-analyses). I aimed to ensure the replicability and reproducibility of my findings with self-replication and open science practices (see Appendix A). Overall, I found that high target power (i.e., to what extent another person has power over oneself) acts as a reputational cue such that when faced with others with high power, people experience an increased level of reputational concern and, correspondingly, display increased cooperation. In this chapter, I shall first review the findings, limitations, and implications of each study reported in the thesis. Next, I shall discuss theoretical and practical contributions that the present thesis offers.

6.1. Summary of Aims, Key Findings, and Limitations

6.1.1. Chapter 2: Studies 1 to 4

Studies 1 to 4 served to offer preliminary, correlational evidence linking power to reputation-based cooperation. In Study 1, I asked university students about their relationship with another person and used their self-reported power relationships (i.e., one's own power, target power, and power difference) and experienced reputational concern in the interaction with the person. I found that target power was associated most strongly with reputational concern compared to one's own power and power difference; the more power another person has, the more reputational concern people experience. In addition, I explored whether the

relationship between power and reputational concern depended upon the nature of the relationship with a target person (i.e., friends, flatmate, family, romantic partner, etc.). Exploratory correlational analyses suggested that the relationship between power and reputational concern might be weak in close relationships.

Study 2 aimed to (1) replicate Study 1 focusing on organizational contexts and (2) test a moderating role of interpersonal closeness. In line with Study 1, I found that target power, rather than power difference and one's own power, was strongly associated with reputational concern. Moreover, I found that interpersonal closeness moderated the relationship between target power and reputational concern such that the strength of the positive association between them decreased as interpersonal closeness increased. This is, in fact, in line with the proposed reputational account of power; I argued that power may be related to reputational concern because power could determine how susceptible people are to reputational consequences such as ostracism and punishments. Thus, in close relationships where people do not expect to receive severe reputational consequences in the first place, power should not influence reputational concern. Overall, Study 2 successfully replicated and extended Study 1.

Focusing on organizational contexts again, I conducted Study 3 to test whether the perceived frequency of a power holder exerting and abusing their power and the perceived relationship with a power holder moderated the relationship between power and reputational concern. In addition, I investigated the influence of power on prosocial behaviour via reputational concern, which is central to the reputational account of power. Firstly, I found that the perceived frequency of a power holder exerting their power had a weak moderating effect on the relationship between target power and reputational concern, similarly to interpersonal closeness. More specifically, reputational concern remained high when the perceived frequency of exerting power was high. Yet, when it was relatively low, target

power and reputational concern were positively correlated. Secondly, I found that both target power and power difference had an indirect effect on prosociality via reputational concern, consistent with and providing the support for the reputational account of power.

Finally, Study 4 aimed at replicating the mediating effect of reputational concern between power and prosociality in friendship contexts, where power relationships are less salient compared to organizational contexts (Swab & Johnson, 2019). Replicating Studies 1 – 3, target power was most strongly associated with reputational concern, and I also replicated the mediation effect; target power indirectly increased prosocial behaviour via reputational concern such that the higher target power is, the more reputational concern people feel and the more prosocial they were. Consistently with Study 3, I also found that power difference had an indirect effect on prosociality via reputational concern.

Across Studies 1 – 4, I consistently observed the relatively strong relationship between target power and reputational concern. Confirming this, the mini-meta analysis revealed a medium-to-large overall correlation between them. However, while Studies 1 – 4 consistently suggested that it is target power rather than one's own power or power difference that is relevant to reputational concern, the meta-analysis yielded a small positive correlation between one's own power and reputational concern. According to the reputational account of power, one's own power should be rather negatively associated with reputational concern, and this finding was surprising. Previous studies on power construal offers relevant underpinnings to understand the puzzle; Scholl and colleagues hold that power can be construed as responsibility rather than an opportunity (e.g., Scholl, 2020; Scholl et al., 2017) and Tost and Johnson (2019), for instance, suggest that power as responsibility can promote prosocial behaviours. Thus, the relationship between one's own power and reputational concern deserves further investigation and more comprehensive tests on whether it is target power or one's own power that influences reputational concern were sought.

Overall, the four correlational studies have collated converging evidence that high target power is associated with increased reputational concern and prosociality, providing initial support for the reputational account of power. However, given the correlational nature of the findings, these studies did not offer a solid basis to establish the causal relationship between power and reputational concern. In addition, because I asked participants to freely recall a target person in these studies, I could not control the nature of the relationship between participants and the target person. In other words, factors unique in each relationship might have blurred the results (e.g., how long participants have known the target, what type of work they had been working on together). On the one hand, I can argue that the observed relationship between target power and reputational concern was robust as it was detected with such noises. On the other hand, it is desirable to conduct experimental studies to examine the relationship between them in a more controlled setting.

6.1.2. Chapter 3: Studies 5 to 7

In Chapter 3, I aimed to provide experimental and causal evidence of the relationship between one's own power and reputational concern with two commonly used power priming methods: episodic and semantic power priming. Studies 5 – 7 yielded little evidence of the association between an experimentally induced sense of power and reputational concern; across the three studies, a sense of power (i.e., one's own power) was not significantly correlated with reputational concern. Moreover, an experimentally induced sense of having high power did not significantly influence reputational concern. Therefore, together with Studies 1 – 4, the results suggest that one's own power may not be a suitable candidate to explain how power shapes reputational concern and, correspondingly, cooperation.

Despite the widespread use of power priming methods in the previous literature, high power priming was only significant in Study 7 in which I carefully designed it for an online survey. Low power priming was not successful at all across the three studies. As I discussed

in Chapter 3, although power priming methods are cheap and easy to implement without a substantial influence of demand effects (Galinsky et al., 2014), my studies place a caveat on the use of power priming; power priming is not always effective.

6.1.3. Chapters 4 & 5: Studies 8 to 14

Studies 1 – 4 pointed to the link between target power, reputational concern, and prosocial behaviour. Namely, these studies documented a medium-to-large positive correlation between target power and reputational concern, and they further showed that high target power led to increased prosocial behaviour via increased reputational concern. Yet, as noted above, the correlational nature of the studies did not allow me to establish a causal link between target power and reputational concern. Thus, the first aim of Chapter 4 was to provide a solid basis to claim the causal relationship between power and reputational concern. To this end, in Study 8, I developed a novel experimental paradigm in which I created a power hierarchy in a minimal group such that I could directly manipulate target power.

In Studies 9 – 11, I applied the experimental power hierarchy paradigm and examined how individuals in a power hierarchy cooperated with other in-group members varying in their power. Namely, I implemented a hierarchical structure based on the ability to ostracise others in minimal groups such that participants had higher, equal, and lower power in-group members in their group. This experimental hierarchy was different from previous economic game-based power manipulations (see Chapter 1) in that a hierarchical structure is created outside of economic games themselves. This allows scholars to easily modify the nature of hierarchies and help them simulate complex social hierarchies in actual organizations (see Section 6.2.2. for more discussions).

Overall, supporting the reputational account of power, I found that people felt more reputational concern and, correspondingly, displayed more cooperation towards higher power in-group members. However, they did not discriminate between lower and equal power in-

group members, showing no decreased cooperation towards lower power in-group members. *Target power (rather than asymmetry) acts as a reputation cue and encourages individuals to display cooperation towards others when target power is high.* The explanatory power of the theory is not limited to prosocial behaviour, and it can be generalized to predict the influence of power asymmetries on other social behaviours driven by reputational concern. For instance, high target power would increase social behaviours which can serve to maintain a positive reputation such as trusting behaviour (Evans & van de Calseyde, 2018) and normative behaviour (Parks & Stone, 2010).

In Chapter 5, Studies 12 – 14 extended these findings to intergroup cooperation, addressing the following question; do people favour lower power in-group member over out-group members? The three studies and the mini meta-analyses overall suggested that people do not treat lower power in-group members more favourably than out-group members. In other words, in-group favouritism, the previously well-documented phenomenon (e.g., Balliet et al., 2014), is only directed at higher power in-group members, but not lower power in-group members.

Previous studies on in-group favouritism (Balliet et al., 2014; Everett et al., 2015a) tended not to focus on within-group variabilities such as power asymmetries and my studies in Chapter 5 provide valuable insights into further understanding how and why people cooperate with in-group members more than they do with out-group members. Yamagishi and colleagues argued that increased cooperation toward in-group members reflects (a) the expectation that other in-group members are more likely to cooperate with themselves than out-group members are (Yamagishi et al., 1999; Yamagishi & Kiyonari, 2000) and (b) increased reputational concern that they experience during interactions with in-group members compared to out-group members (Mifune et al., 2010; Mifune & Yamagishi, 2015; Yamagishi & Mifune, 2008). Correspondingly, previous experiments showed that individuals

no longer favoured in-group members over out-group members when their cooperation was completely anonymous to in-group members (Balliet et al., 2014; Yamagishi et al., 1999; Yamagishi & Kiyonari, 2000; Yamagishi & Mifune, 2008). My findings are generally in line with the strategic nature of in-group favouritism, revealing that people do not feel increased reputational concern towards in-group members when they do not have power over themselves at all.

Previous social psychological work also pointed to the pivotal role of social identification in shaping in-group favouritism (Aaldering et al., 2018; Balliet et al., 2014; Everett et al., 2015a; Hackel et al., 2017; Hogg & Abrams, 1988; Tajfel & Turner, 1979). The social identification perspective assumes that social identification encourages people to favour in-group members so that they can establish a positively distinct social identity (Tajfel & Turner, 1979; Turner et al., 1979). Typically, social identity theorists predict in-group favouritism even under anonymity (Balliet et al., 2014; Everett et al., 2015a; Tajfel & Turner, 1979), as they assume that in-group favouritism is primarily driven by the internal motivation to maintain a positive social identity. While there are various experiments reporting in-group favouritism under anonymity in economic games (Balliet et al., 2014; Hackel et al., 2017; Rand, Pfeiffer, et al., 2009), a large-scale meta-analysis revealed that people overall do not favour in-group members over out-group members when their decision in economic games was anonymous (Balliet et al., 2014). My finding that people discriminate between in-group members of different power conflicts with the social identity perspective and, again, my studies overall offer robust evidence in favour of the perspective emphasizing the strategic nature of in-group favouritism (Yamagishi et al., 1999).

Yet, there are several limitations to the studies; firstly, in my experimental studies, for instance, I operationally defined power as an ability to ostracize others. Ostracism is one of the common forms of power especially in organizational contexts (Li et al., 2021) and is one

of the harshest reputational consequences that individuals must avoid (Hartgerink et al., 2015; Yamagishi et al., 2007). Thus, while my studies offer practical insights towards understanding within-group cooperation under a power hierarchy especially in business and organizational contexts, it remains uncertain whether the findings can be replicated when power is differently defined; power asymmetry manifests itself in a diverse and more subtle way, such as control over valuable resources (Magee & Galinsky, 2008) and an opportunity to direct a group of individuals through some tasks (Kipnis, 1972). Presumably, when power holders cannot exert severe reputational consequences such as ostracism, target power may not sufficiently trigger reputational concern. In other words, depending on the nature of power (severity of reputational consequences that the powerless may face), the extent to which high target power elicits reputational concern and reputation-based cooperation might differ. Therefore, to further extend and qualify the theory, future work should comprehensively explore in what circumstances target power acts or does not act as a reputational cue (i.e., when we would not find the association between power and cooperation, see Section 6.2.2. for more discussions).

Secondly, in Studies 9 – 11, I did not find evidence that low target power decreased cooperation. In other words, low target power did not apparently liberate individuals from reputational concern. However, there might be methodological factors that suppressed the liberating effect of low target power. Firstly, in my studies, while participants had power over three group members, they were always subject to the power of a higher power group member. The possibility of getting ostracized by the higher power group member might induce a feeling of vulnerability and lead to sympathetic behaviour towards the lower power group members who shared the vulnerability (Dijker, 2010). Secondly, given that hierarchical structures are usually constructed in groups, I explicitly instructed participants that they would work with group members. Previous studies suggested that individuals were typically

motivated to avoid earning a negative reputation from other in-group members (Mifune et al., 2010; Mifune & Yamagishi, 2015; Yamagishi & Mifune, 2008), and the in-group context might buffer against the effect of low target power (i.e., promotion of selfish and exploitative behaviour). Thus, while my studies did not report reduced downward cooperation triggered by low target power, low target power may function as a cue that reduces reputational concern and, correspondingly, cooperation in some occasions. Thus, it is ideal to further investigate boundary conditions for the liberating effect of low target power on reputational concern and social behaviours.

Thirdly, in Studies 9 - 14, I used economic games, but I did not pay all participants based on how they completed the games. In addition, participants played PDs with hypothetical partners rather than actual players. While several studies found that the potential effect of such a treatment would be minimal (Amir et al., 2012; Ben-Ner et al., 2008; Locey et al., 2011; Romano et al., 2021), Vlaev (2012) revealed that expectations about others' cooperation were inflated when participants were not fully incentivized, and also pointed out that participants approached and completed economic games differently depending on the incentive. That being said, I do not find a solid basis to claim that the incentive structure would influence the way power elicited reputation and reputation-based cooperation; Study 11, in which participants were not incentivised at all, replicated Study 9 which was partly incentivised. Thus, I assume that the observed within-group discrimination in cooperation should hold irrespective of the incentive structure. In future studies, it is desirable to utilize economic games with full incentives and without deceptions, to further qualify my findings.

Finally, my participants were mostly English-speaking British, and the findings might not be generalizable to other cultures because individuals of different cultures perceive and respond to power hierarchies differently (Kopelman, 2009; Torelli et al., 2020). Torelli et al. (2020), in their review, argued that while power was often associated with self-benefits in

individualistic cultures, individuals in collectivistic cultures tended to conceptualize power in socialized terms (e.g., care for others) and warmth. In addition, Kopelman (2009) found that powerholders from Hong Kong behaved more cooperatively in social dilemmas than those from the United States and Germany. Thus, these findings suggest that even if faced with a person who has the ability to unilaterally ostracize others, individuals in collectivistic cultures may not feel an increased level of reputational concern, as they would not expect them to exert power in a negative, self-benefitting way. A further cross-cultural investigation of the relationship between power and reputation would substantially advance our understanding of when and how power translates into reputational concern.

6.2. Contributions

In this section, I would like to highlight theoretical and practical contributions that this thesis makes. More specifically, I shall discuss theoretical implications and advancements that the reputational account of power offers to different fields of research. Next, I shall discuss the significance of the novel experimental paradigm that I have developed in this research. Finally, I shall discuss practical implications that my findings to offer and how they can inform individuals, organizations, and societies of how they can best harness the force of power asymmetries.

6.2.1. The Reputational Account of Power

The reputational account of power offers a novel theoretical framework to understand the effect of power on cooperation and other reputation-based behaviours. The empirical literature on power is centred around the three major theories of power (Scholl & Sassenberg, 2022): the approach inhibition theory of power (Keltner et al., 2003), the situated focus theory of power (Guinote, 2007), and the social distance theory of power (Magee and Smith, 2013). These theories discuss how one's own power (having power vs. lacking power) influences cognitions (Yin & Smith, 2020) and behaviours (Galinsky et al., 2014; Sturm &

Antonakis, 2015). The reputation account of power is unique in that it places target power rather than one's own power as a key aspect of power and brings theoretical advances to our understanding of the effect of power.

One of the main strengths of the reputational account is that it focuses on target power, which allows us to investigate behaviours of the powerless, which has been largely understudied in the existing literature (Schaerer et al., 2018, 2021). Schaefer et al. (2018) pointed out that the effects of being powerful and powerless are distinct, while they semantically represent opposites of the same psychological concept, power. Schaefer and colleagues also called for further research on behaviours of the powerless and psychological processes underlying them. The reputational account of power provides valuable and complementary implications for the issue; according to the account, whenever target power translates into reputational concern, reputation dictates social behaviours of the powerless. In case high power does not induce reputational concern, social behaviours can be facilitated by intrinsic motivations. To my knowledge, this is the first theory that directly addresses how target power shapes behaviours of the powerless and the reputational account of power can be a leading theory on the topic and form a body of the literature on the effect of power on the powerless.

Secondly, Scholl and Sassenberg (2022) pointed out that the existing literature on social power lacks theories on power that can offer an explanation for different moderators and calls for more work to generate theoretical frameworks that can harness the situational dynamics (i.e., the interactions between power and moderators). As discussed earlier, the reputational account can potentially provide a parsimonious and overarching explanation for the previously reported role of different moderators of the association between power and cooperation. For instance, previous studies found that prosocial orientation (i.e., SVO) moderates the relationship between power and cooperation; This finding can be re-interpreted

in reference to the reputational account of power such that high target power would induce reputational concern but the cooperation-enforcing effect of reputational concern is more pronounced with those with selfish orientation than those with prosocial orientation. Yet, I did not experimentally test whether reputational concern, in fact, help us understand the role of the existing moderators, and it is sensible to conduct further studies. Such empirical tests will serve to qualify the reputational account of power.

In addition, the further work on the reputational account of power can help scholars to reveal new moderators of the effect of power, as I did in Study 2. In Study 2, I investigated the potential moderating role of interpersonal closeness based on the previous theorising that the salience of reputational concern is reduced in close and long-lasting interpersonal relationships (Rumble et al., 2022; Wu et al., 2016). I found that interpersonal closeness moderated the relationship between target power and reputational concern such that the relationship was only significant when interpersonal closeness was relatively low. In other words, my finding suggests that high target power does not translate into reputational concern in close relationships. This suggests that in close relationships, high target power may not be strongly associated with negative reputational consequences; people may not expect that the power asymmetry would result in them unilaterally getting punished. I would like to note that this does not mean that people do not care about their reputation when faced with close others, and, in fact, reputational concern and interpersonal closeness were positively correlated.

Lastly, while I focused on cooperation and prosocial behaviours as focal dependent variables in the thesis, the reputational account of power can potentially explain the influence of power on a wide range of behaviours and decision making processes. Recent studies have revealed that reputation management (i.e., reputational concern) underlie a wide range of social behaviour and decision making processes, such as punishment (e.g., Batistoni et al.,

2022; Sylwester & Roberts, 2010) and pro-environmental behaviours (Barclay & Barker, 2020). Therefore, the implication of the reputational account of power is vast and future studies can empirically extend the scope of the theory by examining whether reputation plays a mediating role in the relationship between target power and other dependent variables.

I would like to note that, despite the theoretical advances that the reputational account of power offers to the literature, the link between target power and reputational concern can be further elaborated; I hypothesised the association between power and reputational concern, based on the fact that target power determines the vulnerability to negative reputational consequences such as punishment and ostracism. When people face others with power, they can be subject to negative reputational consequences. By contrast, when they have power over interaction partners, they can unilaterally exert punishments and they are immune from consequences of having a negative reputation. Thus, I assumed that high target power increases reputational concern primarily because of the desire to avoid establishing a negative reputation. However, I did not test whether high target power induced reputational concern via such a desire and the mechanism by which high target power translates into reputational concern deserves further investigation. While the motivation to avoid a negative reputation is a suitable candidate to explain the mechanism, high target power may increase reputational concern as a cue for rewards such as indirect reciprocity. In other words, people who face a high power individual may display increased cooperation in order to establish a positive reputation so that they can enjoy indirect reciprocity.

6.2.2. Towards Understanding the Role of Power Hierarchies

I would like to highlight the strengths and practical contributions of my novel experimental paradigm. In Studies 8 – 14, I introduced a hierarchical structure to a minimal group and experimentally varied group members' power, to study how power influences people in a hierarchy. Firstly, previous studies on power and power hierarchies have

predominantly focused on a situation where one person held power over another individual or others (e.g., Baldassarri & Grossman, 2011; Bolle & Vogel, 2010; Carpenter et al., 2012; Dorrough et al., 2017; Gross et al., 2016) with a few exceptions (e.g., Antonioni et al., 2018), and understudied the hierarchical nature of power asymmetries. My experimental procedure allows scholars to easily operationalize a power hierarchy and examine how individuals in different hierarchical positions behave towards each other. In other words, this research paradigm enables us to directly compare behaviour towards someone with higher power with that towards someone with less power, going beyond the powerful vs. the powerless dichotomy. Most people always have both higher and lower power individuals in their groups, and this paradigm helps us directly study how they behave towards others of differing levels of power.

The paradigm is currently based on the minimal groups (Tajfel et al., 1971) and I operationally define power as the ability to ostracise others. One of the strengths of the paradigm is its flexibility; it is easy to change the operationalisation of power (e.g., control over resources and the ability to allocate tasks to group members, etc.) and introduce additional factors to better simulate actual group contexts. In the present research paradigm, for instance, group members cannot communicate with each other about others' behaviours. However, in real groups, it is often possible that group members gossip about others to utilise and spread reputational information. The potential to be gossiped about increases reputational concern (Imada, Hopthrow, et al., 2021; Wu et al., 2015, 2016b) and people can use gossip as a punishment (Eriksson et al., 2021; Molho et al., 2020). Therefore, when a power hierarchy is accompanied by gossip, all group members, regardless of their power, may experience reputational concern and the power-based within-group discrimination observed in my studies may not emerge. In addition, it would be possible to introduce potential moderators of the role of power, which can often be found in actual groups with a

hierarchy, such as hierarchy legitimacy (De Cremer & Van Dijk, 2005), and hierarchy stability (Dorrough et al., 2017; Georgesen & Harris, 2006; Mooijman et al., 2019). In sum, the malleability of the empirical power hierarchy paradigm leaves promising future directions to better simulate actual power hierarchies and understand how power hierarchies influence within-group behaviours.

Secondly, the experimental paradigm will be useful with iterated games; I did not let participants exercise their power to ostracize others in our studies, but if I repeated the games and gave them an opportunity to exclude others, I could explore how power holders would use their power and how cooperation between group members of different levels of power would sustain. In other words, the experimental paradigm has the potential to harness how power hierarchies shape cooperation in a group over time. Overall, my experimental paradigm will be useful to experimentally address a wide range of power hierarchy-related research questions. Given the interdisciplinary nature of the field of power and cooperation, this research paradigm could attract scholars of diverse disciplines and contribute to advance our understanding of power, reputation, and cooperation.

6.3. Conclusions

The aim of the thesis is to establish the hypothesized relationship between power, reputation, and cooperation. I tested this with four correlational studies (Studies 1 – 4), experimental studies using power priming methods with a focus on one’s own power (Studies 5 – 7), experimental studies using the experimental power hierarchy paradigm with a focus on target power (Studies 8 – 14), and several meta-analyses on these studies. Moreover, these studies are conducted and reported in a transparent and reproducible way (see Appendix A for a summary of the links to materials associated with the studies) and I took careful steps to ensure the robustness of the presented findings with replications and meta-analyses. Overall, I found that high target power is associated with an increased level of reputational concern,

which, in turn, promotes cooperation. More specifically, when people are faced with others who have power over themselves, they feel an increased level of reputational concern and, correspondingly, display increased cooperation. Crucially, one's own power (i.e., to what extent people feel they have power) was not shown to be related to reputation. I further extended the finding to intragroup and intergroup cooperation contexts and demonstrated that people favour higher power in-group members over lower power in-group members and out-group members. Strikingly, under the power hierarchy, in-group favouritism (Balliet et al., 2014) was only targeted at higher power in-group members. These findings are based on and have theoretical and practical implications for several fields of research such as social psychological research on the role of power, evolutionary psychological research on reputation and cooperation, and organizational research on hierarchies. In addition, given the ubiquity of power hierarchies, the findings contribute to informing individuals and corporations as to understand within-group cooperation.

As discussed earlier, while the thesis presents a robust relationship between target power and reputation-based cooperation, it leaves several promising directions for future studies. The reputational account of power can be further elaborated as to how high target power translates into reputational concern. Direct experimental tests of whether and how this account can accommodate existing moderators of the role of power in cooperation can further validate and qualify the theoretical framework. Finally, the experimental power hierarchy paradigm can be modified to better simulate actual power hierarchies that we can find in organizations and companies. Therefore, I believe that the series of studies reported in the thesis and the reputational account of power will attract scholars and further work and be one of the cornerstones of the studies on power, reputation, and cooperation.

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Appendices

Appendix A: Open Science

I summarize links to data, study material, analysis code, and supplementary results associated with studies reported on this thesis. The OSF page that includes all relevant materials can be found at

https://osf.io/f98q6/?view_only=b37e655671ab426b9462fa4b98e01151.

Ch.	Study	Data/Study Material/Analysis Code/Supplementary Results	Preregistration
2	1	https://osf.io/f98q6/?view_only=b37e655671ab426b9462fa4b98e01151	https://osf.io/bz4rt/?view_only=95fa369e54bb46099c6bed34c1ccf3b6
2	2	https://osf.io/f98q6/?view_only=b37e655671ab426b9462fa4b98e01151	https://osf.io/2erk9/?view_only=b358a6b5a2204f65b8e1d4a1aea8e047
2	3	https://osf.io/f98q6/?view_only=b37e655671ab426b9462fa4b98e01151	https://osf.io/rsmqh/?view_only=c56993e7fb8242d9bee3b132a38347f6
2	4	https://osf.io/f98q6/?view_only=b37e655671ab426b9462fa4b98e01151	https://osf.io/rcvab/?view_only=e0844e8716a74cc0bdc84ea35431bf5b
2	meta analyses	https://osf.io/f98q6/?view_only=b37e655671ab426b9462fa4b98e01151	not preregistered
3	5	https://osf.io/k56u4/?view_only=cf452171a1ea4a4dbc5eb4c946783bc1	https://osf.io/cuwdk/?view_only=9aa5ea3bc4dc483cafd476d0ae96ca7a
3	6	https://osf.io/k56u4/?view_only=cf452171a1ea4a4dbc5eb4c946783bc1	https://osf.io/b4hyf/?view_only=986ace805c424002923203d8c05dd877
3	7	https://osf.io/k56u4/?view_only=cf452171a1ea4a4dbc5eb4c946783bc1	https://osf.io/9azr2/?view_only=6f60f84291aa448497a4b8ec946661a9
4	8	https://osf.io/hztpa/?view_only=aa8b0f34b8d14fecb6157525c825841e	not preregistered
4	9	https://osf.io/hztpa/?view_only=aa8b0f34b8d14fecb6157525c825841e	not preregistered

4	10	https://osf.io/hztpa/?view_only=aa8b0f34b8d14fecb6157525c825841e	https://osf.io/ywpb2/?view_only=574e8b191b0f4cf391746d4aa4a135c9
4	11	https://osf.io/hztpa/?view_only=aa8b0f34b8d14fecb6157525c825841e	https://osf.io/cwzmp/?view_only=0d3f84828f43427d82f7e0ce283a413e
4	meta analyses	https://osf.io/hztpa/?view_only=aa8b0f34b8d14fecb6157525c825841e	not preregistered
5	12	https://osf.io/ya64v/?view_only=c19f67ce11ee41e69f33999e995768e5	not preregistered
5	13	https://osf.io/ya64v/?view_only=c19f67ce11ee41e69f33999e995768e5	not preregistered
5	14	https://osf.io/ya64v/?view_only=c19f67ce11ee41e69f33999e995768e5	not preregistered
5	meta analyses	https://osf.io/ya64v/?view_only=c19f67ce11ee41e69f33999e995768e5	not preregistered