



## Social status as a cue for tacit coordination

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### ABSTRACT

The present paper investigates how and when social status may serve as a cue for tacit coordination. In three experimental studies, we demonstrate that low status individuals are inclined to defer to the preferences of high status individuals, thereby facilitating coordination success. Furthermore, we investigate the boundary conditions of this effect. More specifically, we show that social status only facilitates coordination success when the people involved have asymmetric (or conflicting) preferences (Study 2), and when there is a clear social hierarchy (Study 3). In the general discussion, we relate these findings to earlier research on dominance hierarchies, social power, deference and perspective-taking and we provide suggestions for future research.

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### Introduction

Coordination is a ubiquitous feature of social life. In most social situations, the outcomes of people's choices are not only dependent on their own decisions, but also on the decisions of others. Imagine that you are invited to a birthday party of a male friend of yours and you would like to buy a nice and original present for him. You realize that the originality of your present will not only depend on the present you give, but also on the presents that other people will buy. In that case, you will have to anticipate other people's decisions and adjust your own decision accordingly (and the other attendants should of course do the same thing). In other words, you will have to coordinate your decision with those of others. Although we might not always realize it, every day we are confronted with such situations of social coordination, ranging from small-scale coordination situations involving only two people (e.g., when two friends try to find one another in a busy mall), to more large-scale coordination situations in which hundreds or even thousands of people are involved (e.g., when car drivers are trying to avoid traffic jams; for many more real-life examples, see Camerer, 2003).

Social coordination is often hampered by the fact that communication between people is limited or impossible. In the birthday party example, you probably would not know exactly which people are going to attend, and even if you would, you would probably not have all of their phone numbers. The focus of the present paper is on such tacit but conscious social coordination, which should be

distinguished from forms of nonconscious coordination (e.g., behavioral mimicry; Finkel et al., 2006), and from explicit coordination, in which communication is possible (see e.g., Finkel et al., 2006; Schelling, 1960). How can people tacitly coordinate their decisions? An answer to this question can be found in Thomas C. Schelling's seminal book "The Strategy of Conflict" (1960).

In this book, the Nobel-Prize winning economist Schelling argued that people are often remarkably good at coordinating their decisions, even when communication is impossible. To illustrate his point, he gave the now famous example of two people who aim to meet each other in New York City without having a prior understanding on where and when to meet. Where should they go, and at what time? Schelling asked this question to his research participants, and noted that the large majority answered that they would go to Grand Central Station at 12.00 noon. If people would act accordingly, this would indeed mean that coordination would be highly effective. Schelling presented his participants with numerous of such matching games in which two players were required to both choose the same option. In such settings, participants were for example instructed to write the same positive number, choose the same color, etcetera (cf. Abele & Stasser, 2008; Bacharach & Bernasconi, 1997; Mehta, Starmer, & Sugden, 1994). He showed that in most of these coordination games people were able to tacitly coordinate their decisions by both giving the same answer.

Schelling explained this phenomenon of *tacit coordination* by arguing that people base their decisions on the saliency of the available choice-options (later referred to as "Schelling saliency"; see Mehta et al., 1994). More specifically, he stated that when people have to match their decisions, they try to identify the one choice-option that 'sticks out' from the rest, and if all parties identify the same option as most salient, they will indeed be able to

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coordinate successfully. Schelling called such salient choice-options “focal points”. For instance, in his New York City example Grand Central Station was clearly the most salient place to meet, since it was the most important traffic hub at the time, thereby making it the focal point for coordination. This concept of Schelling salience has universally been acknowledged as an essential element of tacit coordination, which often plays a crucial role in achieving coordination success (Camerer, 2003; Colman, 2006; De Kwaadsteniet, Van Dijk, Wit, & De Cremer, 2006; Mehta et al., 1994; Van Dijk, De Kwaadsteniet, & De Cremer, 2009).

However, other research has demonstrated that tacit coordination is not always as successful as Schelling’s work seems to suggest. For instance, several studies have shown that when payoffs are asymmetric, matching games often result in miscoordination (Cooper, DeJong, Forsythe, & Ross, 1990; Crawford, Gneezy, & Rottenstreich, 2008). To illustrate such asymmetric payoffs, consider the classic example (see Luce & Raiffa, 1957) of a husband and a wife who are planning an evening out together (referred to by Luce and Raiffa as the “battle-of-the-sexes” game). The husband prefers to go to a boxing match, but the wife prefers to go to the opera. However, both of them prefer spending the evening together over spending the evening alone. Where should they go to, the boxing match or the opera? When participants are presented with such asymmetric matching games, and they are not able to communicate with one another (Cooper, DeJong, Forsythe, & Ross, 1994), this often results in coordination failure. Research has repeatedly shown (e.g., Cooper et al., 1990; Crawford et al., 2008) that in such asymmetric games most people stick to the choice-option that yields the highest possible payoff for themselves.

But does that mean that when payoffs are asymmetric, tacit coordination is always doomed to fail? In the present paper, we aim to demonstrate that this is not necessarily the case. As we will argue and demonstrate, under such circumstances social status may be of paramount importance to achieve coordination success.

#### *Social status as a cue for tacit coordination*

Ball, Eckel, Grossman, and Zame (2001) defined a person’s *social status* as a ranking in a hierarchy that is socially recognized and that typically carries with it the expectation of entitlement to certain resources. A person’s status in society may be determined by one’s own achievements (also called earned status; see Ball & Eckel, 1996), but also by one’s membership of a social group or by one’s heritage (also called unearned status). Earlier experimental studies have shown that social status affects people’s decisions and outcomes. High status individuals are often treated favorably, which frequently results in inequality in outcomes. For instance, in ultimatum bargaining games people offer more money to high status opponents than to low status opponents (Ball & Eckel, 1996, 1998). Although at first glance such inequality may seem undesirable, especially when status positions are unearned, we will argue and show that the favorable treatment of high status individuals may actually be beneficial to tacit coordination, especially when the people involved have conflicting preferences.

We argue that the social norm that prescribes that low status individuals should defer to high status individuals (cf. Keltner, Gruenfeld, & Anderson, 2003; Ridgeway, 1988; Ridgeway & Walker, 1995) may serve an important coordinating function (cf. Clark, Clark, & Polborn, 2006; Magee & Galinsky, 2008). In asymmetric coordination situations (such as the battle-of-the-sexes game we described above), some people should give in to others in order to achieve efficient coordination, and people may then use status cues to determine who should defer to whom. This idea is in line with theoretical claims by Keltner, Van Kleef, Chen, and Kraus (2008), who argue that, by prioritizing the interests of high status individuals, social hierarchies may provide a heuristic solution for

social conflict. Such a norm of deference may be the product of socialization, but another interesting, yet plausible, possibility is that – because of its potential to facilitate coordination and to prevent social conflict – this norm has an evolutionary basis (see Van Vugt, 2006; Van Vugt, Hogan, & Kaiser, 2008). Irrespective of its origin, the primary goal of the present paper is to demonstrate that this norm of deference (to high status individuals) can facilitate tacit coordination, especially when people have asymmetric preferences.

In the current paper, we present a series of three experimental studies that were specifically designed to test the ideas presented above. The aim of the present paper is threefold. First, we aim to investigate whether people really use social status as cue to achieve successful tacit coordination (see Studies 1–3). Second, we aim to identify the boundary conditions of the coordinating function of social status (see Studies 2 and 3). And third, we aim to reveal the psychological processes underlying the effect of social status on tacit coordination (see Study 3).

#### **Study 1: social status and asymmetric preferences**

Study 1 provides a preliminary test of our ideas. In this study, we presented participants with a coordination situation in which the players had asymmetric preferences. Social status was manipulated by putting participants either in a high status position (i.e., the role of boss) or in a low status position (i.e., the role of intern). In the control condition, participants received no information about their position. In this first study, we aimed to test our prediction that low status individuals are more inclined to defer to the preferences of high status individuals than vice versa (Hypothesis 1).

#### *Method*

##### *Participants and design*

Participants were 86 students at Leiden University (26 men and 60 women, *M* age = 22.92 years) who participated voluntarily in the study. They were randomly assigned to three between-participant conditions (Status Position: high vs. low vs. control).

##### *Procedure*

The participants were invited to participate in a study on “decision making”. Upon arrival at the laboratory, they were presented with a scenario in which a coordination problem was described. Participants were asked to imagine that they were working for a company and that they would go to a conference with a colleague. This conference would be held in another city than the city both of them lived in. Therefore, they had agreed to go there by train and that they would meet one another before departure at the train station. However, when making this appointment both of them had not realized that there were two train stations from which they could take the train to the conference: (a) a station near the house of the participant, and (b) a station near the house of the colleague. Of course, each of them would prefer to go to the station closest to their own house. At the same time, however, both of them would prefer traveling together over traveling alone (i.e., the participants were explicitly told that both of them preferred traveling together). Participants were asked where they would go: the train station near their own home (Station A) or the station near their colleague’s home (Station B). This scenario was illustrated with a picture in which the two train stations and the two houses were shown (see Fig. 1).

Before participants made a choice between Stations A or B, social status was manipulated: in one condition the participant was the boss and the colleague was an intern (high status condition), in a second condition the participant was an intern and the col-

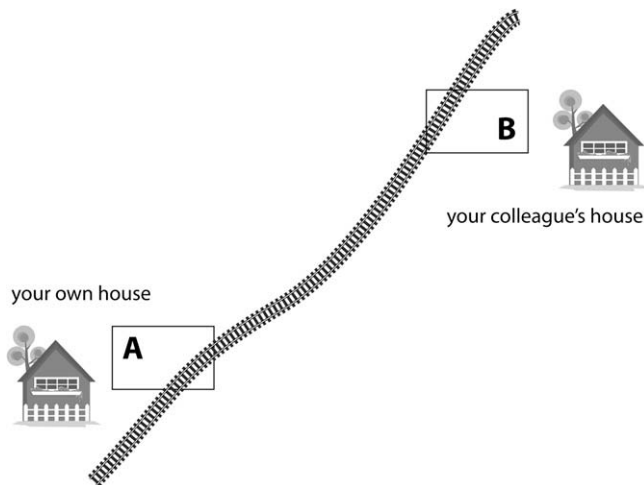


Fig. 1. Graphical depiction of the scenario used in Study 1.

league was his/her boss (low status condition), and in a third condition no mention was made about the status of the participant and his/her colleague (control condition).

At this point, it may be important to note that we are aware of the fact that in some earlier social-psychological studies similar manipulations (e.g., manager vs. subordinate; Anderson & Berdahl, 2002; Galinsky, Gruenfeld, & Magee, 2003) were used to manipulate social power (instead of social status). Social power is a concept that is closely related to social status, which has been defined as “an individual’s relative capacity to modify others’ states by providing or withholding resources or administering punishments” (Keltner et al., 2003, p. 265). In our research, we decided to speak of social status instead of social power because, from a game-theoretic perspective, our (status) manipulations did not alter participants’ actual level of control (or power) over the other player’s outcomes. In the general discussion of this paper, we will further elaborate on the distinction between status and power.

## Results

### Manipulation check

After participants had made their decisions, we posed two questions to check whether our manipulation had induced perceived status differences, namely: (a) to what extent they felt that they had higher status than their colleague (1 = to a small extent, 7 = to a large extent), and (b) to what extent they felt that they had lower status than their colleague (1 = to a small extent, 7 = to a large extent). These two status measures were negatively correlated,  $r(86) = -.32$ ,  $p < .01$ .<sup>1</sup> As expected, participants in the high status condition scored higher on the former question ( $M = 4.64$ ) than participants in the low status condition ( $M = 2.37$ ) and participants in the control condition ( $M = 2.96$ ),  $F(2, 85) = 13.78$ ,  $p < .001$ ,  $\eta^2 = .25$ . Furthermore, participants in the low status condition scored higher on the latter question ( $M = 5.33$ ) than participants in the high status condition ( $M = 1.57$ ) and participants in the control condition ( $M = 2.46$ ),  $F(2, 85) = 58.41$ ,  $p < .001$ ,  $\eta^2 = .59$ . These results indicate that our experimental manipulation had induced participants to perceive status differences.

<sup>1</sup> The reason why we found such low correlations for the perceived status measures in Studies 1 and 2 was that in the control condition there was no status difference between the two players. Without this control condition (i.e., when we only included the high and the low status conditions), the correlation between these two measures was much stronger (in Study 1:  $r(58) = -.57$ ,  $p < .001$ ; in Study 2:  $r(124) = -.51$ ,  $p < .001$ ).

### Participants’ choices

We tested whether our status manipulation had a significant effect on participants’ choices for one of the two train stations. A chi-square analysis indeed indicated that this was the case,  $\chi^2(2, N = 86) = 13.53$ ,  $p < .001$  (see Table 1). As expected, participants in the high status condition more often chose the train station close to their own house (21 out of 28 times) than participants in the low status condition (8 out of 30 times), Wald’s  $\chi^2(1) = 12.34$ ,  $p < .001$ , or the control condition (14 out of 28 times), Wald’s  $\chi^2(1) = 3.27$ ,  $p = .07$ . Furthermore, participants in the low status condition more often chose the train station near their colleague’s home (22 out of 30 times) than participants in the High Status condition (7 out of 28 times), Wald’s  $\chi^2(1) = 12.34$ ,  $p < .001$ , or the control condition (14 out of 28 times), Wald’s  $\chi^2(1) = 3.62$ ,  $p = .06$ . Altogether, these results corroborate Hypothesis 1.

### Discussion

The results of our first study are fully in line with Hypothesis 1. As expected, in the asymmetric coordination situation we presented, high status individuals more often chose the option they preferred themselves, whereas low status individuals more often chose the option that was preferred by the other person. Additionally, we found that when no status information was given, half of the participants chose the option that they themselves preferred, whereas the other half chose the option that was preferred by the other person.

### Study 2: symmetric vs. asymmetric payoffs

The findings of Study 1 provided first support for our idea that status cues can indeed serve a coordinating function. In Study 2 we will provide a second test of this idea, using a different procedure than in Study 1. Whereas in our first study we presented participants with a hypothetical scenario of a coordination situation, in Study 2 participants played an actual coordination game. Furthermore, before participants played this game we manipulated social status using a bogus leadership questionnaire (cf. Stouten, De Cremer, & Van Dijk, 2005). Thus, a first aim of this second game is to replicate the results of Study 1 using an actual coordination game.

A second aim of Study 2 is to investigate the boundary conditions of social status as a cue for tacit coordination. As we showed in our first study, social status may have a large impact on people’s decisions in coordination situations. However, based on our reasoning, we predict that this influence is limited to asymmetric coordination settings. In other words, social status may only affect decisions in asymmetric, but not in symmetric coordination games (Hypothesis 2). After all, in order to apply the coordination rule that low status individuals should adjust to the preferences of high status individuals, players should have information about which choice-option is preferred by the higher status player. In symmetric coordination games, they simply do not have such information, since all available options yield identical payoffs for all players (i.e., both options are equally attractive for both players). Thus, even if a

Table 1  
Study 1: number of choices for Stations A vs. B in the three status conditions.

Conditions	Choices	
	Station A	Station B
High status condition	21	7
Low status condition	8	22
Control condition	14	14

Note: Station A is the train station near the house of the participant and Station B is the train station near the house of his/her colleague (see Fig. 1).

low status player would be motivated to adjust to the preference of a higher status individual, he/she would not know how to do so. In symmetric coordination games, we can therefore expect that players' decisions will not be influenced by status cues. Instead, we predict that in such games people will base their decisions on the salience of the choice-labels (also referred to as Schelling salience; e.g., Mehta et al., 1994), irrespective of the status positions they are in (Hypothesis 3).

## Method

### Participants and design

Participants were 186 students at Leiden University (72 men and 114 women, *M* age = 20.63 years) who participated voluntarily in the study. The participants were randomly assigned to the conditions of a 2 (Payoff Structure: symmetric payoffs vs. asymmetric payoffs) × 3 (Participant's Status: high vs. low vs. control) between-participants factorial design. They were paid € 3 for their participation.

### Procedure

Participants were invited to participate in a study on "decision making". Upon arrival at the laboratory they were seated in separate cubicles, each containing a personal computer. This computer was used to give instructions to the participants and to register the dependent measures.

After filling in some demographic questions (about gender, age, etc.), participants were asked to fill in a questionnaire to assess their leadership qualities, namely the 26-item Management Assessment Inventory (MAI). This questionnaire consists of items such as "Leadership is a matter of influencing others" and "A leader should be able to command respect". Participants answered these questions on 5-point scales (1 = totally disagree; 5 = totally agree). Following earlier research (see e.g., Stouten et al., 2005), this bogus leadership questionnaire was used to manipulate participants' relative status positions (see below).

After filling in the MAI and before they received feedback about their scores on this questionnaire, participants were instructed that they would participate in a matching game with another anonymous person (cf. Schelling, 1960). In this matching game, the participant and his/her co-player could each choose between two letters: A and B. They were told that if they succeeded in both choosing the same letter they would earn a monetary bonus. However, they also learned that communication between the two players was impossible. In reality, this co-player did not exist.

### Payoff structure manipulation

Half of the participants were assigned to the symmetric payoff condition (see Table 2). In this condition, participants were told that if they would succeed in choosing the same letter as their co-player (either A or B), they would earn a monetary bonus of € 3. However, if they did not succeed in choosing the same letter, they would not earn any monetary bonus at all. In other words, for the payoffs of the players it was irrelevant if they chose A or

**Table 3**

Study 2: payoff matrix of the coordination game with asymmetric payoffs.

		Choice co-player	
		A	B
Choice Participant	A	€ 2, € 4	€ 0, € 0
	B	€ 0, € 0	€ 4, € 2

Note: numbers indicate the monetary bonuses that the two players could earn. The numbers to the left of the commas are the payoffs for the participants and the numbers to the right of the commas are the payoffs for their co-players.

B, as long as they managed to successfully match their decisions. Note that this coordination game has the payoff structure of a pure coordination game (Camerer, 2003; Mehta et al., 1994; Schelling, 1960). In this coordination game, the letter A presumably has Schelling salience, since it is the first letter of the alphabet (cf. Schelling, 1960).

The other half of the participants were assigned to the asymmetric payoff condition (see Table 3). In this condition, participants were again told that only if they succeeded in matching their decisions, they would earn a monetary bonus. Additionally, they learnt that if they both chose the letter A, they themselves would earn a bonus of € 2 whereas their co-player would earn a bonus of € 4. By contrast, if they both chose the letter B, they themselves would earn € 4 whereas their co-player would earn € 2. In other words, both choosing B would yield a higher payoff for the participant than both choosing A. For the participant's co-player, by contrast, it was the other way around. Note that this coordination game has the payoff structure of a battle-of-the-sexes game (Camerer, 2003; Cooper et al., 1994; Luce & Raiffa, 1957).

After the participants had read the instructions of coordination games, three practice questions were posed to ensure comprehension of these games. For example, participants were asked how much the two players would earn if they would both choose the letter A. Ninety-six percent of all participants answered all three questions correctly. After each question, the correct answer was disclosed and the most important characteristics of the situation were repeated.

### Status manipulation

Right after they had read the instructions of the coordination game and just before they would choose a letter, status positions were manipulated by providing participants with bogus feedback about their scores on the MAI (cf. Stouten et al., 2005). In the high status condition, participants were told that they had scored higher on the leadership questionnaire than their co-player and that therefore they would take on the role of leader, whereas their co-player would take on the role of subordinate. In the low status condition, participants were told that they had scored lower on the leadership questionnaire than their co-player and that therefore they would take on the role of subordinate, whereas their co-player would take on the role of leader.<sup>2</sup> Note that the participants did not receive any additional information about the content of these roles. In the control condition, participants received no feedback about their scores on the leadership questionnaire nor about the status positions of the two players.

<sup>2</sup> One may wonder whether the specific roles that the participants were assigned to in Studies 2 and 3 (i.e., leaders vs. subordinates), and not their relative status positions per se, may have encouraged the particular choice responses. After all, one may argue that leaders or bosses are supposed to make decisions, and subordinates are supposed to defer to the preferences of others. However, in Study 3 we showed that these role assignments only affected their choices when there were clear status differences between the players. Therefore, we can confidently conclude that the effects we found extend beyond the issue of role requirements.

**Table 2**

Study 2: payoff matrix of the coordination game with symmetric payoffs.

		Choice co-player	
		A	B
Choice Participant	A	€ 3, € 3	€ 0, € 0
	B	€ 0, € 0	€ 3, € 3

Note: numbers indicate the monetary bonuses that the two players could earn. The numbers to the left of the commas are the payoffs for the participants and the numbers to the right of the commas are the payoffs for their co-players.

## Results

### Status check

To check whether participants had understood the status manipulation, they were asked to indicate whether they themselves had been assigned the role of leader, the role of subordinate or whether they had not received any feedback about their leadership roles. Ninety-seven percent of all participants answered this question correctly, which indicates that the large majority had understood and remembered the status manipulation.

### Perceived status differences

As in Study 1, after participants had made their decisions, we posed two questions to check whether our status manipulation had indeed induced status differences, namely: (a) to what extent they felt they had higher status than their co-player (1 = to a small extent, 7 = to a large extent), and (b) to what extent they felt that they had lower status than their co-player (1 = to a small extent, 7 = to a large extent). These two questions were slightly negatively correlated,  $r(186) = -.31, p < .01$ . As expected, participants in the high status condition scored higher on the former question ( $M = 4.23$ ) than participants in the low status condition ( $M = 2.03$ ) and participants in the control condition ( $M = 3.11$ ),  $F(2, 180) = 28.26, p < .001, \eta^2 = .24$ . Furthermore, participants in the low status condition scored higher on the latter question ( $M = 4.77$ ) than participants in the high status condition ( $M = 1.79$ ) and participants in the control condition ( $M = 2.71$ ),  $F(2, 180) = 68.20, p < .001, \eta^2 = .43$ . These results indicate that our role manipulation had induced participants to perceive status differences. As expected, leaders felt they had higher status than subordinates and subordinates felt they had lower status than leaders.

### Participants' choices

To test whether our manipulations had affected participants' choices, we first conducted a logistic regression analysis with Payoff Structure (symmetric payoffs vs. asymmetric payoffs) and Participant's Status (high vs. low vs. control) as independent variables and participants' choices as the dependent variable (see Table 4). As predicted, this analysis yielded a Payoff Structure by Participant's Status interaction effect, Wald's  $\chi^2(2, N = 186) = 13.37, p < .001$ .

To interpret this interaction effect we looked at the two Payoff Structure conditions separately. By doing so, we could see that whereas Participant's Status had no significant effect on participants' choices in the symmetric payoffs condition,  $\chi^2(2, N = 93) = 3.72, p = .16$ , it did have a significant effect on their choices in the asymmetric payoffs condition,  $\chi^2(2, N = 93) = 17.40, p < .001$  (Hypothesis 2). In the symmetric payoffs condition, a large majority of participants chose the letter A, irrespective of the status they had (Hypothesis 3). By contrast, in the asymmetric payoffs condition most leaders chose the letter B whereas most subordinates chose the letter A. These results are fully in line with our predictions.

**Table 4**

Study 2: number of choices for A and B by Payoff Structure (symmetric payoffs vs. asymmetric payoffs) and Participant's Status (high vs. low vs. control).

Payoff Structure	Participant's Status	Choices	
		A	B
Symmetric payoffs	High	25	6
	Low	22	9
	Control	28	3
Asymmetric payoffs	High	11	20
	Low	27	4
	Control	19	12

## Discussion

The findings of our second study again corroborate our predictions. In accordance with Hypothesis 2, status cues only had a significant influence on participants' decisions in an asymmetric coordination game, but not in a symmetric coordination game. In the asymmetric game, low status participants most frequently chose the option that yielded the highest possible payoff for their co-player, whereas high status participants chose the option that yielded the highest possible payoff for themselves. In the symmetric game, by contrast, most participants chose the option that had Schelling salience (i.e., option A), irrespective of their own status position (Hypothesis 3). These results thus clearly corroborate our idea that social status only serves a coordinating function in asymmetric coordination settings. Furthermore, it should be noted that this finding is fully in line with theoretical claims by Keltner and colleagues (2008), who argue that social status may serve as a heuristic solution for social conflict. After all, only in asymmetric coordination games, as opposed to symmetric coordination games, there is a conflict of interests (cf. Camerer, 2003; Schelling, 1960).

An unexpected finding worth mentioning, was that in the control condition of the asymmetric coordination game a small majority of the participants (i.e., 19 out of 31) chose the letter A, which is the option that yielded the lowest possible payoff for themselves but the highest possible payoff for their co-player. This result is opposite to the findings from earlier studies on asymmetric coordination games (e.g., Cooper et al., 1994), which demonstrated that players usually choose the option that yields the highest possible outcome for themselves. This unexpected result might be due to the fact that the letter A has Schelling salience, since it is the first letter of the alphabet (cf. Bacharach & Bernasconi, 1997; Schelling, 1960). In other words, in the control condition of our asymmetric game, the salience of the letter A may have overshadowed the influence of the payoff asymmetry.

### Study 3: same vs. different status

In Studies 1 and 2, the status positions of the people involved in the coordination situations were always complementary (for articles on dominance complementarity, see e.g., Tiedens & Fragale, 2003; Tiedens, Unzueta, & Young, 2007). That is, when one person had a high status position the other person had a low status position, and vice versa. Therefore, the question remains as to whether the findings of these two studies were due to people's own status positions, their co-players' status positions, or differences in status between the two players. In Study 3, we aim to provide an answer to this question.

Several different predictions may be formulated. A first possibility is that people primarily use their own status positions as a basis for their decisions. If so, we might predict that low status participants will more often defer to their co-players than high status participants, irrespective of their co-players' status position. An alternative possibility may be that people primarily use their co-players' status positions as a basis for their decisions. If this is so, we might predict that participants with high status co-players will more often defer to their co-players than participants with low status co-players, irrespective of their own status position. However, based on our reasoning we can predict something else. We believe that people take the status positions of both players into account when making their decisions.

As stated earlier, we argue that people apply the coordination rule that low status individuals should adjust to the preferences of high status individuals (cf. Keltner et al., 2003). Of course, this rule can only be fruitfully applied when there are clear status differences. That is, for this rule to generate an unambiguous guide-

line for coordination one person clearly has to have a higher status position than the other. Therefore, we predict that status cues only affect people's decisions when the status positions of the two players are different, but not when the status positions of the two players are similar (Hypothesis 4). To test this hypothesis, we presented participants with an asymmetric coordination game, in which we not only manipulated participants' own status positions (low vs. high status), but also the status positions of their co-players (same vs. different status).

Additionally, with this third study we wanted to obtain more insight into the psychological process underlying people's decisions in asymmetric coordination settings. More specifically, we wanted to test whether the coordination rule that low status individuals should adjust to high status individuals mediates the effect of social status on decisions in asymmetric coordination games. To test this, we posed a number of questions that were especially designed to measure participants' adjustment motives.

## Method

### Participants and design

Participants were 100 students at Leiden University (26 men and 74 women,  $M$  age = 22.25 years) who participated voluntarily in the study. The participants were randomly assigned to the conditions of a  $2$  (Status Similarity: different status vs. same status)  $\times$   $2$  (Participant's Status: high vs. low) between-participants factorial design. They were paid € 3 for their participation.

### Procedure

The procedure of Study 3 was very similar to the one used in Study 2. However, in the present study all participants were presented with a coordination game with asymmetric payoffs. This game had exactly the same payoff structure as the asymmetric game used in Study 2. This time, however, participants had to choose between the letters Y and Z (instead of A and B).<sup>3</sup> In the coordination game that we presented, both choosing Z would yield a higher bonus for the participant than both choosing Y (i.e., € 4 vs. € 2, respectively), whereas both choosing Y would yield a higher bonus for the co-player than both choosing Z (i.e., € 4 vs. € 2, respectively). Of course, the players would not receive any bonus if they did not succeed in choosing the same letter.

As in Study 2, participants were asked to fill in the MAI questionnaire, after which they received the instructions of the asymmetric coordination game. After these instructions, the same three practice questions were posed as in Study 2. Ninety-five percent of all participants answered all three questions correctly. After each question, the correct answer was disclosed and the most important characteristics of the situation were repeated.

### The status manipulations

Right after participants had read the instructions of the coordination game and just before they would choose a letter, the status positions of the participants and their co-players were manipulated, using a similar procedure as the one used in Study 2. Again, participants received bogus feedback about their scores on the MAI questionnaire. In the high status condition, participants were told

that they had scored high on the leadership questionnaire and that therefore they would take on the role of leader. In the low status condition, participants were told that they had scored low on the leadership questionnaire and that therefore they would take on the role of subordinate.

Additionally, in this study Status Similarity was manipulated (i.e., different status vs. same status). In the different status condition, participants were told that their co-player had a score on the MAI questionnaire that was different from their own score (i.e., lower in the high status condition and higher in the low status condition) and that therefore this co-player would take on a different role than they themselves (i.e., subordinate in the high status condition and leader in the low status condition). By contrast, in the same status condition, participants were told that their co-player had a score on the MAI questionnaire that was almost identical to their own score (i.e., equally high in the high status condition and equally low in the low status condition) and that therefore this co-player would take on the same role as they themselves (i.e., leader in the high status condition and subordinate in the low status condition).

## Results

### Manipulation checks

To check whether participants had understood the status manipulations, two questions were posed. First, they were asked to indicate which role they fulfilled themselves (i.e., leader or subordinate). And second, they were asked to indicate which role their co-player fulfilled (i.e., same role or different role). Ninety-seven percent of all participants answered both questions correctly, which indicates that the large majority had understood and remembered our manipulations.

### Perceived status differences

After participants had made their decisions, we posed the same two questions as in Studies 1 and 2 to check whether our manipulations had induced perceived status differences. This time, there was no significant correlation between these two status measures,  $r(100) = -.15$ ,  $p = .17$ . This lack of correlation was to be expected, considering that in half of the experimental conditions the two players were of equal status.

A  $2 \times 2$  ANOVA on the higher status measure yielded a significant main effect of Participant's Status,  $F(1, 96) = 23.37$ ,  $p < .01$ ,  $\eta^2 = .20$ , and a significant main effect of Status Similarity,  $F(1, 96) = 4.44$ ,  $p < .05$ ,  $\eta^2 = .04$ . Furthermore, these two main effects were qualified by a Participant's Status by Status Similarity interaction effect,  $F(1, 96) = 12.92$ ,  $p < .01$ ,  $\eta^2 = .12$ . In the different status condition, leaders scored much higher on the higher status question than subordinates ( $M = 4.68$  vs.  $1.96$ , respectively),  $t(48) = 5.66$ ,  $p < .01$ . In the same status condition, by contrast, leaders and subordinates did not score (significantly) differently on this question ( $M = 2.84$  vs.  $2.44$ , respectively),  $t(48) = .93$ ,  $p = .36$ . As expected, these findings indicate that whereas in the different status condition leaders (as compared to subordinates) felt they had higher status than their co-players, in the same status condition leaders (as compared to subordinates) did not perceive their own status to be higher.

A  $2 \times 2$  ANOVA on the lower status measure yielded a significant main effect of Participant's Status,  $F(1, 96) = 39.41$ ,  $p < .001$ ,  $\eta^2 = .29$ , and a significant main effect of Status Similarity,  $F(1, 96) = 15.05$ ,  $p < .001$ ,  $\eta^2 = .13$ . Again, these two main effects were qualified by a Participant's Status by Status Similarity interaction effect,  $F(1, 96) = 43.03$ ,  $p < .001$ ,  $\eta^2 = .31$ . In the different status condition, subordinates scored much higher on the lower status question than leaders ( $M = 5.40$  vs.  $1.76$ , respectively),  $t(48) = 9.58$ ,  $p < .001$ . In the same status condition, by contrast,

<sup>3</sup> In Study 3, we used Y and Z instead of A and B, because from the data of Study 2 it seemed that even in the coordination game with asymmetric payoffs participants had a slight preference for the letter A. More specifically, in the control condition of the asymmetric payoffs game, slightly more participants chose A than B (i.e., 19 vs. 12, respectively). This finding implies that the (Schelling) salience of the label A may have overshadowed the effect of the payoff asymmetry. After all, whereas based on Schelling salience one would predict that participants would prefer to choose the letter A (cf. Bacharach & Bernasconi, 1997; Mehta et al., 1994; Schelling, 1960), based on the payoff asymmetry one might predict that people would have a preference for the letter B (cf. Cooper et al., 1990, 1994; Crawford et al., 2008).

subordinates and leaders did not score (significantly) differently on this question ( $M = 2.44$  vs.  $2.52$ , respectively),  $t(48) = .19$ ,  $p = .55$ . As expected, these findings indicate that whereas in the different status condition subordinates (as compared to leaders) felt they had lower status than their co-players, in the same status condition subordinates (as compared to leaders) did not perceive their own status to be lower.

#### Participants' choices

To test whether our manipulations had affected participants' choices, we first conducted a logistic regression analysis with Participant's Status (high vs. low) and Status Similarity (same status vs. different status) as independent variables and participants' choices as the dependent variable (see Table 5). As expected, this analysis yielded a Participant's Status by Status Similarity interaction effect, Wald's  $\chi^2(1, N = 100) = 5.75$ ,  $p < .05$ .

To interpret this interaction effect we looked at the two Status Similarity conditions separately. By doing so, we could see that whereas Participant's Status had a significant effect on participants' choices in the different status condition,  $\chi^2(1, n = 50) = 6.52$ ,  $p < .05$ , it did not have a significant effect on their choices in the same status condition,  $\chi^2(1, n = 50) = .73$ ,  $p = .40$ . In the different status condition, leaders more often chose the letter Z than subordinates and subordinates more often chose the letter Y than leaders. By contrast, in the same status condition neither leaders nor subordinates seemed to have a clear preference for either one of the two letters, and therefore leaders' and subordinates' choices did not differ significantly. These findings are fully in line with Hypothesis 4.

#### Adjustment motives

Additionally, to investigate the motives underlying the participants' choices, we posed two questions, namely: (a) "To what extent did you think that you had to adjust your choice to your co-player's preference?" (1 = to a small extent, 7 = to a large extent), and (b) "To what extent did you think that your co-player had to adjust his/her choice to your preference?" (1 = to a small extent, 7 = to a large extent). These two adjustment measures were slightly negatively correlated,  $r(100) = -.30$ ,  $p < .01$ .

First, we looked at participants' scores on the former question. A  $2 \times 2$  ANOVA on this adjustment question yielded a significant Status Similarity by Participant's Status interaction effect,  $F(1, 96) = 20.77$ ,  $p < .001$ ,  $\eta^2 = .18$ . As expected, in the different status condition subordinates scored higher on this question than leaders ( $M = 5.08$  vs.  $3.36$ , respectively),  $t(48) = 3.42$ ,  $p < .001$ , indicating that subordinates felt more strongly that they themselves should adjust to their co-player's preference than leaders did. In the same status condition, by contrast, we found the opposite pattern. In this condition, leaders scored higher on this question than subordinates ( $M = 5.00$  vs.  $3.68$ , respectively),  $t(48) = 3.01$ ,  $p < .01$ , indicating that leaders felt more strongly that they should adjust to their co-player's preference than subordinates did.

Next, we looked at participants' scores on our second adjustment question. Again, a  $2 \times 2$  ANOVA on this question yielded a

significant Status Similarity by Participant's Status interaction effect,  $F(1, 96) = 7.38$ ,  $p < .01$ ,  $\eta^2 = .07$ . As expected, in the different status condition leaders scored higher on this question than subordinates ( $M = 4.16$  vs.  $3.04$ , respectively),  $t(48) = 2.13$ ,  $p < .05$ , indicating that leaders felt more strongly that their co-player should adjust to their own preference than subordinates did. In the same status condition, by contrast, we found the opposite pattern. In this condition, subordinates scored higher on this question than leaders ( $M = 3.96$  vs.  $3.20$ , respectively),  $t(48) = 1.69$ ,  $p < .10$ , indicating that subordinates felt more strongly that their co-player should adjust to their own preference than leaders did. It should be noted, however, that this latter difference was only marginally significant.

Whereas in the different status condition participants' answers on these adjustment questions were exactly as we expected them, their answers in the same status condition were somewhat unexpected (i.e., leaders felt more strongly that they should adjust to their co-player than subordinates did). We will come back to these findings in the discussion of this study.

#### Mediated moderation analysis

To test whether participants' choices could be explained by their adjustment motives, we conducted a mediated moderation analysis (see Muller, Judd, & Yzerbyt, 2005). To do so, we first performed a series of regression analyses with the Status Similarity  $\times$  Participant's Status term as the independent variable, participants' choices as the dependent variable, and the two above-mentioned adjustment questions as the mediators (while controlling for the Status Similarity and Participant's Status terms). These regression analyses showed a significant Status Similarity  $\times$  Participant's Status interaction effect on participants' choices ( $B = .50$ ,  $SE = .21$ ,  $p < .05$ ), and a significant interaction effects on the two mediators (I should adjust to my co-player:  $B = -.76$ ,  $SE = .17$ ,  $p < .001$ ; my co-player should adjust to me:  $B = .47$ ,  $SE = .17$ ,  $p < .001$ ), thereby replicating the findings reported earlier. Furthermore, both mediators significantly predicted participants' choices. Participants who felt that they should adjust to their co-players more often chose the letter Y ( $B = -.68$ ,  $SE = .18$ ,  $p < .001$ ), whereas participants who felt that their co-players should adjust to them more often chose the letter Z ( $B = .71$ ,  $SE = .18$ ,  $p < .001$ ). And finally, when the two mediators were included in the regression analyses, the interaction effect of Status Similarity and Participant's Status on participants' choices became non-significant ( $B = -.10$ ,  $SE = .28$ ,  $p = .71$ ).

Next, to test whether this mediated moderation was significant, we used a bootstrap method, as proposed by Preacher and Hayes (2008; see also Bollen & Stine, 1990; Preacher & Hayes, 2004; Shrout & Bolger, 2002).<sup>4</sup> This method has several advantages over other methods for testing mediation (Preacher & Hayes, 2004, 2008): (a) multiple mediators can be tested simultaneously, (b) the method does not rely on the assumption of normality, and (c) the number of inferential tests is minimized, thereby reducing the likelihood of Type I errors. The basic idea of the bootstrap method is to extract  $n$  cases with replacement from the original sample, and to re-estimate the size of the indirect effect in this new resample. According to Preacher and Hayes (2008), this resampling and re-estimating should be repeated at least 1000 times, and preferably more than 5000 times. If, when using standard significance levels of  $\alpha = .05$ , the size of the indirect effect in at least 95% of these re-samples is

**Table 5**

Study 3: number of choices for Y and Z by Status Similarity (different status vs. same status) and Participant's Status (high vs. low).

Status Similarity	Participant's Status	Choices	
		Y	Z
Different status	High	7	18
	Low	16	9
Same status	High	15	10
	Low	12	13

<sup>4</sup> We also conducted two separate mediated moderation analyses (i.e., one for each adjustment measure), using the procedure proposed by Muller et al. (2005; see also Baron & Kenny, 1986). To deal with the fact that our dependent variable (i.e., participants' choices) was dichotomous, we recalculated the regression coefficients as proposed by MacKinnon and Dwyer (1993). These analyses yielded similar results as our bootstrap analysis (i.e., Sobel tests indicated that each mediator significantly mediated the interaction effect).

in all cases either larger or smaller than 0 (as indicated by the obtained confidence intervals), the indirect effect is significant. Accordingly, using 10,000 bootstrap re-samples and bias corrected and accelerated intervals (see Preacher & Hayes, 2008), we obtained confidence intervals for the total indirect effect and for the two mediators separately. None of these three confidence intervals contained zero at the 95% level (total indirect effect: CI = .38–1.50; I should adjust to my co-player: CI = .19–1.00; my co-player should adjust to me: CI = .06–.73), indicating that each adjustment measure was a unique mediator ( $p < .05$ ). Thus, the two adjustment measures significantly mediated the interaction effect between Status Similarity and Participant's Status on participants' choices.

### Discussion

The results of our third study are fully in line with our predictions. As expected, participants' status positions only affected their decisions when their co-player had a different status position than they themselves, but not when the two status positions were similar (Hypothesis 4). These findings demonstrate that in order for social status to function as a cue for tacit coordination, there need to be clear status differences between the players. Additionally, we showed that this interaction effect was mediated by adjustment motives, implying that the coordination rule that low status individuals should adjust to high status individuals underlay participants' decisions.

An interesting additional finding was that when both players had high status positions participants more strongly indicated that they should adjust to their co-player than when both players had low status positions. Likewise, when both players had low status positions participants more strongly indicated that their co-player should adjust to them than when both players had high status positions. These findings imply that for the adjustment motives we measured, the status positions of participants' co-players were more influential than their own status positions. Although we did not find a similar effect on our main dependent variable (i.e., in the same status conditions we did not find a significant effect of status on participants' decisions for Y or Z), it may be worthwhile to briefly discuss this somewhat unexpected effect on adjustment motives. After all, as we already know from earlier research, high status (or power) is generally associated with more self-focus, not less (e.g., Galinsky, Magee, Inesi, & Gruenfeld, 2006). Based on this, one may wonder whether this effect might have been due to our rather minimal manipulation of social status. Is this pattern really typical of what can be observed in real-life coordination situations? Future research could test whether the above-mentioned effect also occurs among people with real-life positions of social status (e.g., when two equal-status managers with conflicting preferences are required to coordinate their decisions).

### General discussion

The present paper has repeatedly demonstrated that when communication is impossible social status may serve an important coordinating function. In three experimental studies, we showed that low status individuals tend to defer to the preferences of higher status individuals (cf. Keltner et al., 2003), thereby facilitating tacit coordination. Additionally, we identified two boundary conditions for the coordinating potential of social status. First, we showed that social status only influences decisions in asymmetric, but not in symmetric coordination settings (Study 2). And second, we showed that people only use social status as basis for their decisions when there are clear status differences between the parties involved, and we demonstrated that this effect was mediated by adjustment motives (Study 3). In the following, we discuss the the-

oretical implications of these findings and we provide suggestions for future research.

### The benefits of social hierarchies

Although from an egalitarian perspective status differences may seem undesirable, it has long been established that social hierarchies have important benefits as well (see e.g., Leavitt, 2004). One important benefit is that they can help prevent social conflict. As Keltner and colleagues (2008) summarized, mutually recognized status hierarchies – by prioritizing the interests of high status individuals – pre-empt costly aggressive conflicts regarding the distribution of resources. Furthermore, individuals who arrive at accurate appraisals of their own and others' status positions will avoid conflicts over positions within the social hierarchy. These insights are not only corroborated by social-psychological research (e.g., Sondak & Bazerman, 1991), but also by ethological research on chimpanzee colonies (e.g., De Waal, 1982), and other social animals (e.g., Schjelderup-Ebbe, 1975).

Tiedens and colleagues (e.g., Tiedens, Chow, & Unzueta, 2007; Tiedens & Jimenez, 2003; Tiedens et al., 2007) have also focused on the benefits of social hierarchies, namely, by specifically investigating the effects of dominance complementarity on interpersonal interactions. Very much in line with our reasoning, they have repeatedly shown that such complementarity is especially useful in task-oriented relationships (which require interpersonal coordination). Tiedens et al. (2007, p. 403), summarized the benefits of social hierarchies as follows: they “are an effective relational form for coordinating activity, allocating resources, deciding who will be responsible for what, increasing accountability, acknowledging expertise, and carefully executing a plan” (also see Magee & Galinsky, 2008; Overbeck, Correll, & Park, 2005). Furthermore, Tiedens and colleagues even demonstrated that people often enjoy dominance complementarity (Tiedens & Fragale, 2003), and that people perceive more complementarity when they expect task-oriented interactions (Tiedens et al., 2007). Based on the present research, we can add an important new conclusion to these insights: social hierarchies may facilitate tacit coordination, especially when the people involved have conflicting preferences.

### Social information and tacit coordination

Earlier studies on tacit coordination have exclusively focused on the task characteristics of coordination situations themselves, and how such task characteristics influence people's decisions. Bacharach and Bernasconi (1997), for instance, investigated how the labeling and positioning of choice-options in matching games influence the salience of these options (cf. Mehta et al., 1994). Other studies investigated how payoff asymmetries affect players' choices (Cooper et al., 1990), and how such asymmetries may limit the influence of focal points (Crawford et al., 2008). However, what the present research shows is that such task characteristics are not the only factors that influence people's decisions in coordination situations. That is, people may also take *social information* into account when tacitly coordinating their choices. In three experiments, we induced status differences by giving participants social information about the jobs (Study 1) or social roles (Studies 2 and 3) of the players involved, which, by being indicative of their relative status positions, facilitated successful coordination. These findings are thus a clear illustration of our argument that – besides characteristics of the coordination situation itself – people may also use social information as a cue to achieve coordination success, which is an important new insight for the literature on tacit coordination.

This insight may also contribute to the translation of our findings from the lab to the field. In real-world coordination situations



people often have information about the person(s) they have to coordinate with, such as their sex, age, role, occupation. In contrast to such socially rich environments, laboratory research on tacit coordination has tended to exclude such social information from entering the lab (for an exception, see Holm, 2000). With the current findings, it should be better possible to generalize to real-life situations in which status differences are often highly visible and known, in the form we currently studied (i.e., leader vs. subordinate), or in more general forms such as social class or social economic status (SES). Previous research (see e.g., Stephens, Markus, & Townsend, 2007) has already shown that people take such status indicators into account when making choices. It thus seems likely that such real-life indicators of social status may also affect tacit coordination outside the sterile confines of the lab.

#### *Status, power and legitimacy*

As we already noted in the method section of Study 1, the manipulations we used to induce social status (especially the one used in Study 1) have also been used in earlier research to manipulate social power (see e.g., Anderson & Berdahl, 2002; Galinsky et al., 2003). In the present paper, however, we speak of status instead of power because our manipulations did not alter participants' actual level of power over the other player's outcomes. Put differently, from a game-theoretic point of view, high status players did not have more power over the outcomes or resources of low status players than vice versa. However, we are aware of the fact that status may increase one's sense of power, and that this sense of power may influence decisions. This raises the question of whether similar findings would have been obtained if we would have manipulated social power, for instance, by describing players as having or not having resource control. Future research might set out to investigate this by simultaneously manipulating social status and power, and seeing whether these two variables have independent or joint effects on deference and coordination.

At this point, it may be interesting to relate the present research to earlier work by Tyler on deference to authorities. As Tyler (2006) rightfully argued, people only defer to (rules set by) authorities – and therefore coercion is unnecessary – when they see these authorities as legitimate (also see Levi, Sacks, & Tyler, 2009). When reading this, the question comes to mind as to whether legitimacy also played a role in the present research. After all, participants in Studies 2 and 3 were led to believe that their status positions were based on a questionnaire measuring leadership qualities, which may have legitimized these positions (for a similar procedure to manipulate legitimacy, see Lammers et al., 2008). Would we have found similar results if we had told participants that their status positions were randomly assigned? Based on Tyler's work, one may be inclined to predict that in that case status positions would not have had such large effects on deference. However, earlier research on tacit coordination (e.g., Bacharach & Bernasconi, 1997; Schelling, 1960) has shown that players even use arbitrary cues to determine their decisions, as long as these cues provide unambiguous solutions for tacit coordination. This latter insight suggests that legitimacy might not be necessary when players recognize that even randomly assigned status positions may help them to achieve coordination success. Thus, investigating whether legitimacy plays a (moderating) role in the effect of status positions on tacit coordination, may be another interesting avenue for future research.

#### *Coordination and perspective-taking*

In Study 3, we focused on the psychological process underlying tacit coordination, and showed that interpersonal adjustment motives play an essential role in achieving coordination success. Note,

however, that in order to adjust people have to consider the preferences of their counterpart, and thus temporarily take the other's perspective. Interestingly, previous research has indicated that people may differ in their motivation and/or ability to take the perspective of others (Batson et al., 1997; Davis, 1983; see also Caruso, Epley, & Bazerman, 2006; Van Beest, Van Dijk, De Dreu, & Wilke, 2005). It therefore seems plausible that interpersonal differences in perspective-taking may affect the possibilities for successful tacit coordination.

Surprisingly, no research to date has linked perspective-taking to tacit coordination (but see Galinsky, Ku, & Wang, 2005). Note, however, that perspective-taking has been shown to generate many social benefits. For example, perspective-taking increases the ability to mimic other people's behaviors, resulting in smoother social interactions (Chartrand & Bargh, 1999). Furthermore, negotiation research (Neale & Bazerman, 1983; also see Caruso et al., 2006) has demonstrated that negotiators who are able to take the other's perspective are likely to derive a strategic advantage from this, which can result in higher personal and collective outcomes (Galinsky, Maddux, Gilin, & White, 2008). In other words, perspective-taking may be a key element in different forms of social coordination. It may thus be worthwhile for future research to investigate whether perspective-taking also facilitates coordination when communication is impossible. Such research would further extend our understanding of the psychological processes underlying the (still somewhat neglected) phenomenon of tacit coordination.

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