

Electronic Supplementary Material – Appendices

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Appendix A: Three Economic Games

In this dissertation, we often discuss experiments that use economic games. Three of the most common economic games are the dictator game, the ultimatum game, and the public goods game. Here is a short description of them.

Dictator Game

As the title suggests, there is a dictator and an inferior in this game. The dictator gets a certain amount of money, which she can freely distribute between herself and the inferior, called recipient. So, if she gets \$10, she can keep \$ x and give away \$10- x . In the standard version of the game, both dictator and recipient are anonymous. Obviously, a dictator with egoistic preferences will always keep all money and distribute nothing to the recipient. Yet, Engel (2010), who conducted a meta-analysis of 616 dictator games, concludes that the average giving rate of all participants was 28.3%. Moreover, 63.9% of the dictators gave away some part to the recipient. Thus, there seem to be people with egoistic preferences but the majority behaves altruistically.

Giving away money in an anonymous situation might either lead to utility or prevent disutility. So, let us further examine the possible motivation behind this behaviour. Lazear et al. (2012) conducted a study, where participants got €10. There were three conditions. In the first one every participant had to play a dictator game. In the second one, subjects could choose between two options: (1) play a dictator game or (2) take the money directly. By adding the second option, the giving rate went from €1.87 to €0.58. This difference shows that many participants did not give money in the first condition because they truly wanted to give but felt obliged to give. As soon as such a sharing environment as the dictator game provides it can be avoided, many do avoid it. In turn, this leads to a lower overall giving rate. Dana et al. (2007) came to a similar conclusion. If dictators distribute money to the recipient, it is usually not due to their generosity and fairness but their desire that others (and they themselves) perceive them as generous and fair. Otherwise, the exit option should have no effect on the giving rate.

An experiment that beautifully reveals how participants try to disguise their egoism was published by Andreoni and Bernheim (2009). There, the dictator's allocation was either determined by herself or forced with probability p , known to both dictator and recipient. In the forced distribution, there were two possible allocations with equal probability. Either the dictator got all the money (20\$, 0\$) or the recipient got all the money (0\$, 20\$). Only the dictator knew which one of these options was chosen. Then, either the allocation of the dictator or the forced allocation was realised. It was not revealed to the recipient whether the

realised distribution was the one of the dictator herself or the forced one. As p rose, the allocations of dictators got increasingly selfish. More and more chose (20\$, 0\$) as their distribution. Now, Andreoni and Bernheim changed the forced allocations to (\$19, \$1) or (\$1, 19\$). Interestingly, due to that dictators no longer chose (\$20, \$0) but (\$19, \$1) as their allocation as p rose. These results imply that dictators wanted to hide their selfish behaviour behind the forced choice. A participant with egoistic preferences would always have chosen (\$20, \$0) as her distribution, no matter if the forced one was (20\$, 0\$) or (0\$, 20\$) respectively (\$19, \$1) or (\$1, 19\$). However, a player that actually is selfish but does not want to be perceived as selfish hides behind the forced choices. In this way, she can lead the recipient to believe that the unfair distribution was not her but the computers fault.

We see that the motivation behind giving money to a stranger in a dictator game is often not the utility that giving might provide. It is the disutility that being selfish and especially being regarded as selfish produces. If we can hide our egoism or avoid such situations in the first place, we tend to do so. Like when you see someone begging for money in front of you and quickly cross the street or if that is not possible say you have no cash.

Ultimatum Game

The first part of the ultimatum game is exactly like the dictator game: Person A gets an amount of money and can distribute it between herself and person B. However, unlike in the dictator game, person B can accept the offer or reject it. If she accepts, person A's distribution is realised. If she rejects, no one gets anything. Two players with egoistic preferences would play the game as follows: Player A knows that if she keeps all the money player B is indifferent between rejecting and accepting. Yet, as soon as player A gives something to player B, no matter how little, player B accepts, since something is more than nothing. Consequently, player A allocates the smallest possible amount to player B, who accepts.

If we compare this theoretical outcome with experimental outcomes, we detect a great difference. Not only do proposers offer significant sums to the recipients but recipients do also frequently decline offers below 30% (Gintis et al., 2003, Camerer & Thaler, 1995).¹ It might be objected that the rejection rate depends on the stakes. Refusing a 10% offer of 1'000'000\$ is obviously costlier than refusing a 10% offer of 10\$. Cameron (1999) and Hofmann et al. (1996) tested this hypothesis. Despite playing the ultimatum game with stakes as high as three times the expenditure of a month, participants did not change their behaviour. However, these results are controversial. For example, a study by Andersen et al. (2011) drew

¹ In fact, the most common offer is 50%.

different inferences. Here, participants behaved differently after stakes were raised. Hence, the size of the stake might be of importance.

Again, let us consider the motivation behind such behaviour. On one hand, a proposer might allocate money to the recipient due to her social preferences. However, she might also do so with egoistic preferences. This is because if she knows that the respondent rejects a bad offer, giving an acceptable sum is better than giving nothing. Of course, the challenge for the selfish proposer is to find the respondent's least acceptable sum. On the other hand, a respondent who refuses any amount larger zero must have social preferences. But why do they voluntarily yield up money? Fehr and Schmidt (1999) propose that people have an aversion for inequity. So, a respondent declines an offer because she perceives it as unfair. In their model, fairness is limited to the monetary outcome and does not take into account how the outcome came about and who is responsible for it. Yet, empirical research demonstrated that both the fairness record of the proposer and her intention are essential. On one hand, Guroglu et al. (2011) found that if proposers were forced to advance a rather unfair proposal, recipients were more likely to accept it compared to if proposers had deliberately chosen that unfair allocation. On the other hand, Charness and Rabin (2002) implemented a modified ultimatum game, where respondents knew how proposers behaved before. In case proposers previously acted unfairly, respondents behaved more antisocially. In contrast, if they previously displayed fair behaviour, respondents acted more lenient. Thus, the outcome itself certainly matters but both the fairness intentions behind it and what kind of person (a fair or unfair one) is responsible for it are important as well (Falk et al., 2008).

Public Goods Game

A direct example shall reveal how the public goods game works. Multiple participants, let us say four, play a predefined number of rounds, for example five. At round one, every player is equipped with the same amount of money, such as \$20. Then, they have to decide whether they want to put some of their money into a common pot or not. The money in the pot is multiplied by a factor x , for example 1.2, and distributed in an egalitarian way. This procedure is repeated every round. Now, if all players always put all their money into the common pot they finish with \$24 each after the first round, \$28.8 after the second and so on. Yet, if one participant plays selfishly, she ends up with \$38 and the others with \$18 after the first round, respectively \$54.2 and \$16.2 after the second and so on.

We see that such a situation causes a social dilemma. Comparable to the prisoner's dilemma, if players have egoistic preferences, cooperating is not a dominant strategy: On one hand, given that not everyone cooperates, I lose money if I cooperate. On the other hand, if I play egoistically and someone cooperates, I win money. So, in the end, everyone plays

selfishly, which leads to a suboptimal outcome because the profit maximising strategy of the group as a whole is collaboration.

In spite of these theoretical deliberations, experiments show that subjects often cooperate in public goods games. The median contribution level lies between 40% and 60% (Fehr & Gächter, 2000; Gächter & Fehr, 1999). However, it is not consistent. In the beginning, the level is rather high and then starts to fall until the last round where it reaches its low with on average 73% of participants behaving selfishly (Fehr & Schmidt, 1999). This can be explained as follows: By seeing fellow players free-riding, cooperators experience negative emotions such as anger. The only way to vent one's anger and stop the free-riding is contributing less (Andreoni, 1995). This suggests that there are players who only cooperate if others cooperate as well, so called conditional cooperators. According to Fischbacher et al. (2001) who conducted a one-shot public goods game, 50% are conditional cooperators and 30% free-riders.

A modification of the public goods game provides a more direct way for angry cooperators to retaliate against free-riders: They can punish them. However, this punishment is not costless. A subject with egoistic preferences would never make use of the punishment option since it diminishes her payoff too. But as in the other two economic games presented above, experiments demonstrate that many participants appear not to have egoistic preferences. Regularly, they pay to punish free-riders. Especially high contributors are willing to punish. Three-quarters of the punishers allocated more to the pot than average (Fehr & Gächter, 2002).

The punishment option leads to a surprising side-effect: Cooperation rises on a high level which stays stable (Bowles & Gintis, 2002; Fehr & Gächter, 2002). So, ultimately, punishing raises the group outcome and by that also the outcome of the punisher. Now, one could allege that punishers only punish because they know that in the end this leads to the best outcome for themselves. Yet, even if subjects are aware of the fact that players change every round, they punish free-riders (Fehr & Gächter, 2000). Such behaviour is called strong reciprocity, meaning that "people willingly repay gifts and punish the violation of cooperation and fairness norms even in anonymous one-shot encounters with genetically unrelated strangers." (Fehr & Henrich, 2004, p. 55)

However, as Herrmann et al. (2008) reveal in a cross-cultural study, the effectiveness of punishment is not the same all over the world. For example, in Southern European and Arabic-speaking cultures antisocial punishment is as prevalent as prosocial punishment. The former implies that low contributors punish high contributors. In these societies, the positive effect of prosocial punishment on cooperation was completely destroyed by antisocial punishment. The authors identify the reasons for antisocial punishment in "weak norms of civic cooperation and the weakness of the rule of law". (p. 1362)

Appendix B: Selection of Biases

Researchers have discovered more than a hundred biases and the list is still expanding. Of course, not all of these biases are important for this dissertation. This is because some neither directly nor indirectly touch groups. Here, directly means that groups themselves constitute a significant part of the bias in form of inherent group specific beliefs. In turn, indirectly either implies that an inherent belief that seems group unspecific also affects group outcomes or that we do not update learned group specific beliefs according to Bayes' law.

Unfortunately, to the best of my knowledge, there is no paper or book that comprehensively lists most or all cognitive biases that have been studied so far. And although there are books that examine a variety of fallacies and biases (e.g. Dobelli, 2011, 2012), such books are normally written in a popular scientific manner. As a result, they do not systematically present and analyse all cognitive biases but simply provide a, for the general reader hopefully interesting, selection of biases. The only source that shows a comprehensive listing of most cognitive biases is Wikipedia (2018). Obviously, Wikipedia is not a scientific source. But since there is no alternative list, we nonetheless stick to it. In order to still guarantee scientific standards, every bias is double checked through published papers and books and adjusted if there are inaccuracies.²

In this appendix, we go through every single cognitive bias that is listed in the Wikipedia article with the name "List of cognitive biases".³ Here, we evaluate each bias in terms of whether it is important for this dissertation and whether another bias describes a similar phenomenon. Given there are significant overlaps, we only take one bias into our list. The biases that are part of our list are written in bold. Appendix C thoroughly introduces each of these biases. Moreover, some biases (written in italics) do not make it into the list but are either mentioned in the description of other biases or somewhere else in the course of the dissertation. Of course, ultimately, whether a bias directly or indirectly touches groups cannot be objectively determined and therefore has a subjective component. Furthermore, whether two (or more) biases are similar enough to substitute each other is again a subjective assessment. Finally, which of the two or more similar biases makes it into our list and which not is a rather random decision (normally the more prominent one is chosen). Therefore, the list could also look differently and is open to discussion.

² This double check only includes whether the bias truly exists in the literature and whether its definition is correct. Therefore, we do not check how robust and controversial a bias and its respective evidence is. Yet, there is one exception to this rule, namely the women are wonderful effect, because it partly contradicts chapter 4.3.

³ The relevant article was retrieved at the 22.06.2018. Thus, it might have slightly changed in the meantime.

But before we get to the evaluation of the Wikipedia article, we have a look at one of the standard references in the psychology of discrimination and prejudice. It was written by Kite and Whitley (2016), who are cited several times in this dissertation. Regarding the question of the origins of stereotypes, the authors mention six biases: the outgroup homogeneity effect, the cross-racial identification bias, the ultimate attribution error, the correspondence bias, illusory correlations, and the linguistic intergroup bias. Four of them make into our list, namely the outgroup homogeneity effect, the ultimate attribution error, illusory correlations, and the linguistic intergroup bias. So, why are two of the six biases excluded from our list?

Let us begin with the cross-racial identification bias. It says that we have more difficulties to differentiate between faces of other ethnic groups than of our own ethnic group (Teitelbaum & Geiselman, 1997). On one hand, this could be a specific manifestation of the outgroup homogeneity bias. On the other hand, the phenomenon can also be explained by the lack of perceptual expertise regarding faces of other ethnic groups (Rhodes et al., 2010; Kelly et al., 2007). If the latter were true, the cross-racial identification bias would actually not be a bias but simply a question of learning. This is why we do not treat the cross-racial identification bias as a separate bias but merely shortly present it when we discuss the outgroup homogeneity bias (see appendix C).

What about the correspondence bias (Ross, 1977)? It says that “[a]ll things being equal, people give relatively little weight to how situational factors influence behavior; instead, they believe someone’s actions reflect the person’s personality traits” (Kite & Whitley, 2016, p. 105). Therefore, it is similar to the fundamental attribution error (often, the two are even used as synonyms). Due to such misattributions, both biases lead to inaccurate beliefs about others. In turn, these beliefs can reproduce according behaviour via social learning. This is why, without going too much into detail about the possible differences between the correspondence bias and fundamental attribution error, we substitute the correspondence bias through the fundamental attribution error and social learning. While the fundamental attribution error is shortly introduced when we discuss the ultimate attribution error (see appendix C), we encounter social learning in several chapters of the dissertation (especially chapter 4.3.2).

Finally, there is one bias in our list that is neither part of Kite and Whitley (2016) nor of the Wikipedia article, namely the representativeness heuristic. This bias was chosen out of two reasons: First, although the representativeness heuristic has similarities to the availability heuristic and the two are often mentioned together, they actually complement each other. Second, the representativeness heuristic has a great illustrative power for how much people sometimes deviate from Bayesianism.

So, five biases are already determined. Let us now proceed with the evaluation of the Wikipedia article in order to define the remaining biases of our list. The article divides the

biases into three clusters: (a) decision-making, belief, and behavioural biases; (b) social biases; and (c) memory errors and biases. Yet, some biases appear in more than one cluster. Lastly, the evaluation of each bias' relevance is done in a very brief manner, knowing that this facilitates dissensions. However, there are simply too many biases in order that an extensive evaluation would be feasible.

<i>Decision-Making, Belief, and Behavioural Biases</i>		
Name	Description	Evaluation
Ambiguity effect	The tendency to avoid options for which missing information makes the probability seem "unknown" (Frisch & Baron, 1988).	Similar to the belief in the superiority of familiar alternatives that we discuss in chapter 4.1.1.
Anchoring or focalism	The tendency to rely too heavily, or "anchor", on one trait or piece of information when making decisions (usually the first piece of information acquired on that subject) (Kahneman, 2011).	Has nothing to do with groups.
Anthropocentric thinking	The tendency to use human analogies as a basis for reasoning about other, less familiar, biological phenomena (Coley & Tanner, 2012).	Has nothing to do with groups.
Anthropomorphism or personification	The tendency to characterize animals, objects, and abstract concepts as possessing human-like traits, emotions, and intentions (Epley et al., 2010).	Has nothing to do with groups.
Attentional bias	The tendency of our perception to be affected by our recurring thoughts (Bar-Haim et al., 2007).	Similar to availability heuristic.
Automation bias	The tendency to depend excessively on automated systems (e.g. in cockpits) which can lead to erroneous automated information overriding correct decisions (Mosier et al., 1998).	Has nothing to do with groups.
Availability heuristic	The unconscious inference that high availability of an incident or	Can indirectly affect group specific beliefs if a characteristic of the group

	characteristic implies high probability/frequency of these. (Kahneman, 2011).	is overly available (seems to interfere with Bayesian updating).
Availability cascade	A self-reinforcing process in which a collective belief gains more and more plausibility through its increasing repetition in public discourse (or "repeat something long enough and it will become true") (Kuran & Sunstein, 1998).	Similar to the illusion of truth effect and the availability heuristic.
Backfire effect	The reaction to disconfirming evidence by strengthening one's previous beliefs (Nyhan & Reifler, 2010).	Can affect beliefs about groups if new evidence about them is rejected (seems to interfere with Bayesian updating).
Bandwagon effect	The tendency to do (or believe) things because many other people do (or believe) the same. Related to groupthink and herd behaviour (Nadeau et al., 1993).	Has overlaps with illusion of truth effect. Moreover, groupthink is discussed in chapter 4.2.3.
<i>Base rate fallacy or Base rate neglect</i>	The tendency to ignore base rate information (generic, general information) and focus on specific information (information only pertaining to a certain case) (Bar-Hillel, 1980).	Is part of the availability/representativeness heuristic. We discuss this in chapter 4.2.1.
Belief bias	An effect where someone's evaluation of the logical strength of an argument is biased by the believability of the conclusion (Klauer et al., 2000).	Has nothing to do with groups.
Ben Franklin effect	A person who has performed a favour for someone is more likely to do another favour for that person than they would be if they had received a favour from that person (Tavris & Aronson, 2007; Niiya, 2016).	Has nothing to do with groups.
<i>Berkson's paradox</i>	The tendency to misinterpret statistical experiments involving conditional probabilities (Snoep et al., 2014).	Its implications are discussed in chapter 4.2.1.
Bias blind spot	The tendency to see oneself as less biased than other people, or to be able to identify	Has nothing to do with groups.

	more cognitive biases in others than in oneself (Pronin et al., 2002).	
Cheerleader effect	The tendency for people to appear more attractive in a group than in isolation (Walker & Vul, 2014; van Osch et al., 2015).	Irrelevant for this dissertation since this is a general group effect that is independent of ingroup and outgroups.
Choice-supportive bias	When remembering past choices, people tend to attribute positive features to chosen options and negative features to rejected options (Henkel & Mather, 2007).	Might be an inherent group unspecific belief. Leads to a situation, where we overestimate the positivity of chosen/familiar alternative. Affects groups if familiar and unfamiliar alternatives are usually provided by different groups.
Clustering illusion	The tendency to overestimate the importance of small runs, streaks, or clusters in large samples of random data (that is, seeing phantom patterns) (Gilovich, 1991).	Similar to illusory correlations and the representativeness heuristic (cf. Gilovich, 1991).
Confirmation bias	The tendency to search for, interpret, focus on and remember information in a way that confirms one's preconceptions (Nickerson, 1998).	Prevents us from adjusting inaccurate beliefs about groups (seems to interfere with Bayesian updating).
Congruence bias	The tendency to test hypotheses exclusively through direct testing, instead of testing possible alternative hypotheses (Baron, 2008).	Similar to confirmation bias.
Conjunction fallacy	The tendency to assume that specific conditions are more probable than general ones (Stolarz-Fantino et al., 2003).	Is linked to the representativeness heuristic.
Conservatism (belief revision)	The tendency to revise one's belief insufficiently when presented with new evidence (Edwards, 1968).	Similar to continued influence effect and confirmation bias.
Continued influence effect	The tendency to believe previously learned misinformation even after it has been corrected. Misinformation can still influence inferences one generates after a	Prevents us from adjusting wrong beliefs about groups (seems to interfere with Bayesian updating).

	correction has occurred (Johnson & Seifert, 1994).	
Contrast effect	The enhancement or reduction of a certain stimulus' perception when compared with a recently observed, contrasting object (Herr et al., 1982).	Has nothing to do with groups.
Courtesy bias	The tendency to give an opinion that is more socially correct than one's true opinion, so as to avoid offending anyone (Jones, 1984).	Can be explained in terms of direct or indirect reciprocity. Similar to social desirability.
Curse of knowledge	When better-informed people find it extremely difficult to think about problems from the perspective of lesser-informed people (Camerer et al., 1989; Kennedy, 1995; Birch & Bloom, 2007).	Has nothing to do with groups.
Declinism	The predisposition to view the past favourably and future negatively (Etchells, 2015).	Similar to rosy retrospection in combination with a negativity bias.
Decoy effect	Preferences for either option A or B change in favour of option B when option C is presented, which is completely dominated by option B (inferior in all respects) and partially dominated by option A (Huber et al., 1982; Slaughter et al., 1999).	Has nothing to do with groups.
Default effect	When given a choice between several options, the tendency to favour the default one (Thaler & Sunstein, 2008).	Has nothing to do with groups.
Denomination effect	The tendency to spend more money when it is denominated in small amounts (e.g., coins) rather than large amounts (e.g., bills) (Raghubir & Srivastava, 2009).	Has nothing to do with groups.
Disposition effect	The tendency to sell an asset that has accumulated in value and resist selling an asset that has declined in value (Shefrin & Statman, 1985).	Has nothing to do with groups. Linked to loss aversion and prospect theory (Kahneman, 2011).

Distinction bias	The tendency to view two options as more dissimilar when evaluating them simultaneously than when evaluating them separately (Hsee & Zhang, 2004).	Has nothing to do with groups.
Dunning–Kruger effect	The tendency for unskilled individuals to overestimate their own ability and the tendency for experts to underestimate their own ability (Kruger & Dunning, 1999).	Has nothing to do with groups.
Duration neglect	The neglect of the duration of an episode in determining its value (Frederickson & Kahneman, 1993).	Has nothing to do with groups.
Empathy gap	The tendency to underestimate the influence or strength of feelings, in either oneself or others (Van Boven et al., 2013).	Has nothing to do with groups.
<i>Endowment effect</i>	The tendency for people to demand much more to give up an object than they would be willing to pay to acquire it (Kahneman et al., 1991).	Is linked to loss aversion and therefore discussed when we present loss aversion (see appendix C).
Exaggerated expectation	The tendency to expect or predict more extreme outcomes than those outcomes that actually happen. (Hilbert, 2012).	Result if a person with a status quo bias still chooses the option involving change – the person realises that the consequences of change are actually not as extreme as predicted. Thus, we do not take it into our list.
Experimenter's or expectation bias	The tendency for experimenters to believe, certify, and publish data that agree with their expectations for the outcome of an experiment, and to disbelieve, discard, or downgrade the corresponding weightings for data that appear to conflict with those expectations (Jeng, 2006).	Similar to confirmation bias.
Focusing effect	The tendency to place too much importance on one aspect of an event (Kahneman et al., 2006).	Has nothing to do with groups.
Forer effect or Barnum effect	The observation that individuals will give high accuracy ratings to descriptions of their personality that supposedly are	Has nothing to do with groups.

	tailored specifically for them, but are in fact vague and general enough to apply to a wide range of people. This effect can provide a partial explanation for the widespread acceptance of some beliefs and practices, such as astrology, fortune telling, graphology, and some types of personality tests (Dickson & Kelly, 1985).	
Framing effect	Drawing different conclusions from the same information, depending on how that information is presented (Kahneman, 2011).	Has nothing to do with groups.
Frequency illusion	The illusion in which a word, a name, or other thing that has recently come to one's attention suddenly seems to appear with improbable frequency shortly afterwards (not to be confused with the recency illusion or selection bias) (Newell et al., 2005). This illusion is sometimes referred to as the Baader-Meinhof phenomenon (Hrala, 2016).	Might be due to availability heuristic - something becomes available in our mind and therefore we are more likely to perceive it in our environment – we mistake its availability for frequency/ probability.
Functional fixed-ness	Limits a person to using an object only in the way it is traditionally used (Dunker, 1945).	Has nothing to do with groups.
Gambler's fallacy	The tendency to think that future probabilities are altered by past events, when in reality they are unchanged. The fallacy arises from an erroneous conceptualization of the law of large numbers. For example, "I've flipped heads with this coin five times consecutively, so the chance of tails coming out on the sixth flip is much greater than heads." (Ayton & Fischer, 2004).	Has nothing to do with groups.
Hard–easy effect	Based on a specific level of task difficulty, the confidence in judgments is too conservative and not extreme enough (Merkle, 2009).	Has nothing to do with groups.

Hindsight bias	The propensity to perceive an event that has happened as having been predictable even if it was not or very little predictable (Wood, 1978).	Let us overestimate the predictability of past events – if these past events involved groups, it leads to wrong group specific beliefs (seems to interfere with Bayesian updating).
<i>Hostile attribution bias</i>	The "hostile attribution bias" is the tendency to interpret others' behaviours as having hostile intent, even when the behaviour is ambiguous or benign (De Castro et al., 2002).	Might affect groups. We discuss its possible implications in chapter 3.3.3 when we present the phenomenon "anxiety about the unknown".
Hot-hand fallacy	The "hot-hand fallacy" (also known as the "hot hand phenomenon" or "hot hand") is the fallacious belief that a person who has experienced success with a random event has a greater chance of further success in additional attempts (Ayton & Fischer, 2004).	Has nothing to do with groups. Thus, we do not take it into our list. Yet, might promote a status quo bias if these "additional attempts" are equivalent to maintaining the status quo.
Hyperbolic discounting	Discounting is the tendency for people to have a stronger preference for more immediate payoffs relative to later payoffs. Hyperbolic discounting leads to choices that are inconsistent over time – people make choices today that their future selves would prefer not to have made, despite using the same reasoning. Also known as current moment bias, present-bias, and related to Dynamic inconsistency (Laibson, 1997).	Has nothing to do with groups.
Identifiable victim effect	The tendency to respond more strongly to a single identified person at risk than to a large group of people at risk (Jenni & Loewenstein, 1997).	Might lead to more empathy towards the ingroup because, unlike the outgroup, it is also perceived in an individual perspective (see outgroup homogeneity bias). Could reinforce the intergroup empathy bias that we discuss in chapter 3.1.3. Is not included into the list because these two biases substitute it.

IKEA effect	The tendency for people to place a disproportionately high value on objects that they partially assembled themselves, such as furniture from IKEA, regardless of the quality of the end result (Norton et al., 2012).	Has nothing to do with groups.
Illusion of control	The tendency to overestimate one's degree of influence over other external events (Langer, 1975).	Has nothing to do with groups.
Illusion of validity	The tendency that people experience much confidence in highly fallible judgments (Kahneman & Tversky, 1973).	Is a consequence of the representativeness heuristic (cf. Kahneman & Tversky, 1973; Tversky & Kahneman, 1974) and thus substituted by it.
Illusion of truth effect	The tendency to be more likely to believe a previously heard statement than an unfamiliar one (Begg et al., 1992).	Leads to wrong beliefs about groups (seems to interfere with Bayesian updating).
Illusory correlations	Beliefs that incorrectly link a category with certain attributes or another category (Meiser & Hewstone, 2006).	Leads to wrong beliefs about groups (seems to interfere with Bayesian updating).
<i>Impact bias</i>	The tendency to overestimate the length or the intensity of the impact of future feeling states (Gilbert et al., 2002).	Has nothing to do with groups. But a substantial component of affective forecasting. We discuss it in chapter 4.1.1.
Information bias	The tendency to seek information even when it cannot affect action (Baron, 2008).	Has nothing to do with groups.
Insensitivity to sample size	The tendency to under-expect variation in small samples (Tversky & Kahneman, 1974; Hamil et al., 1980).	Has nothing to do with groups.
Irrational escalation	The phenomenon where people justify increased investment in a decision, based on the cumulative prior investment, despite new evidence suggesting that the decision was probably wrong (Staw, 1997). Also known as the sunk cost fallacy (Friedman et al., 2007).	Connected to loss aversion. Might explain why we hold to the status quo even if it is not optimal.

Law of the instrument	An over-reliance on a familiar tool or methods, ignoring or under-valuing alternative approaches. "If all you have is a hammer, everything looks like a nail." (Maslow, 1966)	Similar to the belief in the superiority of familiar alternatives that we discuss in chapter 4.1.1.
Less-is-better effect	The tendency to prefer a smaller set to a larger set judged separately, but not jointly (Hsee, 1998).	Has nothing to do with groups.
Look-elsewhere effect	An apparently statistically significant observation may have actually arisen by chance because of the size of the parameter space to be searched (Gross & Vitells, 2010).	Has per se nothing to do with groups. Yet, produces illusory correlation.
Loss aversion	The tendency that losses loom larger than same sized gains (Tversky & Kahneman, 1991; Kahneman, 2011).	Might be an inherent group unspecific belief. Can lead to an overly positive impression of the status quo. Affects groups if they are treated unequally in the status quo.
Mere exposure effect	The tendency to prefer things you are familiar with to unfamiliar things (Bornstein & Craver-Lemley, 2004).	Might lead to a preference for familiar groups and therefore be linked with anxiety about the unknown that we discuss in chapter 3.3.3.
Money illusion	The tendency to concentrate on the nominal value (face value) of money rather than its value in terms of purchasing power (Shafir et al., 1997).	Has nothing to do with groups.
Moral credential effect	The tendency of a track record of non-prejudice to increase subsequent prejudice (Monin & Miller, 2001; Merritt et al., 2010).	Affects groups but has nothing to do with how prejudices emerge in the first place. Thus, we do not take into our list.
Negativity bias or Negativity effect	The tendency to weigh negative entities such as personal traits, objects, or events more heavily than positive ones (Rozin & Royzman, 2001).	Might be an inherent group unspecific belief. Can lead to an endorsement of the status quo because we fear possible negative consequences of change more heavily than we are looking forward to the possible positive consequences of change. Affects

		groups if they are treated unequally in the status quo.
Neglect of probability	The tendency to completely disregard probability when making a decision under uncertainty (Sunstein, 2003).	Might be due to the availability heuristic.
Normalcy bias	The refusal to plan for, or react to, a disaster which has never happened before (Omer & Alon, 1994).	Has nothing to do with groups.
Not invented here	Aversion to contact with or use of products, research, standards, or knowledge developed outside a group (Antons & Piller, 2015).	Similar to the belief in the superiority of familiar alternatives that we discuss in chapter 4.1.1.
Observer-expectancy effect	When a researcher expects a given result and therefore unconsciously manipulates an experiment or misinterprets data in order to find it (Balph & Balph, 1983)	Could be linked to confirmation bias and thereby the myside bias that we discuss in chapter 4.2.3.
Omission bias	The tendency to judge harmful omissions as (morally) better than equally harmful actions (Baron & Ritov 2004).	Might be an inherent group unspecific belief. Can lead to a maintenance of the status quo because inaction is equivalent to the status quo. Affects groups if they are treated unequally in the status quo.
Optimism bias	The tendency to be over-optimistic, overestimating favourable and pleasing outcomes (Sharot, 2011).	Has nothing to do with groups.
Ostrich effect	Ignoring an obvious (negative) situation (Karlsson et al., 2009).	Has nothing to do with groups.
Outcome bias	The tendency to judge a decision by its eventual outcome instead of based on the quality of the decision at the time it was made (Baron & Hershey, 1988).	Similar to the hindsight bias.
<i>Overconfidence effect</i>	Excessive confidence in one's own answers to questions. For example, for certain types of questions, answers that people rate as "99% certain" turn out to be wrong 40% of the time (Kahneman, 2011).	On a group level, might lead to the ultimate attribution error. Thus, is shortly mentioned when we discuss this error in chapter 4.1.2. Could also be linked to the myside bias that we discuss in chapter 4.2.3.

Pareidolia	A vague and random stimulus (often an image or sound) is perceived as significant, e.g., seeing images of animals or faces in clouds, the man in the moon, and hearing non-existent hidden messages on records played in reverse (Liu et al., 2014).	Might be linked to illusory correlations and predictive coding.
Parkinson's law of triviality	The tendency to give disproportionate weight to trivial issues. Also known as bikeshedding, this bias explains why an organization may avoid specialized or complex subjects, such as the design of a nuclear reactor, and instead focus on something easy to grasp or rewarding to the average participant, such as the design of an adjacent bike shed (Parkinson & Lancaster, 1958).	Has nothing to do with groups.
Pessimism bias	The tendency for some people, especially those suffering from depression, to overestimate the likelihood of negative things happening to them (Sharot, 2011).	Since this bias mainly affects people that are mentally ill we neglect it in this dissertation.
Planning fallacy	The tendency to underestimate task-completion times (Buehler et al., 1994).	Has nothing to do with groups.
Post-purchase rationalization	The tendency to persuade oneself through rational argument that a purchase was good value (Henkel & Mather, 2007).	Similar to the choice-supportive bias.
Pro-innovation bias	The tendency to have an excessive optimism towards an invention or innovation's usefulness throughout society, while often failing to identify its limitations and weaknesses (Rogers, 1995).	Opposite of the status quo bias. Yet, it is mainly limited to technical innovation and therefore has nothing to do with groups.
Projection bias	The tendency to overestimate how much our future selves share one's current preferences, thoughts and values, thus leading to sub-optimal choices (Loewenstein et al., 2003)	Has nothing to do with groups. But a substantial component of affective forecasting that we discuss in chapter 4.1.1.
Pseudocertainty effect	The tendency to make risk-averse choices if the expected outcome is positive, but	Part of loss aversion. Chapter 4.1.1 discusses its implications through the

	make risk-seeking choices to avoid negative outcomes (Tversky & Kahneman, 1981).	belief in the superiority of familiar alternatives
Reactance	The urge to do the opposite of what someone wants you to do out of a need to resist a perceived attempt to constrain your freedom of choice (see also Reverse psychology) (Brehm & Brehm, 1981).	Has nothing to do with groups.
Reactive devaluation	Devaluing proposals only because they purportedly originated with an adversary (Ross & Stilling, 1991).	Might affect groups if some groups are more likely to contain adversaries. Can be explained by social identity theory and thus is not taken into our list. Could maintain the status quo if one rejects all ideas of change that are from adversaries.
Recency illusion	The illusion that a word or language usage is a recent innovation when it is in fact long-established (Rickford et al., 2007).	Has nothing to do with groups.
Regressive bias	A certain state of mind wherein high values and high likelihoods are overestimated while low values and low likelihoods are underestimated (Fischhoff et al., 1977).	Might be linked to the circumstance that we mistake availability for probability.
Restraint bias	The tendency to overestimate one's ability to show restraint in the face of temptation (Nordgren et al., 2009).	Has nothing to do with groups.
Rhyme as reason effect	Rhyming statements are perceived as more truthful. A famous example being used in the O.J Simpson trial with the defense's use of the phrase "If the gloves don't fit, then you must acquit." (McGlone & Tofigbakhsh, 2000)	Has nothing to do with groups.
Risk compensation / Peltzman effect	The tendency to take greater risks when perceived safety increases (Cassell et al., 2006).	Has nothing to do with groups. Might be linked to the availability heuristic (cf. Sunstein, 2002).

<i>Selective perception</i>	The tendency that our perception is influenced by our beliefs/expectations (Griffin, 2016).	Similar to the stereotypical bias if the respective beliefs that influence our perception are group specific. We discuss it when we present the stereotypical bias (see appendix C).
Semmelweis reflex	The tendency to reject new evidence that contradicts a paradigm (Mortell et al., 2013).	Can explain why wrong societal beliefs including beliefs about groups are difficult to overcome (seems to interfere with Bayesian updating).
Sexual overperception bias / sexual underperception bias	The tendency to over-/underestimate sexual interest of another person in oneself (Haselton & Nettle, 2006).	Has nothing to do with groups.
Social comparison bias	The tendency, when making decisions, to favour potential candidates who don't compete with one's own particular strengths (Garcia et al., 2010).	Has nothing to do with groups.
Social desirability bias	The tendency to over-report socially desirable characteristics or behaviours in oneself and under-report socially undesirable characteristics or behaviours (Fisher, 1993).	Has nothing to do with groups.
Status quo bias	The tendency to remain at the current state of affairs and prefer it to possible changes (Kahneman et al., 1991).	Might be an inherent group unspecific belief. Affects groups if they are treated unequally in the status quo.
Stereotyping	Expecting a member of a group to have certain characteristics without having actual information about that individual (Kite & Whitley, 2016).	Necessary process in order to make predictions (see chapter 2.3).
Subadditivity effect	The tendency to judge probability of the whole to be less than the probabilities of the parts (Baron, 2008).	Might be linked to the circumstance that we mistake availability for probability.
Subjective validation or personal validation effect	Perception that something is true if a subject's belief demands it to be true. Also assigns perceived connections between coincidences (Forer, 1949).	Is linked to predictive coding and illusory correlations.

Surrogation	Losing sight of the strategic construct that a measure is intended to represent, and subsequently acting as though the measure is the construct of interest (Choi et al., 2012).	Has nothing to do with groups.
Survivorship bias	Concentrating on the people or things that "survived" some process and inadvertently overlooking those that didn't because of their lack of visibility (Brown et al., 1992).	Has nothing to do with groups.
Time-saving bias	Underestimations of the time that could be saved (or lost) when increasing (or decreasing) from a relatively low speed and overestimations of the time that could be saved (or lost) when increasing (or decreasing) from a relatively high speed (Peer, 2010).	Has nothing to do with groups.
Third-person effect	Belief that mass communicated media messages have a greater effect on others than on themselves (Davison, 1983).	Has nothing to do with groups.
Unit bias	The tendency to want to finish a given unit of a task or an item. Strong effects on the consumption of food in particular (Geier et al., 2006).	Has nothing to do with groups.
Weber–Fechner law	Difficulty in comparing small differences in large quantities (Dehaene, 2003).	Might promote the outgroup homogeneity bias.
Well-travelled road effect	Underestimation of the duration taken to traverse oft-travelled routes and overestimation of the duration taken to traverse less familiar routes (Allan, 1979; Zakay & Block, 2004).	Has nothing to do with groups.
"Women are wonderful" effect	A tendency to associate more positive attributes with women than with men (Eagly et al., 1991).	Questionable effect (see e.g. Broverman et al., 1972). Therefore, we do not examine it in this dissertation. See chapter 4.3 for a closer examination of the role of women in society.

Zero-risk bias	Preference for reducing a small risk to zero over a greater reduction in a larger risk (Schneider et al., 2017).	Has nothing to do with groups
Zero-sum bias	A bias whereby a situation is incorrectly perceived to be like a zero-sum game (i.e., one person gains at the expense of another) (Meegan, 2010).	Has nothing to do with groups.
<i>Social Biases</i>		
Name	Description	Evaluation
Actor-observer bias	The tendency for explanations of other individuals' behaviours to overemphasize the influence of their personality and underemphasize the influence of their situation and for explanations of one's own behaviours to do the opposite (that is, to overemphasize the influence of our situation and underemphasize the influence of our own personality) (Jones & Nisbett, 1971).	Similar to fundamental attribution bias.
Authority bias	The tendency to attribute greater accuracy to the opinion of an authority figure (unrelated to its content) and be more influenced by that opinion (Milgram, 2009).	Has nothing to do with groups.
Defensive attribution hypothesis	Attributing more blame to a harm-doer as the outcome becomes more severe or as personal or situational similarity to the victim increases (Burger, 1981).	Might be linked to the ultimate attribution error.
Egocentric bias	Occurs when people claim more responsibility for themselves for the results of a joint action than an outside observer would credit them with (Ross & Sicoly, 1979).	Has nothing to do with groups.
Extrinsic incentives bias	An exception to the fundamental attribution error, when people view others as having (situational) extrinsic motivations and (dispositional) intrinsic motivations for oneself (Heath, 1999).	Has nothing to do with groups.

False consensus effect	The tendency for people to overestimate the degree to which others agree with them (Marks & Miller, 1987).	Is connected to the myside bias that we discuss in chapter 4.2.3.
Forer effect (aka Barnum effect)	The tendency to give high accuracy ratings to descriptions of their personality that supposedly are tailored specifically for them, but are in fact vague and general enough to apply to a wide range of people. For example, horoscopes (Dickson & Kelly, 1985).	Has nothing to do with groups.
<i>Fundamental attribution error</i>	The tendency for people to over-emphasize personality-based explanations for behaviours observed in others while under-emphasizing the role and power of situational influences on the same behaviour (Jones & Harris, 1967).	Has nothing to do with groups. Yet, it is a variation of the ultimate attribution error, which is why we shortly mention it when we discuss the ultimate attribution error (see appendix C).
<i>Group attribution error</i>	The biased belief that the characteristics of an individual group member are reflective of the group as a whole or the tendency to assume that group decision outcomes reflect the preferences of group members, even when information is available that clearly suggests otherwise (Allison & Messick, 1985).	Relevant for the intergroup context. Yet, since Kite and Whitley (2016) primarily mention the ultimate attribution error, we merely attach the description of this bias to the one of the ultimate attribution error (see appendix C).
Halo effect	The tendency for a person's positive or negative traits to "spill over" from one personality area to another in others' perceptions of them (Kahneman, 2011).	Is a manifestation of illusory correlations. Has per se nothing to do with groups.
Illusion of asymmetric insight	People perceive their knowledge of their peers to surpass their peers' knowledge of them (Pronin et al., 2001).	Has nothing to do with groups.
Illusion of external agency	When people view self-generated preferences as instead being caused by insightful, effective and benevolent agents (Gilbert et al., 2000).	Has nothing to do with groups.
Illusion of transparency	People overestimate others' ability to know them, and they also overestimate	Has nothing to do with groups.

	their ability to know others (Gilovich et al., 1998).	
Illusory superiority	Overestimating one's desirable qualities, and underestimating undesirable qualities, relative to other people (Hoorens & Buunk, 1992). (Also known as "Lake Wobegon effect", "better-than-average effect", or "superiority bias".)	Has nothing to do with groups unless this transforms to social identity. Such cases are discussed when we analyse the ultimate attribution error and the intergroup linguistic bias in chapter 4.1.2.
Ingroup bias	The tendency for people to give preferential treatment to others they perceive to be members of their own groups (Tajfel et al., 1971).	Is that a bias in the first place or simply a preference?
Just-world hypothesis	The tendency for people to want to believe that the world is fundamentally just, causing them to rationalize an otherwise inexplicable injustice as deserved by the victim(s) (Furnham, 2003).	Certainly affects the situation and status of groups. Yet, it is unclear how much this bias is grounded on societal beliefs (see chapter 4.3.3). This is why we leave it out.
Moral luck	The tendency for people to ascribe greater or lesser moral standing based on the outcome of an event (Nelkin, 2013).	Has nothing to do with groups.
Naïve cynicism	Expecting more egocentric bias in others than in oneself (Kruger & Gilovich, 1999).	Has nothing to do with groups.
Naïve realism	The belief that we see reality as it really is – objectively and without bias; that the facts are plain for all to see; that rational people will agree with us; and that those who don't are either uninformed, lazy, irrational, or biased (Ross & Ward, 1996).	Prevents the adjustment of wrong group beliefs. Is linked to the myside bias that we discuss in chapter 4.2.3.
Outgroup homogeneity bias	The belief that outgroup members are all alike, whereas ingroup members are diverse (Park & Judd, 1990; Kite & Whitley, 2016).	Might be an inherent group specific belief.
Self-serving bias	The tendency to claim more responsibility for successes than failures. It may also manifest itself as a tendency for people to evaluate ambiguous information in a way	Linked to the fundamental attribution error.

	that is beneficial to their interests (Miller & Ross, 1975).	
<i>Shared information bias</i>	Known as the tendency for group members to spend more time and energy discussing information that all members are already familiar with (i.e., shared information), and less time and energy discussing information that only some members are aware of (i.e., unshared information) (Reimer et al., 2010).	Can lead to wrong group beliefs because important unshared information (e.g. stereotype inconsistent behaviour of an outgroup member) is not sufficiently discussed. This bias is discussed in chapter 4.2.3.
Sociability bias of language	The disproportionately higher representation of words related to social interactions, in comparison to words related to physical or mental aspects of behaviour, in most languages. This bias attributed to nature of language as a tool facilitating human interactions. When verbal descriptors of human behaviour are used as a source of information, sociability bias of such descriptors emerges in factor-analytic studies as a factor related to pro-social behaviour (for example, of Extraversion factor in the Big Five personality traits) (Trofimova, 2014).	Has nothing to do with groups.
System justification	The tendency to defend and bolster the status quo. Existing social, economic, and political arrangements tend to be preferred, and alternatives disparaged, sometimes even at the expense of individual and collective self-interest (Jost et al., 2004).	Certainly affects intergroup behaviour. Yet, system justification grew out of a critique of social identity theory that we do not share in this dissertation (chapter 4.3.3 touches this topic through social dominance theory). This is why we leave it out.
Trait ascription bias	The tendency for people to view themselves as relatively variable in terms of personality, behaviour, and mood while viewing others as much more predictable (Kramer, 1982).	Has nothing to do with groups. Similar to the fundamental attribution error.
Ultimate attribution error	The phenomenon that people overemphasise situational factors in case of negative	Might be an inherent group specific belief.

	behaviour of their own group but personal factors in case of negative behaviour of other groups. Moreover, positive acts tend to be attributed to situational factors less when they are performed by an in-group member than when they are performed by an outgroup member (Pettigrew, 1979).	
Worse-than-average effect	A tendency to believe ourselves to be worse than others at tasks which are difficult (Kruger, 1999).	Has nothing to do with groups.
<i>Memory Errors and Biases</i>		
Name	Description	Evaluation
Bizarreness effect	Bizarre material is better remembered than common material (McDaniel et al, 1995).	Has nothing to do with groups.
Choice-supportive bias	When remembering past choices, people tend to attribute positive features to chosen options and negative features to rejected options (Henkel & Mather, 2007).	Might be an inherent group unspecific belief. Leads to a situation where we overestimate the positivity of chosen/familiar alternatives. Affects groups if familiar and unfamiliar alternatives are usually provided by different groups.
Change bias (?)	After an investment of effort in producing change, remembering one's past performance as more difficult than it actually was (no proper source found).	Has nothing to do with groups.
Childhood amnesia	The retention of few memories from before the age of four (Hayne & Jack, 2011).	Has nothing to do with groups.
Conservatism or Regressive bias	Tendency to remember high values and high likelihoods/probabilities/frequencies as lower than they actually were and low ones as higher than they actually were. Based on the evidence, memories are not extreme enough (Fischhoff et al., 1977).	Might be linked to the circumstance that we mistake availability for probability.
Consistency bias	Incorrectly remembering one's past attitudes and behaviour as resembling	Might be linked to hindsight bias.

	present attitudes and behaviour (Schacter, 1999).	
Context effect	That cognition and memory are dependent on context, such that out-of-context memories are more difficult to retrieve than in-context memories (e.g., recall time and accuracy for a work-related memory will be lower at home, and vice versa) (Tulving, 1974).	Has nothing to do with groups.
<i>Cross-race effect</i>	The tendency for people of one race to have difficulty identifying members of a race other than their own (Teitelbaum & Geiselman, 1997).	Seems to be explainable by perceptual experience and outgroup homogeneity bias and is discussed there (see appendix C)
Cryptomnesia	A form of misattribution where a memory is mistaken for imagination, because there is no subjective experience of it being a memory (Brown & Murphy, 1989).	Has nothing to do with groups.
Egocentric bias	Recalling the past in a self-serving manner, e.g., remembering one's exam grades as being better than they were, or remembering a caught fish as bigger than it really was (Ross & Sicoly, 1979).	Has nothing to do with groups.
<i>Fading affect bias</i>	A bias in which the emotion associated with unpleasant memories fades more quickly than the emotion associated with positive events (Ritchie et al., 2015).	Is linked to rosy retrospection and discussed there (see appendix C).
False memory	A form of misattribution where imagination is mistaken for a memory (Brainerd, 2002).	Has per se nothing to do with groups but is linked to the stereotypical bias.
Generation effect (Self-generation effect)	That self-generated information is remembered best. For instance, people are better able to recall memories of statements that they have generated than similar statements generated by others (Slamecka & Graf, 1978).	Has nothing to do with groups.

Google effect	The tendency to forget information that can be found readily online by using Internet search engines.	Has nothing to do with groups.
Hindsight bias	The propensity to perceive an event that has happened as having been predictable even if it was not or very little predictable (Wood, 1978).	Let us overestimate the predictability of past events – if these past events involved groups, it leads to wrong group specific beliefs (seems to interfere with Bayesian updating).
Humour effect	That humorous items are more easily remembered than non-humorous ones, which might be explained by the distinctiveness of humor, the increased cognitive processing time to understand the humor, or the emotional arousal caused by the humor (Summerfelt, 2010).	Has nothing to do with groups.
Illusion of truth effect	The tendency to be more likely to believe a previously heard statement than an unfamiliar one (Begg et al., 1992).	Can lead to wrong beliefs about groups (seems to interfere with Bayesian updating).
Illusory correlation	Beliefs that incorrectly link a category with certain attributes or another category (Meiser & Hewstone, 2006).	Can lead to wrong beliefs about groups (seems to interfere with Bayesian updating).
Lag effect	The phenomenon whereby learning is greater when studying is spread out over time, as opposed to studying the same amount of time in a single session. See also spacing effect (Sisti et al., 2007).	Has nothing to do with groups.
Leveling and sharpening	Memory distortions introduced by the loss of details in a recollection over time, often concurrent with sharpening or selective recollection of certain details that take on exaggerated significance in relation to the details or aspects of the experience lost through leveling. Both biases may be reinforced over time, and by repeated recollection or re-telling of a memory (Koriat et al., 2000).	Has nothing to do with groups.
Levels-of-processing effect	That different methods of encoding information into memory have different levels	Has nothing to do with groups.

	of effectiveness (Craik & Lockhart, 1972).	
List-length effect	A smaller percentage of items are remembered in a longer list, but as the length of the list increases, the absolute number of items remembered increases as well. For example, consider a list of 30 items ("L30") and a list of 100 items ("L100"). An individual may remember 15 items from L30, or 50%, whereas the individual may remember 40 items from L100, or 40%. Although the percent of L30 items remembered (50%) is greater than the percent of L100 (40%), more L100 items (40) are remembered than L30 items (15) (Kinnell & Dennis, 2011).	Has nothing to do with groups.
Misinformation effect	When people are exposed to misleading details after a witnessed event, they often claim that they saw the misleading details as part of the event (Tousignant et al., 1986).	Has nothing to do with groups.
Modality effect	That memory recall is higher for the last items of a list when the list items were received via speech than when they were received through writing (Murdock, 1972).	Has nothing to do with groups.
Mood-congruent memory bias	The improved recall of information congruent with one's current mood (Watkins et al., 1996).	Has nothing to do with groups.
Next-in-line effect	People taking turns speaking in a group tend to have diminished recall for the words of others who spoke immediately before them (Brenner, 1973).	Has nothing to do with groups.
Part-list cuing effect	That being shown some items from a list and later retrieving one item causes it to become harder to retrieve the other items (Bäuml & Aslan, 2004).	Has nothing to do with groups.
Peak-end rule	That people seem to perceive not the sum of an experience but the average of how it	Has nothing to do with groups.

	was at its peak (e.g., pleasant or unpleasant) and how it ended (Frederickson & Kahneman, 1993; Kahneman, 2011).	
Persistence	The unwanted recurrence of memories of a traumatic event (Holmes et al., 2009)	Has nothing to do with groups.
Picture superiority effect	The notion that concepts that are learned by viewing pictures are more easily and frequently recalled than are concepts that are learned by viewing their written word form counterparts (Whitehouse et al., 2006).	Has nothing to do with groups.
<i>Positivity effect (Socioemotional selectivity theory)</i>	Older adults show a significant information processing bias toward positive versus negative information (Reed et al., 2014).	The opposite of the negativity bias. We mention it when we discuss the negativity bias (see appendix C).
Primacy effect, recency effect & serial position effect	That items near the end of a sequence are the easiest to recall, followed by the items at the beginning of a sequence; items in the middle are the least likely to be remembered (Murdock, 1962).	Has nothing to do with groups.
Processing difficulty effect	That information that takes longer to read and is thought about more (processed with more difficulty) is more easily remembered (O'Brien & Myers, 1985).	Has nothing to do with groups.
Reminiscence bump	The recalling of more personal events from adolescence and early adulthood than personal events from other lifetime periods (Jansari, 1996).	Has nothing to do with groups.
Rosy retrospection	The tendency to remember past events as having been more positive than they actually were (Norman, 2009).	Might be an inherent group unspecific belief. Leads to an idealisation of the past, which can support the maintenance of the status quo. Affects groups if the status quo treats them unequal.
Self-relevance effect	That memories relating to the self are better recalled than similar information relating to others (Rogers et al., 1977).	Has nothing to do with groups.

Source confusion	Confusing episodic memories with other information, creating distorted memories (Schacter & Dodson, 2001).	Has per se nothing to do with groups but can be connected to the stereotypical bias.
Spacing effect	That information is better recalled if exposure to it is repeated over a long span of time rather than a short one (Sisti et al., 2007).	Has nothing to do with groups.
Spotlight effect	The tendency to overestimate the amount that other people notice your appearance or behaviour (Gilovich et al., 2000).	Has nothing to do with groups.
Stereotypical bias	Stereotypes can distort our memory (Payne et al., 2004).	Can lead to inaccurate beliefs about groups (seems to interfere with Bayesian updating).
Suffix effect	Diminishment of the recency effect because a sound item is appended to the list that the subject is not required to recall (Spoehr & Corin, 1978).	Has nothing to do with groups.
Suggestibility	A form of misattribution where ideas suggested by a questioner are mistaken for memory (Schacter, 1999).	Has nothing to do with groups.
Telescoping effect	The tendency to displace recent events backward in time and remote events forward in time, so that recent events appear more remote, and remote events, more recent (Janssen et al., 2006).	Has nothing to do with groups.
Testing effect	The finding that taking an initial test improves subsequent memory performance (McDaniel et al., 2007).	Has nothing to do with groups.
Tip of the tongue phenomenon	When a subject is able to recall parts of an item, or related information, but is frustratingly unable to recall the whole item. This is thought to be an instance of "blocking" where multiple similar memories are being recalled and interfere with each other (Brown, 1991).	Has nothing to do with groups.
Travis Syndrome (?)	Overestimating the significance of the present. It is related to the enlightenment	Has nothing to do with groups.

	idea of progress and chronological snobbery with possibly an appeal to novelty logical fallacy being part of the bias (no proper source found) .	
Verbatim effect	That the "gist" of what someone has said is better remembered than the verbatim wording. This is because memories are representations, not exact copies (Anderson & Paulson, 1977).	Has nothing to do with groups.
von Restorff effect	That an item that sticks out is more likely to be remembered than other items (von Restorff, 1933; Parker et al., 1998).	Has nothing to do with groups.
Zeigarnik effect	That uncompleted or interrupted tasks are remembered better than completed ones (Zeigarnik, 1927; Savitsky et al., 1997).	Has nothing to do with groups.

Appendix C: Description of Selected Biases

This appendix discusses each of the 19 biases that we selected in appendix B in more detail. At this, we stick to the classification of the Wikipedia article that we have already used in appendix B. The fact that there are precisely three subcategories of biases and how the biases are allocated to them might to some degree be arbitrary. Yet, this is irrelevant for this dissertation's purposes. We could have also listed them without having subcategories but did not do so because they provide some guidance in the jungle of biases.

Decision-Making, Belief, and Behavioural Biases

Availability Heuristic

The availability heuristic involves the tendency to evaluate the frequency of characteristics or the probability of incidents in terms of availability (Kahneman, 2011). Here, availability is mainly (but not exclusively) defined by the number of relevant instances and the ease with which these relevant instances come to mind (ibid.). Tversky and Kahneman (1973) first discovered this heuristic. For example, they let participants estimate the ratio between English words where the letter R is in the first position and third position. The median answer was 2:1. Yet, there are actually more words that have an R in third than in first position. The authors explained participants' misjudgements as follows: It is more difficult to think of words whose third letter is a R than of words that begin with an R. As a consequence, the latter were more available in participants' minds which led to the belief that they are more frequent too.⁴

The mechanism of the availability heuristic can be directly used to influence judgements. Schwarz et al. (1991) asked half of participants to recall autobiographical examples of assertive behaviour, whereas the other half had to do so for unassertive behaviour. Then, each of these two groups was again split into two subgroups, whereby one had to recall six and the other twelve examples. After the task, participants had to evaluate how assertive they are. The authors hypothesised that the more examples a subject has to recall, the less fluent the recollection process gets. In turn, this increasing difficulty in remembering instances is interpreted as a sign for unavailability. Thus, the more examples of assertiveness respectively unassertiveness participants had to recall, the less they evaluated themselves as being assertive

⁴ This might lead to the impression that the availability heuristic is a memory bias. Yet, the availability bias does actually not depend on how accurately we remember things. It is a heuristic that grounds on the recollection process in general, regardless of whether our memory is wrong or right.

respectively unassertive. The results confirmed this hypothesis and even revealed that on general, participants reported higher assertiveness after remembering twelve unassertive rather than twelve assertive behaviour. In another experiment of this paper, Schwarz et al. demonstrated that the availability heuristic could be disrupted if participants are given an explanation for their increasing recollection difficulties. Here, the experimenters told participants that they would hear background music during the memory task and that this music would disturb their performance. Consistent with the authors' hypothesis, the difference in the evaluation of assertiveness between those that had to recall six and those that had to recall twelve examples disappeared.

Finally, a study by Rothman and Schwarz (1998) examined when availability is rather defined by fluency of the recollection process and when rather by the mere number of instances remembered. In their experiment, participants had to either think of three or eight risk factors for heart disease. The authors came to the following conclusion: "When heart disease was not considered self-relevant, participants used a heuristic judgment strategy and relied on their ease of recall. They reported greater vulnerability after having recalled three rather than eight risk-increasing behaviors and lower vulnerability after having recalled three rather than eight risk-decreasing behaviors. [Yet] [w]hen heart disease was considered self-relevant, people used a systematic processing strategy and relied on the content of the information recalled. They reported greater (lower) vulnerability after having recalled eight rather than three risk-increasing (decreasing) behaviors." (p. 1053) Thus, whether our availability of something rather relies on "how many examples could be recalled" or "how fluently could these examples be recalled" seems to be moderated by self-relevance.

Representativeness Heuristic

The representativeness heuristic comprises the unconscious inference that high representativeness of an object regarding a category automatically implies high probability that the object also belongs to that category (Kahneman, 2011). Kahneman and Tversky (1973) first mentioned this heuristic. They allocated participants into three groups. The first group had to guess the percentage of freshmen that are enrolled in nine different fields of specialisation. The second group got a personality sketch and had to assess how similar this personality sketch is to their prototype of someone who is enrolled in one of these nine fields of specialisation. The third group also got the personality sketch but had to guess which of the nine fields of specialisation the person is most likely to be enrolled. The authors found that the judgments of likelihood of the third group were much closer to those of group two than group one. As a consequence, subjects mainly made predictions based on how representative the

personality sketch was referred to the respective category and not the base rate of that category.

Another experiment of Tversky and Kahneman (1983) regarding the representativeness heuristic has become particularly well known. It got the name “Linda problem”. The authors conducted it at various American universities, where they gave participants the following description: “Linda is 31 years old, single, outspoken and very bright. She majored in philosophy. As a student, she was deeply concerned with issues of discrimination and social justice, and also participated in anti-nuclear demonstrations.” (p. 297) Now, subjects had to decide which of two statements is more likely: A) Linda is a bank teller; B) Linda is a bank teller and active in a feminist movement.

Although A always has to be true if B is true but not vice versa, 85-90% of subjects chose option B. Thus, to choose B is against the logic of statistics. The reason why many still chose B is again representativeness. By reading the description, participants formed predictions on various aspects of Linda’s life. These predictions matched better with the statement B) than with statement A). Thus, subjects chose B) because the idea of Linda being a bank teller and active in a feminist movement was more representative than Linda being only a bank teller. Then, they made the unconscious inference that high representativeness involves high probability, which in the case of Linda is not true, and chose the wrong answer B) (Kahneman, 2011).

Illusory Correlations

Illusory correlations describe beliefs that incorrectly link a category with certain attributes or another category (Meiser & Hewstone, 2006). Chapman (1967) coined the term in order to display the similarities of phenomena from such diverse areas as belief in primitive magic, superstition, errors in clinical observations, the halo effect, and social prejudice. In several experiments, Hamilton and Gifford (1976) showed how illusory correlations regarding attributes of minority groups can occur. The authors assumed that interactions between majority-group members and minority-group members are infrequent. Consequently, when such an interaction does happen it is distinctive. Additionally, the authors expected that undesirable behaviour is comparatively rare and therefore also distinctive. Thus, the co-occurrence of undesirable behaviour by a minority-group member is “double distinctive”. Because of that it can lead to the inference that minority-group members are prone to behave in undesirable ways. Hamilton and Gifford tested their hypothesis in the following way: Participants had to read a series of 39 sentences. Each sentence was either associated with group A or group B. The use of artificial groups should guarantee that no attributes have yet been linked to the groups. Group A constituted the majority-group. 26 of the 39 sentences concerned this group.

The remaining 13 sentences were associated with group B which therefore constituted the minority-group. While 27 sentences portrayed positive behaviours, the remaining 12 depicted negative behaviours. Each group performed good and bad behaviours in the same ratio. So, unbiased participants should have found no relationship between behaviour and group affiliation. The results show that this was also true given the behaviours were positive and thereby not distinctive (enough). Yet, in case the behaviour was negative, participants exaggerated the extent to which the minority displayed those behaviours. This confirms the assumption that double distinctiveness leads to a biased assessment.

Brown and Smith (1989) demonstrated that the existence of negative behaviour is not a requirement for illusory correlations. In their study, the academic staff of a British university had to estimate the number of male and female workers regarding the senior staff on their campus. At the campus, female seniors represented the minority-group. The authors found that the participants overestimated the number of female and underestimated the number of male senior staff and conclude that their “estimates were consistently inaccurate, producing a lower perceived correlation between gender and seniority than actually existed.” (p. 61) Lastly, Risen et al. (2007) have shown that there are also one-shot illusory correlations. This means that already one unusual behaviour by a distinctive group member can be sufficient to form an illusory correlation.

Omission Bias

The omission bias says that people tend to judge harmful omissions as (morally) better than equally harmful actions (Baron, 2008). The bias was first mentioned by Ritov and Baron (1990). In their experiments, subjects had to decide whether they wanted to vaccinate a hypothetical child. Although the vaccination itself could cause death, it substantially decreased the overall mortality rate. Despite this fact, participants were reluctant to vaccinate. The main reason for this outcome was that participants felt less responsible for outcomes of omissions than outcomes of commissions. For example, one participant wrote: “I did not want to risk killing the child with a vaccine that is optional. It would have been my fault if the child died from the vaccine.” (p. 275)

Spranca et al. (1991) examined the moral dimension of the omission bias more properly. They gave participants the following case: John West is the best tennis player at his club. Still, he is not good enough to play professionally. Every year, the club hosts a tennis tournament that sometimes attracts a professional player who wants a warm-up before Wimbledon. This year, the top player Ivan Lendl competes in the tournament. Both John and Ivan make it to the final round. Here, Ivan is expected to be vastly superior. The evening before the match there is a dinner for both finalists. John knows that Ivan is allergic to Cayenne

pepper and remembers that the house dressing of the club contains Cayenne pepper. So, he thinks that if Ivan takes the house dressing, he might have a very bad night which increases John's chances to win. At the dinner, Ivan orders before John and the waiter asks him whether he prefers the Italian dressing or the house dressing. Now, there are three endings to the story: (1) Before Ivan decides John recommends Ivan the house dressing. Ivan has a rough night and loses the final. If John had not recommended the house dressing, Ivan would have taken the Italian dressing. Yet, John did not know that. (2) Ivan takes the Italian dressing, has a rough night, and loses the final. John realises that if he had told Ivan about the Cayenne pepper in the house dressing, Ivan would have taken the Italian dressing. (3) Ivan orders the Italian dressing but then John recommends the house dressing, so Ivan changes his choice. Ivan has a rough night and loses the final.

Subjects had to rate John's morality for each of the three endings. The results show that two thirds of subjects rated the two commission endings (version 1 and 3) as morally worse than the omission ending (version 2). Thus, these participants displayed an omission bias. Many of those who displayed an omission bias reasoned their judgement by saying that "... John played a greater causal role in the commission endings than in the omission endings and that this was good reason for their different moral judgments" (p. 85). Baron and Ritov (2004) confirm that this kind of justification for judging omission and commission differently is the main fundament of the bias. It is not the distinction between inaction and action but rather the one between indirect and direct causation that leads to the omission bias.

Negativity Bias

The negativity bias implies that humans have a tendency to weigh negative entities such as personal traits, objects, or events more heavily than positive ones (Rozin & Royzman, 2001). The notion of such a bias has already been brought up centuries ago by various prominent humanists such as Rousseau, Schopenhauer, Puschkin, or Shakespeare (ebd.). For example, Schopenhauer (1995) mentioned that pain but not the absence of pain leads to a bodily sensation: "We feel pain, but not painless. ... We feel the desire as we feel hunger and thirst; but as soon as it has been satisfied, it is like the mouthful of food which has been taken, and which ceases to exist for our feelings the moment it is swallowed." (p. 575) As one of the first in academia, Jordan (1965) detected a negativity bias while examining the symmetry of liking and disliking concerning scales. Normally, scales consist of a neutral midpoint and two equidistant endpoints, such as "like very much" and "dislike very much". Now, Jordan found that the subjective distance between the midpoint and each of the two extremes is not equal. He inferred that positive affect respectively attitude has a weaker effect on measured behaviour than negative affect respectively attitude. Kanouse and Hanson (1971) applied these insights

on evaluations in general and drew two main conclusions: (1) Concerning decisions under risk, potential gains are less heavily weighted than potential losses. (2) Information that is evaluated as negative weighs more heavily in the generation of overall evaluations than information that is evaluated as positive.

Rozin and Royzman (2001) state that the negativity bias is manifested in four ways: First, there is negative potency which means that negative entities are more salient than equivalent positive entities. Second, there are steeper gradients for negative events than for positive ones. So, a negative event is faster perceived as more negative than a positive event as more positive.⁵ Third, the combination of negative and positive stimuli leads to a more negative evaluation than the algebraic sum of each individual stimulus would predict. So, the whole is more negative than the sum of its parts. This is called negativity dominance. Fourth, there is negative differentiation, implying that negative entities are more diverse, their conceptualisations are more complex, and they engage a wider response repertoire. For example, the vocabulary for negative emotions is richer than the one for positive emotions.

There is ample evidence suggesting that the negativity bias declines as people get older. At a certain point, there even seems to emerge a positivity bias. A meta-analysis by Reed et al. (2014) concludes that “older adults show a significant information processing bias toward positive versus negative information, whereas younger adults show the opposite pattern.” (p. 1) Thus, the negativity bias seems to be limited to the first half of life.

Loss Aversion

Loss aversion involves the tendency that losses loom larger than same sized gains. The first conclusion of Kanouse and Hanson (1971) mentioned above already contains this notion. However, while Kanouse and Hanson only considered decisions under risk, loss aversion applies to both risky and riskless choices (Kahneman, 2011). Tversky and Kahneman (1991) conducted the following experiment: The experimenters gave half of participants a mug. Then, these participants had to set a selling price, whereas participants without a mug had to set a buying price. These prices indicated at which point participants rather take the money instead of the mug. The median selling price was \$7.12, the median buying price \$3.12. Thus, the two prices diverged widely even though participants faced the exact same choice. This phenomenon is called the endowment effect. As a participant gets a mug his reference point changes to having a mug and not having the money. Therefore, selling the mug is a loss to him. Now, since losses loom larger than gains he sets a relatively high selling price in order to compensate for the loss of the mug. For none-mug-owners it is exactly vice versa. Their

⁵ This is also true if potency itself is low, which is why it is distinct from negative potency.

reference point is having the money and not having the mug. So, the endowment effect is powered by loss aversion and the difference between the selling and buying price ultimately a manifestation of it.⁶

Some specifications and differentiations of loss aversion: Neumann and Böckenholt (2014) conducted a meta-analysis of loss aversion in product choice and found a consistent effect. Yet, it varies substantially across studies. Ert and Erev (2013) indicate six manipulations that lead to higher loss aversion, such as the use of high nominal (numerical) payoffs, framing the safe alternative as the status quo, or the use of high stakes. In fact, in case of small outcomes loss aversion might even reverse so that gains loom larger than losses (Harinck et al., 2007). Gächter et al. (2007) discovered that individuals who are loss averse in riskless choice tasks tend to be loss averse in risky choices as well. Moreover, loss aversion increases in wealth, income, and age, and decreases in education. Finally, these results imply that our choices are dependent on our reference point.⁷ Yet, what exactly defines this reference point? Abeler et al. (2013) suggest that it is not the actual endowment but the expected one. Their experiment confirms the hypothesis of expectation-based reference-dependent-preferences.

Status Quo Bias

The status quo bias comprises that people tend to remain at the current state of affairs and prefer it to possible changes (Kahneman et al., 1991). The bias was discovered by Samuelson and Zeckhauser (1988). They confirmed it in various laboratory and field studies. For example, in one of their experiments, they gave subjects the following hypothetical choice task: "You are a serious reader of the financial pages but until recently have had few funds to invest. That is when you inherited a large sum of money from your great-uncle." (p. 12) Now, participants had to decide whether they want to invest in a moderate-risk company, a high-risk company, treasury bills, or municipal bonds. This choice task functioned as the neutral conditions. The status-quo condition was as follows: "You are a serious reader of the financial pages but until recently have had few funds to invest. That is when you inherited a portfolio of cash and securities from your great uncle. A significant portion of this portfolio is invested in moderate-risk Company A. You are deliberating whether to leave the portfolio intact or to

⁶ There are also critics to such an interpretation. For example, Gal (2006) proposes that the fundamental processes beneath the endowment effect is not loss aversion but inertia, a preference to remain at the status-quo. Chapter 4.1.1 reveals that the two explanations are two sides of the same coin.

⁷ In behavioural economical terms, people that depend their choices on their reference point have reference-dependent-preferences (Kőszegi & Rabin, 2006).

change it by investing in other securities.” (p. 12f)⁸ Again, subjects had the same four investment options as in the neutral condition. The results reveal that substantially more subjects chose (respectively remained at) the moderate-risk company in the status quo condition than in the neutral condition.

Confirmation Bias

The confirmation bias describes the human tendency to seek or interpret evidence in ways that are confirming existing beliefs, hypothesis, or expectations (Nickerson, 1998). This phenomenon is known for centuries. Already the philosopher Francis Bacon (1939[1620]) wrote in his book *Novum Organum* published in 1620: “The human understanding when it has once adopted an opinion (either as being the received opinion or as being agreeable to itself) draws all things else to support and agree with it. And though there be a greater number and weight of instances to be found on the other side, yet these it either neglects and despises, or else by some distinction sets aside and rejects, in order that by this great and pernicious predetermination the authority of its former conclusions may remain inviolate.” (p. 36)

Wason (1960) found first experimental evidence for the confirmation bias.⁹ In his study, participants had to find the rule behind a series of three numbers, which was 4-6-8. They could suggest various possible next numbers, which the experimenter either declared as correct or incorrect. Only when they were convinced of the correctness of their rule, they should tell it the experimenter. The actual rule behind the numerical series was that the next number simply has to be bigger than the previous one. Now, Wason found that participants who failed to find the rule on first try, which applied to more than three quarters of subjects, tried numbers that mostly confirmed their hypothesis. Because they did not actively search for disconfirming evidence their beliefs about the rule were less accurate.

So, the experiment of Wason implies that we tend to seek information that confirms our beliefs/hypotheses. A meta-analysis conducted by Hart et al. (2009) supports this finding. But as said above, we are not only prone to seek but also interpret information in a biased way. For example, Lord et al. (1979) gave subjects that were either supporting or opposing capital punishment two purported studies. One of these confirmed, the other disconfirmed existing beliefs about the deterrent efficacy of the death penalty. Consistent with the confirmation bias, both types of participants rated the study confirming their beliefs as more convincing and probative. Moreover, this confirmation even led to a reinforcement of their

⁸ Participants were told that the tax and broker commission consequences of any change are insignificant.

⁹ Yet, there are critics that claim that the findings of Wason do not demonstrate a confirmation bias but a positive testing strategy. For a proper analysis on the differences between these two see Klayman and Ha (1987).

beliefs. Thus, even though the pro- and anti-capital punishment participants read the exact same two studies, they drew fundamentally different conclusions from them, which ultimately polarised them even more.

Backfire Effect

The backfire effect has much in common with the finding by Lord et al. (1979) presented before. It says that disconfirming evidence might not lead to an adaption but reinforcement of previous beliefs. A study conducted by Nyhan & Reifler (2010) tested this hypothesis. They implemented four experiments in which participants had to read mock news articles, which contained a misleading claim from a politician. Over the course of the article, this claim was either corrected or not.¹⁰ Then, they had to indicate whether they agree with a statement that supported the misleading claim of the politician. The results reveal that among the statement's targeted ideological group the corrections often failed to diminish misperceptions. But not only that there were numerous instances where the corrections even backfired and led to stronger agreement with the statement.

Continued Influence Effect

The continued influence effect states that after a misinformation, which was initially presumed to be correct, has been corrected it can still influence a person's belief. This is even true if the retraction is well remembered (Ecker et al., 2010). Johnson and Seifert (1994) first coined the term. In their experiment, participants had to read a fictitious story about a warehouse fire. First, it was said that the fire was caused by material stored in a closet. Then, participants learned that the closet had in fact been empty. Despite remembering this retraction, participants nevertheless made use of these outdated misinformation in order to draw inferences. Although there is no meta-analysis, the effect was confirmed in numerous studies (Ecker et al., 2010, 2011; Johnson & Seifert, 1998; Seifert, 2002; van Oostendorp, 1996; van Oostendorp & Bonebakker, 1999; Wilkes & Leatherbarrow, 1988; Wilkes & Reynolds, 1999).

Semmelweis Reflex

The Semmelweis reflex describes the human tendency to reject new evidence because it contradicts established norms, beliefs, or paradigms (Mortell et al., 2013). The reflex was named after Ignaz Philipp Semmelweis, a Hungarian physician of the 19th century. He noticed that mothers that were doctored by physicians and medical students had a five times higher

¹⁰ For example, one such mock news article concerned the alleged weapons of mass destruction of Iraq.

mortality rate than mothers that were doctored by midwives. Furthermore, he realised that the midwives-patients' lower mortality rate was due to a lower rate of childbed fever. He assumed that this difference was due to a lack of hygiene measures in case of physicians and medical students. At that time, it was not unusual that after having done an autopsy, physicians directly doctored mothers without washing or disinfecting their hands. Semmelweis tested his hypothesis in a clinical study which confirmed it. But although this finding was revolutionary back then, it got no recognition and experts ignored, disputed, or even ridiculed Semmelweis. The idea that the (in that era godlike) physicians themselves were the root of the higher mortality rate was unacceptable (Röhrig & du Prel, 2010; Levitt & Dubner, 2009). The at first (and partly still) highly disputed findings of Galileo Galilei, Charles Darwin, Albert Einstein, or Sigmund Freud may also demonstrate how difficult paradigm changes are.

Social Biases

Outgroup Homogeneity Bias

The outgroup homogeneity bias describes the belief that outgroup members are all alike, whereas ingroup members are diverse (Linville et al. 1989; Park & Judd, 1990). Park and Rothbart (1982) conducted an experiment that nicely reveals the gist of the outgroup homogeneity bias. Women from three sororities on the University of Oregon had to judge the characteristics of the other two as well as their own sorority. The authors chose these three sororities because of high degree of similar values, close physical proximity, and frequent social contact with one another. The participants had to provide two sets of judgements. The first included judgements of the degree to which each sorority possessed favourable and unfavourable characteristics. Thus, this set was relevant to ethnocentrism principles. The second contained ratings of the degree of intragroup similarity for the three sororities, which was relevant to outgroup principles. Here, subjects were asked the following question: “Consider only the [As]. Using the [following] scale, how similar or dissimilar are the [As] to one another?” (p. 1061) They had to answer this question regarding every sorority by use of a nine-point scale ranging from extremely dissimilar to extremely similar. The results were as expected. On one hand, there was an ethnocentrism effect. Sororities allocated more favourable and less unfavourable characteristics to their own sorority compared to the other two. On the other hand, there was an outgroup-homogeneity bias. Every group described its members as more dissimilar than the other groups described them. In their paper, Park and Rothbart present two other experiments, where not sororities but men and women were taken as social groups. The outcomes of both studies support the outgroup homogeneity bias too. Moreover, a meta-analysis by Mullen and Hu (1989) also confirms a small but significant outgroup homogeneity bias.

Kite and Whitley (2016) list four explanations for the bias. (1) By interacting more with members of your own group you collect more information about them and thereby their diverseness. This hypothesis is supported by the fact that the bias is less severe in case of groups that experience frequent contact such as men and women (Brown & Smith, 1989) or old and young (Harwood et al., 1995). Yet, even here the bias does not vanish, suggesting that it is not solely a lack of information. (2) Interactions with ingroup members lead to more information about their uniqueness. So, it is not only about the quantity but also quality of interactions. Unlike outgroup members, you experience ingroup members in various situations and roles. Plus, it is easier to change from small talk to profound talk by means of which the talker can demonstrate his individuality more easily. (3) Despite being members of a group, humans are still motivated to see themselves as unique. This is why we have to differentiate ourselves from our ingroup so as to maintain our individuality. This idea goes back to the optimal distinctiveness theory of Brewer (2012). It states that people seek both inclusion and differentiation within the ingroup. In contrast, the outgroup already is distinctive, which is why there is no need to notice further diversity there. (4) Ingroup vs. outgroup comparisons are normally made at the group level. Thus, in such comparisons, the within-group differences are minimised. However, people also compare themselves within their own group. Here, individual differences between ingroup members get important which ultimately reveals the diversity of the group.

The crucial factor behind all four explanations is that the gained insight about the ingroup's diversity does not transfer to the outgroup. This shall not imply that one also has to see the diversity within the outgroup but simply acknowledge that it probably exists as well. The cross-racial identification bias is able to illustrate this point. This bias describes that people normally have more difficulties to differentiate between faces of other ethnic groups than of their own ethnic group (Teitelbaum & Geiselman, 1997). Actually, this is not surprising since as we grow up we are mostly confronted with faces of our own ethnicity and thus become experts in distinguishing them and not others (Rhodes et al., 2010; Kelly et al., 2007). Yet, there is a significant difference between saying Asian faces all look alike and to me Asian faces all look alike because I have not learned to distinguish them. In case of the former, the person has not transferred the insight of variety in faces within his ethnicity on other ethnicities.

Ultimate Attribution Error

The ultimate attribution error describes the phenomenon that people overemphasise situational factors in case of negative behaviour of their own group and personal factors in case of negative behaviour of other groups. Moreover, positive acts tend to be attributed to situational

factors less when they are performed by an ingroup member than when they are performed by an outgroup member (Pettigrew, 1979). Duncan (1976) discovered this tendency in the following study: White research participants had to watch a videotape, where a man pushes another man. Then, they had to assess whether the pushing was just playing around or violent behaviour. If a white person pushed a black person, most participants declared it as playing around. Yet, if a black person pushed a white person, the large majority described it as violent behaviour. So, personal factors are weighted more heavily than situational ones in case of outgroup members. This would also imply that, for example, academic success of an outgroup member should be attributed to personal factors such as inherent intellectual abilities. Yet, in such cases the phenomenon is vice versa. The successes of outgroup members are attributed to luck, special advantages, or unusual characteristics of the situation (Pettigrew, 1979; Kite & Whitley, 2016).

The study of Duncan (1976) is ambiguous though. This is because only white people analysed the videotape. It cannot be excluded that their impression of a black pushing a white person being more violent and less playful is right. Maybe the subjects experienced various situations where this was true. In order to see whether there truly is a bias, Duncan would also have had to include black participants. Only if they got to a different assessment of the videotape, there had to be a bias. However, there are also studies where subjects were recruited from both groups. For example, in a survey of Coleman (2013) U.S. college students had to make attributions for the good or bad behaviours of Republican or Democratic politicians. A questionnaire within the study identified subjects as (rather) Democrats or Republicans. The ultimate attribution error could be found in both groups. Khan and Liu (2008) conducted another study about this topic with Hindus and Muslims as participants. Again, the ultimate attribution error could be confirmed. Especially the attribution of negative behaviour to situational respectively personal factors could be found. The attribution of the outgroup's positive behaviour to situational fact received considerable but not total support. These findings coincide with Hewstone (1990) who reviewed the literature on intergroup causal attribution.

For completion, two other forms of attribution errors exist. The fundamental attribution error describes the same phenomenon as the ultimate attribution error. The only difference is that here the level of analysis is not the group but the individual.¹¹ A study by Jones and Harris (1967) is often described as first evidence for it. Participants had to assess how positive writers of an essay about Fidel Castro think of him. Subjects knew that the writer could either choose freely whether he wants to write pro- or anti-Castro or not. Surprisingly, those who were forced to write anti-Castro were also assessed to be more anti-Castro than those who

¹¹ However, there are personal differences concerning attribution styles (cf. Heckhausen, 1972).

were forced to write pro-Castro. So, the situational factor was underestimated and/or the personal one exaggerated. By contrast, the group attribution error involves two beliefs: (1) The characteristics of an individual group member are prototypical for the whole group. (2) The outcomes of group decisions mirror the preferences of its members even if there is information suggesting otherwise (Allison & Messick, 1985).

Linguistic Intergroup Bias

The linguistic intergroup bias involves that the way people describe the behaviours of the ingroup and outgroup varies in their level of abstraction (Maass et al., 1989; Maass et al., 2014). Here, abstract refers to general and enduring psychological states such as person A is dishonest or neurotic. In contrast, concrete terms involve observable and descriptive behaviours such as person A eats a pie or kissed a stranger. Now, the linguistic intergroup bias contains the following two assumptions: (1) Positive ingroup and negative outgroup behaviours tend to be described in abstract terms. (2) Negative descriptions of the ingroup and positive descriptions of outgroups are prone to be made in concrete terms.

In order to test these assumptions Maass et al. (1989) conducted an experiment in an Italian city. Every year, there is a highly competitive horse race in this city where the competitors represent certain areas of the city. The inhabitants of these areas highly identify with their ambassador in the race. This leads to a natural intergroup context. The authors took people of two quarters of equal status as participants. The task of the subjects was to describe what they saw on given cartoons. These cartoons either displayed positive or negative behaviours. Both the ingroup and the outgroup supposedly performed half of each type. The results confirmed the assumptions of the intergroup linguistic bias. On one hand, participants depicted the positive behaviour of the ingroup and the negative behaviour of the outgroup in abstract terms; for instance, the outgroup is violent. On the other hand, the ingroup's negative and the outgroup's positive behaviour was described in concrete terms; for example, A (an ingroup member) hits B (an outgroup member). A review by Maass and Arcuri (1996) demonstrates that this bias also emerges in many other kinds of groups such as women and men, competing schools, political interest groups, or nations.

Compared to concrete statements, abstract terms carry three main features. First, they are harder to prove or disprove. Second, they provide more information about a group member's characteristics. For example, saying that person A is violent includes a wider range of possible behaviours than saying that person A punched someone in the face. Third, an abstract statement usually implicates a rather stable characteristic of a person. Describing a person as violent implies that this person was, is, and will be violent in various situations. This is why

abstract terms serve as more expressive predictors for future behaviour than concrete terms (Maass et al., 2014; Kite & Whitley, 2016).

Memory Errors and Biases

Illusion of Truth Effect

The illusion of truth effect states that people are more likely to believe a statement they previously heard and now hear again than a statement they hear for the first time. The effect is independent of the actual trueness of the statement (Begg et al., 1992). The main explanation for it is that repeated information is easier to process (Wang et al., 2016). Astonishingly, the illusion of truth effect does even occur in situations where we actually do or should know better (Fazio et al., 2015). Thus, knowledge is no (absolute) preventer for it. Hasher et al. (1977) first discovered the illusion of truth effect. In their experiment, subjects had to rate how sure they are about the trueness or falseness of quite unknowable statements about politics, sports, and the arts. They did so three times, with a two weeks interval between each rating. While most statements appeared only in one rating, others were repeated in all sessions. The results revealed that only in case of repeated statements there was a substantial increase in the validity of judgements, regardless whether the statement was rated as true or false. The authors infer that the “[f]requency of occurrence is apparently a criterion used to establish the referential validity of plausible statements.” (p. 107)

That a statement can be perceived as more and more true if it gets repeated is not a new notion. According to Le Bon (2002), already Napoleon said that “there is only one figure in rhetoric of serious importance, namely, repetition.” (p. 77) And also Wittgenstein referred to the illusion of truth effect when he stated that the tendency to believe repeated information is as reasonable as buying the same newspaper again so as to see if the first was right (Kenny, 1973; Begg et al., 1992). A meta-analytic review by Dechêne et al. (2010) confirms the illusion of truth effect. Here, they differentiated between within-items and between-items effects. The former involves the additional trueness of a statement by repetition. The latter describes the differences in ratings of truths between new and repeated statements. The results show that while both effects are significant, the between-items effect is even larger.

Stereotypical Bias

The stereotypical bias implies that stereotypes distort our memory (Payne et al., 2004). For example, Banaji and Bhaskar (2000) gave participants lists of names which were either African American or European American. Then, they had to indicate which of these were names of criminals. The experimenters told them that some names might appear familiar since the

media has reported about them. Now, even though the lists did not include any criminals, significantly more black than white names were recognised as those of criminals. Subjects asserted that the basis of their judgements was not race but memory. So, the results demonstrate that the recall of participants' memory was non-consciously biased by stereotypes.

Similarly, if stories are retold multiple times, stereotype-consistent information is held better in the collective remembering than stereotype-inconsistent information (Kashima, 2000). Such a bias is somewhat surprising because a meta-analysis by Rojahn and Pettigrew (1992) finds that expectation-inconsistent information is better recalled by individuals than expectation-consistent information.¹² In order to examine the difference between individual and collective remembering Kashima (2000) conducted the following experiment: Participants had to retell a story about a man and a woman who displayed both gender-stereotype-consistent and inconsistent behaviour. All in all, the story was retold four times, leading to a five-person communication chain. So, the participant on the first position of the chain read the original story and then retold it the participant on the second position of the chain. In turn, this participant retold it the participant on the third position of the chain and so on. The results reveal that participants who were at an early position of the chain retold more stereotype-inconsistent information than stereotype-consistent information.¹³ Yet, the further the position, the more did participants reproduce stereotype-consistent information. One explanation given by Kashima for this effect is that a lack of information caused by the multiple retelling can more easily be filled with stereotype-consistent than inconsistent information.

Another explanation can be provided by the phenomenon of selective perception. Selective perception describes the tendency that our perception is influenced by our beliefs/expectations. Griffin (2016) gives the following example: “[S]uppose a manager is exceptionally fond of a particular worker. The manager has a very positive attitude about the worker and thinks he is a top performer. One day the manager notices that the worker seems to be goofing off. Selective perception may cause the manager to quickly forget what he observed. Similarly, suppose a manager has formed a very negative image of a particular worker. She thinks this worker is a poor performer and never does a good job. When she happens to observe an example of high performance from the worker, she may not remember it for very long.” (p. 272) Thus, due to selective perception we neglect information that contradicts our beliefs. As a consequence, stereotype-inconsistent information is less well perceived/remembered than stereotype-consistent information.

¹² Yet, a meta-analysis by Stangor and McMillan (1992) postulates that in social contexts the opposite is true.

¹³ However, this is only true for plot relevant information and not background information.

Rosy Retrospection

Rosy retrospection involves the tendency to remember past events as having been more positive than they actually were (Norman, 2009). For example, Mitchell et al. (1997) tested this bias regarding holidays. They examined how people anticipated, actually experienced, and subsequently recollected three kinds of holidays: a 3-week bicycle trip in California, a trip to Europe, and a Thanksgiving vacation. All three conditions had in common that the anticipation and subsequent recollection of the holiday were more positive than the actual experience.¹⁴ The authors explain the bias by means of “an increase in the number of negative thoughts during the event which seem to be caused by distractions, disappointment, and a less positive view of the self. However, these effects are short-lived; within days after the event, people have much more positive evaluations of the event.” (p. 421)

Rosy retrospection is closely related to the fading affect bias. It says that information concerning negative emotions are forgotten more quickly than information regarding positive emotions. Ritchie et al. (2015) examined the idea of the fading affect bias as an emotion regulator for autobiographical memory. Their sample included 562 participants of 10 different cultures and more than 2’400 autographical event descriptions. Each subsample provided evidence for the fading affect bias. Thus, at least one reason why people have rosy retrospection is that concerning past experiences, negative affect fades faster than positive affect does. This leads to an overly positive recollection of the past.

Hindsight Bias

The hindsight bias, also called the knew-it-all-along effect, describes the propensity to perceive an event that has happened as having been predictable even if it was not or very little predictable (Wood, 1978). The academic origin of this bias is an insight by Paul Meehl (1973). He found that clinicians overestimated their feeling of “having known all along how cases were going to turn out.” (Fischhoff, 2007, p. 19). Fischhoff & Beyth (1975) examined this notion more properly by means of the following experiment. The authors gave participants various possible outcomes regarding President Nixon’s trips to Moscow and Peking. The task of participants was to estimate the likelihood of these outcomes. Unexpectedly, after Nixon’s trips were completed participants had to remember respectively reconstruct their own predictions. Additionally, they had to state which events they believed to have actually occurred and which not. The results show that given participants indicated that an event in fact occurred, remembered probabilities that it would occur were generally higher than in their original

¹⁴ Thus, Norman calls these three phases (anticipation, experience, and recollection) rosy projection, dampening, and rosy retrospection.

prediction. In contrast, concerning events that participants believed not to have occurred, remembered probabilities that it will happen were generally lower than in their original prediction. Thus, in hindsight subjects exaggerated their predictive power.

A meta-analysis by Christensen-Szalanski and Willham (1991) confirms the existence of a (rather small) hindsight bias. They find that the cause of the bias is mainly due to cognitive and not motivational factors. Moreover, the strength of the bias varies by three moderators: (1) The type of question; questions about case histories and real-world events lead to a smaller hindsight bias than almanac questions.¹⁵ (2) The type of outcome information provided; given that an event did in fact not occur, the hindsight bias is smaller than if it did occur. (3) Subjects' familiarity with the task reduces or even dissolves the hindsight bias. A more recent meta-analysis by Guilbault et al. (2004) comes to a similar conclusion.

Choice Supportive Bias

The choice supportive bias implies that “[w]hen remembering past choices, people tend to attribute positive features to chosen options and negative features to rejected options.” (Henkel & Mather, 2007, p. 163) The bias increases as we age. Mather and Johnson (2000) found first evidence for that. In their experiment, participants had to execute several two-option choices. Then, they were either asked to reconsider the details of their choice, to reconsider how they felt about their choice, or to do a neutral task. Later, participants had to ascribe attributes to the previous options. Here, in comparison to their chosen options, older subjects (64-83) ascribed substantially fewer positive and more negative attributes to foregone options. This was true for all three conditions. In case of younger participants, the choice supportive bias was only as strong as the one of older subjects in the “reconsider how you felt about your choice” condition.¹⁶ Thus, first, as we age our memory increasingly tends to distort in favour of our chosen options. Second, if younger adults affectively review a decision, their choice-supportive memory tends to increase.

Henkel and Mather (2007) found that the choice supportive bias does also apply if people misremember their choice. In their experiment, participants who falsely remembered their chosen option favoured the option they believed to have chosen more in their memory attributions than the option they in fact chose. This was also true if experimenters gave participants a wrong reminder about their decision, leading to false beliefs of participants. And the memory bias does not only concern valence but also vividness. “[F]eatures attributed in a fashion favoring believed choices were more vividly remembered than features attributed in

¹⁵ For example, “When will the next lunar eclipse be?” is an almanac question.

¹⁶ The authors controlled for recognition accuracy and source identification.

a non choice-supportive fashion.” (p. 163) These findings suggest that memory seems not to be a good guarantor for stable preferences (Aldrovandi & Heussen, 2011). For example, a study conducted by Hall et al. (2012) examined the nature of attitudes. Participants had to indicate their opinions about various moral questions. Later in the survey, their opinion was reversed and presented to them as the opinion they indicated before. The majority of these reversals remained undetected and participants even started to generate supportive arguments for the oppositional opinion. Thus, at least some of our preferences seem quite flexible.

Appendix D: Interaction between Social Identity and Social Biases

This appendix shows how social identity affects the manifestation of the three social biases that we use in the dissertation. This is important because it reveals that a possibly inherent group specific belief can lead to different manifestations, depending on environmental influences and thereby on how strongly one identifies with one's ingroup.

Let us begin with the outgroup homogeneity bias. Several studies suggest that perceived ingroup and outgroup homogeneity may be influenced by motivational factors (for a review, see Simon, 1992). For example, Simon and Brown (1987) found that members of a minority group tend to perceive greater ingroup than outgroup homogeneity. The authors explain this finding as follows: Building on social identity theory, minority group members may perceive their social identity more positively if they regard their ingroup as homogenous. The reason for this is that ingroup homogeneity is positively linked to ingroup solidarity (Lee & Ottati, 1993; 1995; Simon & Mummendey, 1990; Simon & Pettigrew, 1990; Doosje et al., 1995). However, according to Bartsch and Judd (1993) this ingroup homogeneity only concerns dispersion and not stereotypicality. Moreover, given members of minority groups had to judge the variability of their group before they judged the variability of the larger outgroup, there actually was an outgroup homogeneity effect. Lastly, Castano and Yzerbyt (1998) found that if the ingroup's and outgroup's homogeneity have to be judged simultaneously, an ingroup homogeneity effect emerged. However, if participants only judged one group (so either the ingroup or the outgroup), overall there was no difference in homogeneity between the ingroup and outgroup.

Lorenzi-Cioldi (1998) argues that it is not necessarily group size (minority vs. majority) but rather group status (high-status vs. low-status) that moderates the outgroup homogeneity effect.¹⁷ A high-status group member perceives a low-status outgroup as being more homogenous as his own group. The outgroup homogeneity effect also applies if the two groups at comparison have comparable statuses. However, in case of low-status group members that compare their group homogeneity with the one of a high-status group, no outgroup homogeneity effect is observable. On the contrary, sometimes this even leads to an ingroup homogeneity effect.

Beside the order of comparison of group homogeneity (respectively whether there is a comparison at all), group status, and whether a group is part of the majority or minority, there

¹⁷ Although the majority group is often the high-status group, this does not always have to be the case. For example, in South Africa, black citizens outnumber the white citizens. Yet, the latter are perceived as the high-status group.

is a fourth influential factor: strength of ingroup identification. In their paper, Castano and Yzerbyt (1998) present a second study. Here, the authors asked psychology students to not only assess the homogeneity of psychologists and social workers but also to indicate how strongly they identify with the group “psychologists”. The study revealed that “high identifiers perceived greater homogeneity in the ingroup than in the outgroup. In contrast, low identifiers displayed the opposite tendency” (p. 219). Moreover, high-identifiers perceived their group as a minority whereas low-identifiers did not.

De Cremer (2001) confirms the findings of Castano and Yzerbyt (1998). He told participants, who thought that they play a public goods game, that their results were either compared with other participants from the same university or with participants from a university close-by.¹⁸ Thus, the former procedure produced an intragroup condition, the latter an intergroup condition. First, through answering three questions, participants had to state how strongly they identify with their university. Then, they were asked to indicate the variability among students at their own university and among students at the other university. Note that participants of the intergroup condition probably anticipated that they would also have to indicate the variability among students of the other university. In contrast, this came as surprise for participants of the intragroup condition. This experimental design led to three main findings. First, higher group identification increased the tendency that the ingroup is perceived as more homogenous. Second, compared to the intragroup condition, the intergroup condition led to a stronger identification with the university. Thus, the context influenced group identification. Third, the intragroup condition tended to lead to an outgroup homogeneity effect, whereas the intergroup condition tended to lead to an ingroup homogeneity effect. Thus, the context partly decided whether the ingroup or outgroup was perceived as more homogenous.

The ultimate attribution error is the next social bias we want to examine in terms of whether it is influenced by social identity. We know from social identity theory that people are inclined to evaluate ingroup members more positively than outgroup members. This is especially true if one’s own identification with the ingroup is high. As a consequence, it can be assumed that high identifiers display a stronger ultimate attribution error compared to low identifiers. De Cremer (2000) tested this hypothesis. In his experiment, participants had to play a sort of public goods game. Before they received feedback about their final outcome, they had to indicate how strongly they identify with their group members. Then, after they got their results, subjects were asked to what extent their group’s outcome was due to the group members’ actions. De Cremer found that subjects attributed the group’s outcome more

¹⁸ The university close-by was considered to be the same academic level. Additionally, it was often taken for comparison with the university of the participants. Thus, they should be familiar with that other university.

to the qualities of the group members in case the group was successful vs. unsuccessful. Moreover, there was a significant interaction between feedback and group identification. On one hand, high identifiers attributed group failure less to group qualities in comparison with low identifiers. On the other hand, referred to low identifiers, high identifiers attributed group success more to the qualities of the group members. Thus, group identification influences the ultimate attribution error.

The study of de Cremer leaves two questions unanswered. First, he only investigated the ingroup regarding impacts of the ultimate attribution error. Therefore, it is unclear whether group identification also affects the attribution of outgroup behaviour. Second, de Cremer's experimental design led to artificial groups. Consequently, we do not know whether these results are transferable to real groups. Klein and Licata (2001) provide answers to these questions. They conducted an experiment with Dutch- and French speaking Belgians. The survey included the following topics: (1) unemployment rate (higher in the French-speaking part of the country); (2) the electoral strength of far-right parties (higher in the Dutch-speaking part); (3) percentage of senior citizens looked after by their family rather than in an old people's home (higher in the French-speaking part); and (4) degree of bilingualism (higher in the Dutch-speaking part). The task of participants was to explain why there are differences between the two linguistic groups regarding these topics. The topics unemployment rate and the degree of bilingualism casted the French-speaking part in a negative light. Contrary to that the electoral strength of far-right parties and the percentage of senior citizens looked after by their family rather than in an old people's home casted the Dutch-speaking part in a negative light. Thus, according to the ultimate attribution error, the members of both linguistic groups should attribute their two group unfavourable phenomena to external and their two group favourable phenomena to internal factors.

The results are mixed. In case of differences in the rate of employment and differences in the rate of bilingualism, no group specific attribution patterns were found. Both French- and Dutch speaking participants mainly attributed these differences to external factors. Participants' explanation of the difference in the care of senior citizens revealed significant group dissimilarities. Here, compared to Dutch speakers, French speakers were more likely to attribute these differences to internal causes. In general, this effect was not significantly dependent on how strongly subjects identify with their group. However, if we only examine the low identifiers of both linguistic groups, we see that they were equally likely to use internal and external explanations. Thus, high identifiers were almost entirely responsible for the observable ultimate attribution error. Lastly, the difference in the political strength of far-right political parties leads to similar results. Again, compared to Dutch speakers, French speakers more often explained this difference by internal vs. external factors. Yet, this effect was

dependant on the level of group identification. Only the high identifiers of each group displayed an ultimate attribution error.

Klein and Licata (2001), who used real groups, demonstrate that group identification affects the attribution of both ingroup and outgroup related societal phenomena. Moreover, a Canadian study conducted by Guimond (2000) comes to a similar conclusion. Here, Anglophone military students were more likely to blame the Francophones themselves for their unfavourable economic situation (rather than the system) the stronger they identified with their group. However, as we have seen in the experiment of Klein and Licata (2001), the ultimate attribution error does not apply every time. Nevertheless, if it applies, the effect of group identification and thereby social identity on the bias seems to be undeniable.

The manifestations of the linguistic intergroup bias are also influenced by social identity. Shulman and Clément (2008) were the first ones who investigated this. As in the original linguistic intergroup bias experiments of Maass et al. (1989, 2000), the authors presented subjects (Francophone Canadians) a series of four cartoon vignettes. Two depicted actors engaged in prosocial and the other two in antisocial behaviours. Each vignette came with four verbal descriptions, where each represented a distinct level of linguistic abstraction. Subjects had to select the description which they believed represented the depicted story best. Additionally, participants were asked to indicate their attitude toward Anglophones, how strongly they identify with Francophones and Anglophones, their confidence with English, and their level of anxiety when speaking English. The authors found that strong (vs. low) ingroup identifiers were more likely to exhibit a linguistic intergroup bias when talking about the outgroup's behaviour. So, in comparison to the ingroup, they described negative outgroup behaviour by use of more abstract terms, implying cross-situational and temporal stability. This finding is in line with the linguistic intergroup bias. Yet, unsound with the linguistic intergroup bias, high identifiers described the outgroup's desirable behaviour not less but similarly abstract as undesirable behaviour. Furthermore, given participants identified with the outgroup (the Anglophones) and had high confidence in English, the linguistic intergroup bias was no longer directed against the outgroup but the ingroup.

However, a later study by Shulman et al. (2011) relativises these results. They again examined Francophone Canadians and reached the following conclusion: “[R]egardless of the degree of identification with the in-group, participants who are confident L2 [second language] speakers tend not to engage in either the LIB [linguistic intergroup bias] or reverse LIB effects. Low L2 confidence, in contrast, in combination with high identification to the in-group appears to be related to a reverse LIB effect.” (p. 328) The authors argue that this is the case because subjects perceive intergroup interactions as unfamiliar and uncomfortable and due to that overcompensate for their bias. However, Shulman et al. fail to give a proper

answer why the results of their second study differ so substantially from the results of their first study.

In Canada, the Francophones constitute both the minority and low-status group. Shulman and Clément (2008) write: “Indeed, in relation to majority Anglophones, the ethnolinguistic vitality status of Francophones in the province of Ontario in general, and in the city of Ottawa in particular, is relatively low.” (p. 114). Thus, maybe not only group identification but also group status could be important for the appearance of the linguistic intergroup bias. Unlike the two studies conducted by Shulman and colleagues, Chan (2017) examined a minority group that is perceived as a high-status group: Hongkongers. He asked participants (all born in Hong Kong) whether they see themselves as Hongkongers, Hongkongers but also Chinese, Chinese but also Hongkongers, or Chinese. Then, participants were given four cartoon vignettes for which they had to select the description that suited each of them best. The results reveal that Hongkongers with a rather Chinese identity exhibited hardly any linguistic intergroup bias. However, Hongkongers with an exclusively Hongkongers identity showed a complete linguistic intergroup bias. They described prosocial ingroup and antisocial outgroup behaviour in more abstract terms, whereas antisocial ingroup and prosocial outgroup in more concrete terms. This was also true if the cartoons did not directly display whether the actors were Hong Kong or Chinese citizens but solely indicated whether the location of the displayed behaviour is in Hong Kong or China.

Thus, while highly identified Francophones did not exhibit a clear linguistic intergroup bias (or even the reversed version of it), highly identified Hongkongers did. Maybe this is because of different group statuses. But this is only a hypothesis since so far there is no study that analysed the impact of status on the linguistic intergroup bias. Nevertheless, we see that the linguistic intergroup bias seems not to be universal but dependent on various factors such as group identification and thereby social identity, presumably group status, and probably some more.

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