



# Handbook of Peace Psychology

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Roth & Loughnane: Information Processing  
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## Information Processing: The Power of the Human Mind in Influencing Collective Conflicts

Jenny Roth & Jack Loughnane

### Abstract

Relations between social groups and their members are influenced by and influence how people perceive and judge each other. The way how people process information about others in fact represents an antecedent and consequence of intergroup relations. The present chapter illustrates how general cognitive mechanisms in processing information can lead to biases in perceiving and judging social groups and their members that in turn can influence intergroup relations. We will illustrate this by first, explaining how people process information in general and social information in specific. In specific, we will draw on social categorization and self-categorization and schema activation and application. Then, we will explain biases relevant for intergroup relations that arise at least in part from how people process social information along with attention and general learning mechanisms. We highlight category accentuation, outgroup homogeneity, ingroup favouritism complemented by outgroup derogation, and stereotyping. The underlying processes of the biases in perceiving and judging others can occur in an automatic fashion. Despite the potential automaticity involved, we highlight the crucial influence of people's goals and motivation in influencing these biases. We end the chapter with a discussion how these intergroup biases complemented by confirmation biases that maintain and fortify the intergroup biases can contribute to collective conflicts.

*Keywords: social cognition, ingroup favouritism, intergroup bias, categorization, category accentuation, outgroup homogeneity, stereotyping, automaticity, confirmation bias, collective conflicts*

### Zusammenfassung

Die Beziehungen zwischen sozialen Gruppen und ihren Mitgliedern werden durch die Art und Weise beeinflusst, wie Menschen einander wahrnehmen und beurteilen. Die Art und Weise, wie Menschen Informationen über andere Menschen verarbeiten, stellt eine Vorstufe und eine Folge der Beziehungen zwischen Gruppen dar. Das vorliegende Kapitel veranschaulicht, wie allgemeine kognitive Mechanismen bei der Informationsverarbeitung zu Verzerrungen der Wahrnehmung und Beurteilung sozialer Gruppen und ihrer Mitglieder führen können, die wiederum die Beziehungen zwischen den Gruppen beeinflussen können. Zur Veranschaulichung werden wir zunächst erläutern, wie Menschen Informationen im Allgemeinen und soziale Informationen im Besonderen verarbeiten. Wir werden insbesondere an der sozialen Kategorisierung und Selbstkategorisierung sowie der Aktivierung und Anwendung von Sche-



mata ansetzen. Anschließend werden wir die für Intergruppenbeziehungen relevanten Verzerrungen erläutern, die sich zumindest teilweise daraus ergeben, wie Menschen soziale Informationen verarbeiten. Wir gehen insbesondere auf die Akzentuierung von Kategorien, die Homogenität von Fremdgruppen, die Bevorzugung von Eigengruppen, ergänzt durch die Abwertung von Fremdgruppen, und die Stereotypisierung ein. Die Prozesse, die den Verzerrungen bei der Wahrnehmung und Beurteilung anderer zugrunde liegen, können automatisch ablaufen. Trotz der potenziellen Automatizität dieser Prozesse betonen wir, dass Ziele und die Motivation der Menschen diese Verzerrungen entscheidend beeinflussen können. Wir beenden dieses Kapitel mit einer Diskussion darüber, wie diese Verzerrungen in der Intergruppenwahrnehmung, ergänzt durch Mechanismen der Wahrnehmungsbestätigung, die die Intergruppenverzerrungen aufrechterhalten und verstärken, zu kollektiven Konflikten beitragen können.

*Schlüsselwörter: soziale Kognition, Eigengruppen Favorisierung, Intergruppen Verzerrung, Kategorisierung, Akzentuierungseffekt, Fremdgruppen Homogenität, Stereotypisierung, Automatizität, Confirmation Bias, kollektive Konflikte*

### The Social Cognitive Approach

Despite collective conflicts occurring between social groups, the actions are performed by individuals and their actions are preceded by processes in their minds. Since the Nobel Prize winning discoveries of Kahneman and Tversky (1982) about human biases in perceiving and judging, it is widely known that people are not only rational thinkers who accurately consider all relevant pieces of information. Instead, people process information through the lens of their experiences and motives which can bias their perception, judgment, and downstream behaviour (Kruglanski, 1996). The resulting subjective interpretation of the situation by the perceiver along with their reaction to it can diminish or escalate collective conflicts.

The social cognitive approach applies principles known about the human mind aiming to understand people's perception, judgment, and behaviour in social contexts (Deutsch & Roth, 2020). Guided by the social cognitive approach, this chapter aims to highlight how the way that people process information can contribute to understanding collective conflicts. Information processing influences many of the phenomena described in other chapters of this handbook (e.g., Chapter 35: social categorization, stereotypes, and prejudice) and many of the topics dealt with in other chapters influence how people process information (e.g., Chapter 37: personality and socialization; Chapter 44: communication).

In this chapter, we draw on the social cognitive approach in explaining biases that contribute to collective conflicts. We will first describe general information-processing before we highlight cognitive processes that are particularly relevant for perceiving social groups and their members. We will then present a selection of biases that we consider particularly relevant for fueling and maintaining collective conflicts and that have been explained by how people process information. After having presented these biases, we discuss

conditions under which they occur and the role of goals and motivation in influencing them. At the end of this chapter, we will draw implications from the described biases along with additional confirmation biases for understanding collective conflicts.

### General Information Processing

In general, information processing can be understood as a sequence of three basic cognitive steps (Neisser, 1967). It explains how stimuli in the environment are perceived, how they are memorized and recalled and how they finally produce feelings, thoughts, and behaviour of the perceiver (see Figure 1).

As a first step in this sequence, information from the environment enters the cognitive system by being attended to and perceived (Deutsch & Roth, 2020). In this step, sensors (eyes, ears, tactical sensors) detect the stimulus, for example a person. Here is where information is filtered the first time depending on what the perceiver is attending to. Second, the incoming information is analyzed and transformed. In this step, the perceptual content is compared with stored and recollected memory. Here is where incoming information may be complemented with information stored in memory, and where the incoming information can complement existing memory content. Finally, the incoming information along with the activated memory content is used to form an impression, judgment, and eventually behaviour. Thus, the information is used in interpreting the target stimulus and generating behaviour informed by it.

The processing of information is not taking place in isolation but in light of existing motivation and goals of the perceiver. To illustrate the power of goals in shaping people's perception, think of how you perceive a glass of water when being thirsty compared to not. When you are thirsty, you will pay more attention to the glass, and it may result in you craving the water, eventually influencing your behaviour. Instead, when you are not thirsty you may not even consciously perceive the glass of water and it is unlikely to guide your behaviour. It is very similar with social stimuli, for example, the perceiver's goal of interacting with a person leads to processing the characteristics of this person more thoroughly (Kunda & Spencer, 2003).

Importantly, not all memory content and not all goals influence information processing at a specific point in time. For memory content and goals to affect information processing, the specific memory content, or the goal need to be accessible and thus, ready to influence information processing (Higgins & King, 1981). Accessibility is increased if the content or the goal is often and recently used. The higher the accessibility the higher the probability that the respective content or goal will affect the processing of the incoming information (Förster, Liberman & Higgins, 2005).

Furthermore, the extent to which memory content and goals affect information processing depends on the specific (so called operating) conditions under which a perceiver processes information (Gawronski & Bodenhausen, 2011). More specifically, some cognitive pro-

cesses occur more or less automatically (Bargh, 1994). An automatic process is one that occurs without people being aware of it, without people intending it, without people being able to control it, and even if people are distracted (Moors & De Houwer, 2006).

The described information processing steps transform a stimulus into a cognitive representation. This representation does often not exactly mirror the stimulus. Instead, the resulting cognitive representation is influenced by the perceiver's memory content, goals, and motivation.

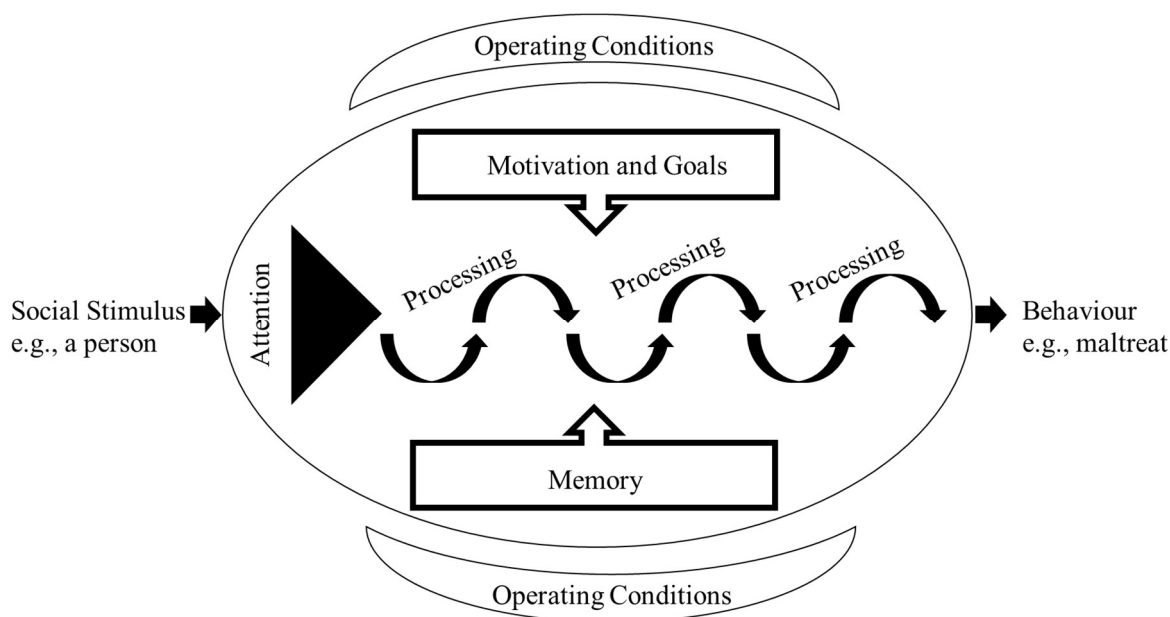


Figure 1. Simplified illustration of information processing adapted from Deutsch and Roth (2020)

### Highlighted Cognitive Processes

Now as we are familiar with general information processing steps and how memory, goals, and motivation can influence cognitive representations, we will present three specific cognitive processes that are particularly relevant for processing social information.

#### Social Categorization

In general, people organize information in memory in categories. A social category includes information that a person holds about classes of individuals (e.g., migrants, Russians, women; Macrae & Bodenhausen, 2000). In line with the general information processing steps (see Figure 1), when people attend to another person, they assess their features (e.g., skin, hair, accent). Then, they compare the features of the target person with information stored in memory and analyze similarities and differences (Blair, Judd, Sadler & Jenkins, 2002). Finally, they assign the target person a social category that best fits their features (Klauer & Ehrenberg, 2005; Tomelleri & Castelli, 2012).

Often, multiple social categories may well apply to the features of a target person (e.g., a Black female manager could be assigned to the social category of Black people,

women, managers, or even cross-categorized as female manager; Crisp & Hewstone, 2007). Which category a person is assigned to depends on the accessibility of the category in memory (Castelli, Macrae, Zogmaister & Arcuri, 2004). That means people use categories that easily come to mind. For example, whether we categorize people as men versus women or as Black versus White depends on the accessibility of these social categories. As elaborated in the previous section on general information processing, the accessibility of information depends on the recency – when the respective social category has been used last, and the frequency – how often the social category is used (Rutland & Cinnirella, 2000). Which social category is used also depends on the context. For example, if a person is a minority member amongst majority members makes the minority category salient and thus accessible for further processing (Mitchell, Nosek & Banaji, 2003). It also depends on the goals of the perceiver. For example, if White Northern Americans aim to self-protect against potential physical threat they have been shown to increase race-based categorisations (Black vs. White; Maner, Miller, Moss, Leo & Plant, 2012).

### Self- Categorization

A central aspect of social categorization is that people categorize not only others but also themselves. Categorizing oneself mainly follows the same principles as categorizing others. First, people use categories that are accessible at a current point in time and that fit the self. The fit of the self to the category is assessed by analyzing similarities and differences between the self and others. The self is then assigned the social category that has the most similarities with the self and the greatest dissimilarities with others (Turner, Hogg, Oakes, Reicher & Wetherell, 1987). The process of self-categorization leads to the distinction between *ingroups* - groups that include the self - and *outgroups*-groups that exclude the self.

Usually, people belong to multiple social groups and thus, can categorize themselves for example, based on their ethnicity, gender, profession, or any other distinction. Furthermore, social categorization including self-categorization occurs at various levels of inclusiveness (Turner et al., 1987). For example, people can categorize members of national groups in Europe (Spaniards, Germans, Italians, etc.). These categories are less inclusive than categorizing the same person into the social category of Europeans. Thus, a person can be categorized as a German and on a more inclusive level of categorization the same person can be categorized as European. The category European is more inclusive than the category German as Spanish, Italian, and other national subgroups are included along with Germans into that broader category.

Self-categorization theory (Turner et al., 1987) suggests that how people self-categorize – similar to how people categorize others – depends on the current context along with people’s state of mind and goals. The context renders different categories salient. For example, people may not use the category German while encountering themselves in Germany, but they may use it when they have a solo status among Swiss people in Switzerland (Biernat & Vescio, 1993) or they may use the more inclusive category of European when comparing

themselves with Americans (Wegener & Klauer, 2004). Furthermore, theory and research suggest that several motives (e.g., uncertainty reduction, optimal distinctiveness, positive self-esteem) drive how people self-categorize (Hogg, 2000; Leonardelli, Pickett & Brewer, 2010; Tajfel & Turner, 1979).

### Schema Activation and Application

Social categories usually contain a wealth of knowledge, beliefs, and expectations about respective category members. This content has been developed throughout people's life via several mechanisms (e.g., direct experiences, social learning, media exposure; Sherman, 1996; Sherman, Percy & Soderberg, 2013; Ward & Grower, 2020). The accumulated information is stored in people's memory forming so-called cognitive schemas (Rumelhart, 1980). These schemas help the perceiver to organize and structure the multitude of information in their environment.

Stereotypes can be considered as a schema of information about a social category and its members (Stangor & Schaller, 2000). Stereotypes contain information such as characteristics (e.g., intelligent, lazy, barbarous) and habits (e.g., committing crimes) about members of the respective social group. Similarly, information about oneself can be considered a cognitive schema of the self (Markus, 1977). The self-schema contains all information that a person has acquired about themselves including their characteristics and experiences but also conceptions of how they expect themselves to be (Higgins, 1989).

Schemas can be activated when a perceiver attends to a person in their environment (Payne, 2001). For example, attending to a person with white hair and wrinkled skin can activate the schema of the elderly. Since schemas link information in memory, activating the schema of the elderly makes the wealth of stored information accessible for further processing. The schema can then be applied and "fill in the gaps" thus, the activated memory content can complement the perceived information. This process of schema application can contribute to category-based impressions and potential action (Brewer, 1988; Fiske & Neuberg, 1990). Thus, the activation of schemas allows the perceiver to go beyond the information given by completing missing information with the information stored in the perceiver's mind that in turn can influence the perceiver's impression of others (Mekawi & Bresin, 2015).

These specific cognitive processes open the door for biases in perceiving, judging, and behaving toward social groups and their members.

### Cognitive Biases

Below, we will focus on biases that contribute to perceiving and augmenting differences between social groups and their members: category accentuation, outgroup homogeneity, in-group favoritism, and stereotyping. These biases in social group perception are relevant because war and peace are group phenomena. They occur between individuals who define



themselves as members of different social groups, e.g., Palestinians versus Israeli, Catholics vs. Protestants, Ukrainians vs. Russians. We will come back to the operating conditions of the involved cognitive processes after having described the biases.

### Category Accentuation

When perceivers assign individuals a social category the real differences between the social groups are accentuated (Tajfel & Wilkes, 1963). That means, perceivers exaggerate similarities within categories and differences between categories (Queller, Schell & Mason, 2006). Applied to an example, when a Ukrainian citizen is assigned to their national group the individual is perceived as more similar to other Ukrainians and more dissimilar to Russians while similarly Russians are perceived to be more alike and more dissimilar to Ukrainians compared to citizens that have not been categorized into their national group.

The cognitive process of social categorization leads to category accentuation driven by assimilating exemplars within a category while contrasting them from a different category (Tajfel, 1959). This perceptual accentuation of group differences goes along with stereotype formation and attitudes toward the groups (Krueger, 1992; McGarty & Turner, 1992). Research suggests that how people devote attention contributes to category accentuation and the formation of stereotypes (Sherman et al., 2009). Building on attention theory (Kruschke, 2003), Sherman and colleagues suggest that people learn about some categories (majority, ingroups) before they learn about others. This is just because of different levels of experiences with these groups. Once they have learned the features of those groups, they will devote more attention to the *features that distinguish* minorities and outgroups from the category they have learned about first – contributing to category accentuation.

### Outgroup Homogeneity

Related to category accentuation is the phenomenon of perceiving outgroup members usually more similar to each other and thus more homogeneous than ingroup members (Boldry, Gaertner & Quinn, 2007). For example, a German may perceive Germans to be very different from each other whereas that same German may perceive all Chinese much alike.

Through the cognitive process of self-categorization, outgroup members appear to be more strongly assimilated compared to ingroup members. One reason for this is that people are more familiar with ingroup members than with outgroup members. With increased familiarity, people have usually more differentiated information stored in memory about individual ingroup members compared to outgroups (Linville, Fischer & Salovey, 1989). Thus, they have a more detailed schema representing the ingroup. When they think of ingroups they can easily access and recall different ingroup exemplars. The different individuals that come to mind have distinct features and thus, people judge the ingroup to be more variable than the outgroup about which only a generalized picture comes to mind (also see Park, Ryan & Judd, 1992).

Another explanation for the outgroup homogeneity effect is that people usually are more motivated to get an accurate perception of ingroup members because they are more relevant to them in multiple contexts compared to outgroup members. Therefore, Van Bavel, Packer and Cunningham (2008) suggested that people process information about ingroup members in greater depth that may result in a more heterogeneous representation of ingroups compared to outgroups. Research supports that notion by showing that brain regions relevant for processing depth are more strongly activated in response to ingroup than outgroup members (Van Bavel, Packer & Cunningham, 2011).

A third explanation suggests that people judge outgroups usually in comparison to the ingroup, thus based on intergroup comparison, whereas they judge ingroups and their members by comparing individuals from the ingroup, thus based on within group comparison. Within group comparison highlights individual differences whereas intergroup comparison highlights similarities among outgroup members which may contribute to the observed outgroup homogeneity effect (Haslam, Oakes, Turner & McGarty, 1995).

### Ingroup Favouritism

Another relevant bias in intergroup encounters is that people show more positive feelings, thoughts, and behaviours towards the group they belong to compared to the outgroup. Ingroup favouritism (also called ingroup bias or intergroup bias) is observed in group evaluations (Leach, Ellemers & Barreto, 2007) as well as in treatments of ingroup members compared to outgroup members (Tajfel, Billig, Bundy & Flament, 1971).

Plenty of research has demonstrated that merely categorizing people into random social groups with a shared group label (so-called minimal groups) produces ingroup favouritism (Brewer & Silver, 1978). In the original studies, Tajfel and colleagues (1971) assigned people to groups based on their indicated preferences for paintings (Kandinski and Klee group). They then asked these participants to allocate points to their ingroup and the outgroup by presenting them with matrices. Each potential allocation of points on the matrix indicated a specific strategy (e.g., fairness: same amount to the ingroup and the outgroup, maximum profit: highest amount of points for ingroup despite the outgroup getting more points, positive ingroup distinction: higher points of the ingroup compared to the outgroup). Tajfel and colleagues found that people show the tendency for ingroup favouring behaviour even if it may diminish the ingroup's maximum profit.

Ingroup favouritism is one of the most robust and well-established phenomena in intergroup relations. It has been replicated with social groups randomly assigned with letters "X" and "Y" (Billig & Tajfel, 1973; Roth & Steffens, 2014). Although the strength of favouring the ingroup is increased if people share similarities with their ingroup members, this is not a necessary precondition (Balliet, Wu & De Dreu, 2014; Billig & Tajfel, 1973). The only precondition is self-categorization.

The traditional explanation for the observation of ingroup favouritism under the minimal conditions of self-categorization suggests that people are generally motivated to perceive themselves positively (Tajfel, 1978). Self-positivity can be reached when one positively compares to other individuals; for example, when Anton is stronger than Alexej. Similarly, self-positivity can be achieved when one's ingroup is positively distinct from a relevant outgroup; for example, when the ingroup is perceived as morally superior to the outgroup. As goals and motivation influence how we perceive others, the need for positive distinctiveness on the group level can result in ingroup favouritism. Despite the robustness of the finding that merely categorizing people into "us" and "them" leads to favouring the ingroup, this motivational explanation has received little support (Aberson, Healy & Romero, 2000; Hogg & Abrams, 1990; Rubin & Hewstone, 1998) and predictions have been specified (Martiny & Rubin, 2016).

If anything, there is evidence for the reverse relationship that the more people perceive themselves positively the more they show ingroup favouritism (Aberson et al., 2000). This finding is in line with a different cluster of more information processing focused approaches explaining ingroup favouritism. These alternative approaches suggest that it is not just the motives that lead to ingroup favouritism upon self-categorization, but that activated memory content contributes to it. These approaches suggest that categorizing oneself activates self-schema thus, memory content related to the self. Building on the observation that in most cultures most people have a positive representation of themselves (De Raedt, Schacht, Franck & De Houwer, 2006; Greenwald & Farnham, 2000; Olson, Fazio & Hermann, 2007; Roth, Steffens, Morina & Stangier, 2012; Yamaguchi et al., 2007), the activated self-schema contains mostly positive information. When this positive information becomes activated and accessible by self-categorization this information affects cognition about the respective ingroup. For example, if I perceive myself as kind and caring and I self-categorize as an academic, I will also perceive academics as kind and caring (Coats, Smith, Claypool & Banner, 2000; Smith, Coats & Walling, 1999).

Several theoretical explanations have been suggested for the observation that people's self-evaluations are positively related to ingroup favouritism. For example, the self-anchoring approach (Cadinu & Rothbart, 1996) suggests that the self is used as an anchor based on which the ingroup is evaluated aligning ingroup evaluations with self-evaluations (Roth & Steffens, 2014; Vanhoomissen & Van Overwalle, 2010). Social projection or the self as an informational base are very similar approaches suggesting that people have more information about themselves than they usually have about members of a social group as such, they use their self-schema to fill the gaps and project the information about themselves to the group they belong to (DiDonato, Ullrich & Krueger, 2011; Gramzow & Gaertner, 2005; Krueger, 2007). Yet another explanation suggests that an individual's cognitions about the self and an ingroup follow the principle of cognitive consistency and are represented in a balanced fashion (Greenwald et al., 2002). When people have high positive self-esteem and they self-categorize into a social group the cognitive system then associates the group with the positive self, resulting in positive ingroup evaluations (Cvencek et al., 2021).

## Ingroup Favouritism versus Outgroup Derogation

Notably, allocating more resources to an ingroup and evaluating it more favourably than outgroups does not necessarily imply that outgroups and their members are punished, insulted, beat, tortured, or killed (Yzerbyt & Demoulin, 2010). Ingroup favouritism has been distinguished from outgroup derogation (Hamley, Houkamau, Osborne, Barlow & Sibley, 2020; Mummendey & Otten, 1998). While mere self-categorization has consistently been shown to produce ingroup favouritism, it does not imply outgroup derogation (Brewer, 1979; Hewstone, Rubin & Willis, 2002; Otten & Moskowitz, 2000). Research has shown that people favour the ingroup when it comes to assigning their ingroup more positive characteristics than the outgroup and when allocating positive resources to the ingroup relative to the outgroup. However, people make less distinction between an ingroup and an arbitrary outgroup in assigning negative traits or negative treatment (Amiot & Bourhis, 2005; Buhl, 1999).

When competition among resources, conflict between social groups, or ingroup threat come into play, ingroup favouritism may be complemented with outgroup derogation for example, in the form of reluctance to help or even harming the outgroup (Amira, Wright & Goya-Tocchetto, 2021; Weisel & Böhm, 2015). In situations of intergroup conflict, people may also show a tendency to perceive their ingroup as possessing more of what makes a human thus, assigning the human essence more to the ingroup than to outgroups (Leyens et al., 2000). Research on *dehumanization* has found that people consider some emotions to be unique to human beings (e.g., love) and they associate their ingroup more strongly than some outgroups with these unique human emotions (Vaes, Leyens, Paola Paladino & Pires Miranda, 2012).

While outgroup derogation like ingroup favouritism builds upon the cognitive processes of self-categorization and schema activation and application (Vanhoomissen & Van Overwalle, 2010), the previously cited literature suggests derogating outgroups and their members is driven by goals and motivation.

## Stereotyping

Stereotypes are cognitive schemas that contain the information that people have acquired as being typical for specific social groups. These characteristics usually contain evaluative aspects (e.g., intelligence is evaluated positively, egotism is evaluated negatively). From a social cognitive perspective, the term prejudice refers to attitudes towards social groups and their members that are based on the valence of the stereotypes associated with a social category (Dovidio, Hewstone, Glick & Esses, 2010).

People acquire stereotypes over the course of their lives via several learning mechanisms. For example, they learn stereotypes via direct experiences with category exemplars and they learn stereotypes indirectly from parents, peers, or the media. This learning is also influenced by general cognitive mechanisms such as attention (see Sherman et al., 2009). As such, cognitive mechanisms can lead to biased representations of social groups and their



members as it is demonstrated in the phenomenon of *illusory correlations* (Hamilton & Gifford, 1976; Sherman et al., 2009). This phenomenon indicates that people perceive and remember associations between social groups and characteristics where there are no objective co-occurrences. Consider the example that someone observes a majorities' group members to behave lawfully 18 times out of 26 and criminally 8 times, while observing a minorities' group members to behave lawfully 9 times out of 13 and criminally 4 times. Despite the same ratio (i.e., 0.3) of criminal behaviour of members from both groups, perceivers judge the minority group more criminal than the majority group. Thus, despite stereotypes often containing a "kernel of truth" about social groups and their typical members (Jussim, Crawford & Rubinstein, 2015) they can also reflect biased representations that are false.

Once stereotypes are established and associated with social groups-irrespective of being correct or incorrect representations of reality-they form part of the individual's memory. In line with a social cognitive account on stereotyping and prejudice, perceiving, judging, and treating individuals follows the sequence of social categorization, stereotype activation and stereotype application (Brewer, 1988; Devine, 1989; Macrae & Quadflieg, 2010; Yzerbyt & Demoulin, 2010).

First, based on their features along with the accessibility of categories in the perceiver, a target person is assigned to a social category (cf. Blair, Judd & Fallman, 2004 for stereotyping without categorization). Second, the stereotypes that are associated with the respective category usually become activated. What stereotypes and attitudes are activated depends on the context (Wittenbrink, Judd & Park, 2001; with some researchers arguing that they depend on the context only, see Payne, Vuletich & Lundberg, 2017). For example, different stereotypes of Black people may come to mind when one meets a Black person at a boxing match versus a music festival. The context also influences whether a respective person is evaluated as more or less positive (Blair, 2002; Gawronski & Sritharan, 2010). It is an unresolved debate on whether contextual variations in attitudes towards a social category member are due to variation in social categorization (Fazio, 2007), variations in what category exemplars become accessible (Schwarz, 2007), or which specific set of stereotypes associated with a social category becomes activated (Gawronski & Bodenhausen, 2006, 2017). Initial evidence most strongly supports the latter account (Ma, Correll & Wittenbrink, 2016). The activation of stereotypes and prejudice also depends on the features of the target person (Livingston & Brewer, 2002; Ma, Correll & Wittenbrink, 2018), and of the perceiver (Degner & Wentura, 2009). For example, people differ in the strength of category-stereotype associations (Fazio, Jackson, Dunton & Williams, 1995), and the associative strength determines the extent of stereotype-activation (Gawronski, Ehrenberg, Banse, Zukova & Klauer, 2003; Gawronski, Geschke & Banse, 2003). Once activated, stereotypes and prejudice may be applied in the current judgment and decision-making processes. Hence, people may interpret the person and their behaviour in light of the stereotypes which may in turn influence their judgment and behaviour (Blair, Judd & Chapleau, 2004; Correll et al., 2007; Correll, Wittenbrink, Crawford & Sadler, 2015).

Thus, social categorization and schema activation and application can lead to biased perception, judgment, and treatment of individuals based on their group membership. Notably, despite the wealth of research on how the cognitive processes of social categorization and stereotype activation and application affect perceptions, judgments and behaviour towards an individual person, little research has addressed how the cognitive processes of schema activation and application affect the perception of collectives and social groups as a whole (Alt & Phillips, 2022).

### Automaticity and the Crucial Role of Motivation and Goals

Now as we have described biases in processing information about social groups and their members, we will use this section to discuss the conditions under which related cognitive processes occur. Like cognitive processes in general (see Figure 1), also the cognitive processes relevant for the described biases occur under certain conditions so called, *operating conditions* (Gawronski & Bodenhausen, 2011).

In line with the metaphor of the cognitive miser, the human mind would easily be overwhelmed by the plentitude of information in the environment (Bargh, 1999). The processes of social categorization, schema activation and application, which contribute to explaining the described biases, may help counteracting this by simplifying the complex social world (Brewer, 1988; Fiske & Neuberg, 1990). They can be considered particularly useful in guiding a perceiver through the wealth of information if they occur in an automatic fashion and in fact save cognitive energy (Trujillo, 2019).

### Evidence of Automatic Processing

Much research on social categorization, stereotype activation and application has investigated the operating conditions. This large body of research indicates that every step in this sequence can occur in an automatic fashion (Roth, Deutsch & Sherman, 2019). People categorize others without being fully aware of it (Rule, Ambady, Adams & Macrae, 2008) and without intending to do so (Wiese, Schweinberger & Neumann, 2008). Similarly, stereotypes become activated bypassing awareness (Degner, Wentura, Gniewosz & Noack, 2007; Wittenbrink, Judd & Park, 1997) and intention (Govorun & Payne, 2006; Payne, Cheng, Govorun & Stewart, 2005). Furthermore, stereotypes can be applied in a respective situation in a similarly automatic fashion (Correll, Park, Judd & Wittenbrink, 2002; Lombardi, Higgins & Bargh, 1987; Macrae, Bodenhausen, Milne & Wheeler, 1996).

Research has also shown that self-categorization leads to ingroup favouritism right after categorization and that this occurs under time pressure indicating its efficiency (Ashburn-Nardo, Voils & Monteith, 2001; Cvencek, Greenwald & Meltzoff, 2012; Olson, Crawford & Devlin, 2009; Otten & Moskowitz, 2000). Ingroup favouritism can also occur without the awareness of the perceiver (Otten & Wentura, 1999) and it does not need the perceiver's attention to group membership (Van Bavel et al., 2008, 2011). Furthermore, people

assign ingroups more uniquely human emotions than outgroups without intention (Boccatto, Cortes, Demoulin & Leyens, 2007).

Altogether there is a wealth of empirical evidence suggesting that social categorization including self-categorization and schema activation and application are efficient processes implying that they occur in split seconds, that they are facilitated when people are under time pressure or when other things keep them busy. Furthermore, they occur with minimal attention, without people noting it and even without intending it (Roth et al., 2019).

### The Crucial Role of Goals and Motivation

Importantly, despite relevant social cognitive processes occurring conditionally automatically people's goals and motivation determine the direction and the extent of the resulting biases. For example, if an outgroup is perceived as highly threatening because it has the power to control or harm the ingroup (i.e., an aversive state that people aim to avoid or defend) the outgroup homogeneity effect is increased (Corneille, Yzerbyt, Rogier & Buidin, 2001). Ingroup favouritism is increased when people are made aware of their mortality (Harmon-Jones, Greenberg, Solomon & Simon, 1996) due to their motivation to regain control over their own mortality by identifying with a persisting collective (Fritzsche, Jonas & Fankhänel, 2008). Furthermore, ingroup favouritism was enhanced when the concept of loyalty was experimentally made salient and thus was activated and ready for processing in the perceiver's mind compared to activating equality (Zogmaister, Arcuri, Castelli & Smith, 2008). Also, the process of categorizing people either into the ingroup or the outgroup is affected by people's motivation. An illustration of this is the *ingroup overexclusion effect* which refers to the tendency of highly identified group members to categorize other people into the outgroup to ensure that the ingroup is more favourable than the outgroup (Castano, Yzerbyt, Bourguignon & Seron, 2002; Leyens & Yzerbyt, 1992). Self-enhancement or self-protection goals promote the activation of stereotypes and can intensify prejudice consistent judgments of outgroup members (Fein & Spencer, 1997; Jordan, Spencer & Zanna, 2005). These exemplary research findings illustrate that goals and motivation can intensify biases in intergroup relations.

Most of the research on the effects of goals and motivation, however, has focused on the reduction of these biases, specifically on the reduction of stereotyping and prejudice. People's general motivation to respond without prejudice has consistently been shown to reduce the use of negative stereotypes and prejudice in evaluating and judging outgroups and their members (Devine, Plant, Amodio, Harmon-Jones & Vance, 2002; Dunton & Fazio, 1997). For example, being motivated to form an accurate impression of an individual (Kruglanski & Freund, 1983; Pendry & Macrae, 1994; von Hippel, Silver & Lynch, 2000) or aiming to willingly suppress the influence of stereotypes and prejudice in judgments of outgroup members reduces their application (Macrae, Bodenhausen, Milne & Jetten, 1994; Wyer, 2007; for more detail on stereotype suppression see chapter 35 on social categorization, stereotypes, and prejudice in this handbook). Thus, most of the studies suggest that using stereotypes and prejudice depends on people's motivation and goals (Dasgupta, 2004;

but see Blair, Judd, & Fallman, 2004 for goal-independence of feature-based stereotyping). Similarly, ingroup favouritism appears to be reduced when fairness and egalitarian goals are activated (Çoksan & Cingöz-Ulu, 2022; Jetten, Spears & Manstead, 1997).

Notably, research has revealed boundary conditions for motivation and goals to reduce biases although, most of this research has investigated stereotyping and prejudice: This research indicates that people are only able to control the influence of stereotypes and prejudice in their judgments when they had time and sufficient processing capacity to implement their goal (i.e., not being under time pressure or distracted with other things; Correll et al., 2002). In general, preventing stereotyping and prejudice seems to be effective for those who are intrinsically motivated to be non-prejudiced (compared to being instructed to avoid it or motivated externally by for example incentives; Devine & Sharp, 2009) and those who hold egalitarian goals (Glaser & Knowles, 2008; Moskowitz, Gollwitzer, Wasel & Schaal, 1999; Moskowitz & Li, 2011; Zogmaister et al., 2008).

### Implications for Collective Conflicts

There is little direct evidence on how information processing contributes to collective conflicts. However, the reviewed research has demonstrated that the social cognitive processes can lead to biases in people's perception and judgment of social groups and their members. Therefore, they may influence the societal climate (Froehlich & Schulte, 2019) and even people's support for war (Sides & Gross, 2013).

### Implications of the Described Biases for Intergroup Conflict

The category accentuation bias in the perception and judgment of others involves the exaggeration of differences between social groups (Queller et al., 2006). Along with accentuation of intergroup differences the associated stereotypes can become stronger (Sherman et al., 2009). Furthermore, the stereotypes associated with outgroups are often more negative than the stereotypes associated with ingroups because a) outgroup information is rarer than information about the ingroup (see Sherman et al., 2009), b) more positive characteristics are associated with the ingroup via the ingroups' association with the positive self-schema (Vanhoomissen & Van Overwalle, 2010) and c) outgroup information is often learned after information about the ingroup (Van Rooy, Van Overwalle, Vanhoomissen, Labiouse & French, 2003). Additionally, the outgroup homogeneity bias can go along with an overgeneralization in that outgroup members are attributed more stereotypes than ingroup members (Park & Rothbart, 1982).

Overall, the described biases of category accentuation, outgroup homogeneity, ingroup favouritism, along with stereotyping contribute to perceiving an increased distinction between the ingroup and the outgroup along with judging the ingroup and their members as more favourable (e.g., Brewer, 1979). Additionally, if outgroups are perceived as more homogeneous compared to ingroups, this suggests that the outgroup is not only perceived to be less favourable, but all members are more similarly unfavourably compared to ingroup



members (Rubin & Badaea, 2007). Altogether, the described biases suggest that perceived differences between social groups and their members are increased and that this is done in a way that leads to a more positive image of the ingroup compared to the outgroup.

### Biases that Lead to Confirming Ingroup Favouring Intergroup Differences

Additionally, to the previously described biases, research indicates that people's preconceptions influence what aspects of a situation they attend to and how they process that information (Plaks, Stroessner, Dweck & Sherman, 2001). Thus, a range of biases in how people process information can maintain the same. If for example, a perceiver has concerns about a certain outgroup (e.g., Russians) this perceiver may particularly draw their attention to non-normative behaviour of respective outgroup members (Sherman, Macrae & Bodenhausen, 2000). If that person for example reads about a Russian being involved in a crime versus engaged in a charity, the person will particularly draw their attention to the crime. This in turn confirms the person's initial concerns. *Confirmation biases* can maintain cognitive schemas in general and group stereotypes in specific (Nickerson, 1998). Confirmation biases come in different forms (Klayman, 1995).

One form of confirming differences between ingroups and outgroups consists in how people attribute reasons to people's behaviour (Shaver, 2016). For example, in a study conducted in 1989, US American college students in addition to favouring the US government over the Soviet government, tended to choose negative explanations for Soviet government actions and positive explanations for US government actions (Burn & Oskamp, 1989). This research indicates ingroup favouritism in political judgments and explanations of actions in line with that bias, potentially confirming it.

Research has distinguished between internal and external attributions. Internal attributions refer to explaining people's behaviour by their dispositions. External attributions refer to explaining people's behaviour by situational constraints thus driven from outside influences (Heider, 1958; Kelley, 1973). People tend to attribute positive ingroup behaviours and negative outgroup behaviours to dispositional causes (i.e., internal attribution), but negative ingroup and positive outgroup behaviours to situational causes (i.e., external attribution; *ultimate attribution error*; Hewstone, 1990). If people are prejudiced this bias in attribution is complemented by people attributing stereotype consistent behaviours to internal factors and inconsistent behaviours to external forces which in turn confirms the stereotypes (Sherman, Stroessner, Conrey & Azam, 2005). Since internal causes are more stable and indicative of people's personalities than external explanations, this bias in attribution confirms and maintains ingroup favouring explanations of behaviours.

Ingroup favouring portraits have also been found in the communication of past intergroup conflicts (Oeberst, von der Beck, Matschke, Ihme & Cress, 2020). Oeberst and colleagues have analyzed reports of 35 different conflicts reported in different languages on Wikipedia. Their results show that the ingroup (which differed depending on the respective language of the author) was systematically presented as more favourable than the outgroup

and the outgroup as more immoral and more responsible for the conflict. This indicates that reporting of past intergroup conflicts facilitates the maintenance of intergroup hostility even when reported on relatively neutral platforms.

Intergroup differences in general and ingroup favouring perceptions and judgments are also confirmed and maintained using differentiating language (*linguistic intergroup bias*; Maass, 1999). The linguistic category model (Maass, 1999) suggests that people describe other people's behaviour in more or less abstract terms. Specifically, describing a person's behaviour in descriptive action verbs is a low abstract level of description (e.g., he acted immoral) whereas assigning people adjectives based on observed individual behaviours is a more abstract way of describing same (e.g., he is immoral). The more abstract descriptions suggest that the observed behaviour reflects a stable characteristic of the actor (Semin & Fiedler, 1988). In line with this theorizing, empirical evidence has demonstrated that people tend to describe positive ingroup and negative outgroup behaviours in more abstract language whereas negative ingroup and positive outgroup behaviours are described in more concrete language (Maass, Salvi, Arcuri & Semin, 1989). This tendency implies dispositional inferences for positive ingroup behaviours and negative outgroup behaviours and the reverse for negative ingroup and positive outgroup behaviours. This bias mirrors how cognition is affecting the use of language that in turn can confirm and enforce ingroup favouritism. Carnaghi et al. (2008) added that once a perceiver categorizes a target person (e.g., Paul is a Dane) instead of describing the person with a corresponding adjective (e.g., Paul is Danish) increases stereotype application and makes alternative categorization less likely (e.g., Paul is a German). Thus, the use of language when perceiving others increases and maintains the described biases.

Notably, preconceptions lead to specific expectancies about future behaviours of social groups and their members. Thus, correct as well as incorrect preconceptions influence what we expect from people (Hamilton, Sherman & Ruvolo, 1990) and those expectations can fulfill themselves. Merton (1948) suggested that at the beginning, a false expectancy can evoke a new behaviour which makes the originally false conception become true. This is because people's expectations, correct or false ones, can influence how a perceiver behaves towards others. For example, if someone expects another person to be violent this person will tend to ask questions about violent behaviours. This person will then recollect their memory of this behaviour that they have performed even if it was at a rare instance. In turn, the answer will confirm the initial expectation in the perceiver that this person is in fact violent. Research on different areas of interaction for example, experimenter-participant interaction, teacher-student interaction, casual interactions, and bargaining and negotiating have provided substantial support that expectancies can self-fulfill even if they have no substance initially (Miller & Turnbull, 1986). Merton (1948) illustrated the potential impact of such *self-fulfilling prophecy*, on the example of war between nations:

it is believed that war between two nations is "inevitable". Actuated by this conviction, representatives of the two nations become progressively alienated, apprehensively countering each "offensive" move of the other with a

"defensive" move of their own. Stockpiles of armaments, raw materials, and armed men grow larger and eventually the anticipation of war helps create the actuality. (p. 195)

This illustrates how favourable representations of the national ingroup may influence group interactions in a way that proves this view by the social groups' own actions. In summary, the discussed biases along with biases that maintain and even fortify them and that are influenced by how the human mind processes social information can have conflict escalating consequences.

## Conclusion

The present chapter illustrated that information processing mechanisms can contribute to biased perceptions and judgements of social groups and their members. We have highlighted social categorization and self-categorization as well as schema activation and application. These processes along with general cognitive mechanisms of attention and learning contribute to explaining the discussed biased perceptions and judgments as reflected in category accentuation, outgroup homogeneity, ingroup favouritism, and stereotyping. Altogether, the way people process information easily leads to perceptions of exaggerated differences between people that are assigned to distinct categories (i.e., category accentuation), and exaggerated similarities between members of groups that people do not belong to (i.e., outgroup homogeneity). They also contribute to preferences for groups that people categorize themselves into (i.e., ingroup favouritism) as well as the application of more positive stereotypes to ingroups and more negative stereotypes to outgroups.

We have presented evidence that the cognitive processes involved in creating these biases can occur conditionally automatic. We mentioned that this can be adaptive because it allows the individual to be able to take decisions – if needed, in split seconds and even when one is distracted. Despite their automaticity, the reviewed literature suggests that goals and motivation can exaggerate or decrease the resulting biases depending on the direction of the respective goal. As such, at least to some extent, people can control the discussed biases if they are motivated to do so.

Notably, the discussed biases are complemented by additional biases that foster and maintain ingroup favouritism and more positive stereotypes about ingroups compared to outgroups. First, people pay attention to aspects that confirm their biases. Second, they interpret people's behaviour in a way that confirms their biases. Third, people use specific language that facilitates and maintains ingroup favouritism and they describe intergroup conflicts in a way that favors their ingroup and even derogates the outgroup. These additional biases along with the self-fulfillment of expectations bear the potential to reinforce and maintain intergroup conflict.

We hope that the present chapter elucidated that different people could perceive the same intergroup situation differently and that this can be explained by how people process

information in the light of their own goals, motivation, and their past experiences stored in their memory. Based on the reviewed evidence, we speculate that the discussed biases along with mechanism of their maintenance have the potential to fuel intergroup conflict because members of both groups in conflict perceive their ingroup exaggeratedly different and superior to the outgroup and they may both even attribute the responsibility for war to the respective outgroup (see Oeberst et al., 2020).

If people from the conflicting parties perceive their perceptions as reflections of reality the biases in favour of their own group and their ingroup's position, the resulting intergroup distinctions and perceived incompatibility between the groups could negatively affect intergroup relations (Loughnane, Roth & van Tilburg, 2023). In a climate of war, each social group will probably have their own biases favouring the ingroup and derogating the outgroup. This can result in diverging subjective realities between the ingroup and the outgroup contributing to malicious intergroup interactions (Deutsch, 1983). These interactions may foster intergroup conflict and hinder conflict resolution communication and the search for conflict resolution options (Demoulin, Leyens & Dovidio, 2013).

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