Remembering the past, experiencing the present,

and predicting the future:

Social-cognitive perspectives on intergroup contact

By

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A thesis submitted in partial fulfilment of the requirements of the University
of East Anglia for the degree of Doctor of Philosophy.

Research undertaken in the School of Psychology, University of East Anglia

January 2019

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Abstract

One of the most robust interventions for reducing prejudice is intergroup contact. Whilst the affective processes involved in prejudice reduction via intergroup contact are becoming well understood, this thesis explores novel social-cognitive factors surrounding intergroup contact. Two strands of research explore how people look back at past contact and look forward to future interactions with unfamiliar group members. Experiments 1 to 4 examine how experiences of fluency in recalling past contact may influence people's perceptions of their intergroup contact, and in turn influence outgroup attitudes and future contact intentions. Utilising two different paradigms in Chapter 2 and 3, no effect of the manipulation of contact retrieval fluency was found on any of the outcome variables. Potential reasons for this null-effect are discussed, including memory biases, inference processes regarding the contact-attitude relationship, and affective and normative components of prejudice. The second strand of research described in Chapter 4 and 5 moves focus from the past to the future, to examine generalisation of intergroup contact to trust behaviour towards novel group members. This process of member-to-member generalisation was examined within a Trust Game paradigm, where group membership and interaction valence were manipulated. Experiments 5 to 8 demonstrate that people use their experiences with group members to inform decisions to trust unknown individuals in the future. Member-to-member generalisation was enhanced for negative compared to positive experiences, but was particularly attuned to violations of previous group-based beliefs. Together, this thesis highlights the importance of social-cognitive processes involved in intergroup contact generalisation to attitudes and behaviour, and shows the potential of using laboratory-based behavioural measures to examine intergroup contact.

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Acknowledgements and declarations

There are many people that I would like to give my sincere thanks to, who have supported me in many ways and helped to get to where I am now. Firstly, I would like to express my regard to the UEA School of Psychology. The School has provided me with a supportive environment in which I could work and develop myself as a researcher and has given me the opportunity to come to the United Kingdom for my PhD. I would like to express my gratitude to the researchers within the school who have provided feedback and other help over the last years. I would also like to thank the numerous undergraduate students within the School of Psychology who have taken part in my studies over the last three years, without whom I could not have conducted my research and completed this thesis.

Secondly, I would wholeheartedly like to thank my supervisors Charles Seger and Rose Meleady for their support and guidance throughout my PhD. Thank you, Charlie, for always having an open door and a listening ear, for giving me the freedom to explore my own research ideas, and for providing so many opportunities for me to develop myself as a researcher and teacher. Thank you for involving me in many different research projects and helping with my workshops. You have always supported me, gave me encouragement when I needed it, and allowed me to explore, try out new things, and learn from my mistakes. Thank you, Rose, for providing a critical sounding board to my ideas, for giving me space to do my own work, and for helping me to clarify and improve my thinking. Thanks to you as well for offering me opportunities to grow as a researcher and teacher, including me in some of your own research projects and letting me teach in your module. I truly appreciate our brainstorming sessions in the last few months of the PhD, which have tremendously helped me to reflect on and improve my writing and to organise my ideas.

Thirdly, I would like to express my gratitude to my PhD colleagues who have given my so much support of the last three years. In particular my fellow cohort PhD students Lisa, Marianna, Becca, and Laura, without whom I would not have been able to remain happy and sane while finishing my PhD. Thank you for supporting me, understanding my troubles, offering help and listening to my moaning. I hope to see you all again in the future.

Lastly, I would like to thank my family and friends for their support and interest in my work and my research. Thank you to my partner Sven, who has been

my rock throughout this endeavour. Thank you for your endless patience and for supporting me and following me wherever this strange career is taking me. Thank you to my father for developing and nurturing my interest in psychology, for reading every dissertation and thesis I have written, and for the stimulating discussions about the relevance and importance of my work. Lastly, thank you to my sister and my mother for offering endless love and support, even though being further away was not always easy. Without my family, I would not be here today.

I declare that the work contained in this thesis has not been submitted for any other award and that it is all my own work. I also confirm that this work fully acknowledges opinions, ideas, and contributions from the work of other

CHAPTER 1

Introduction and literature review

Human history is dominated by intergroup conflict. In the twentieth century alone, at least 108 million people were killed in wars, and estimates for the total number killed in human history ranges from 150 million to 1 billion people (Hedges, 2003). Whether it has been over property such as land or money, or about ideology and beliefs, conflict between people from different groups is a universal human phenomenon. A current day example is the issue of migration. Due to large-scale conflicts between ideological groups and governments within and between nations, many people have fled warn-torn countries to come to safe Western countries. However, people with different political backgrounds do not agree on how to deal with large-scale immigration, leading to conflict between these different political groups. For example, UK public opinion polls show that immigration is perceived as one of the most important issues facing the British nation, and British views are generally unfavourable towards immigration (Blinder & Richards, 2018). As these conflicts between political or ethnic groups can and do lead to discrimination, aggression, and racially or politically motivated violence (Blinder & Richards, 2018; Burnett, 2011), different disciplines within the social sciences such as psychology, sociology, and political science have been studying these problems from different angles to try to understand the causes and consequences of intergroup conflict.

One of the most profound theories on overcoming prejudice is Gordon Allport's Contact Hypothesis (Allport, 1954). This theory states that engaging in positive contact with individual outgroup members reduces prejudice towards the individual, and this effect can generalise towards the outgroup as a whole. Over the last sixty years, the contact hypothesis has been studied extensively and was developed into a full integrative theory of intergroup contact, incorporating a wide range of empirical findings, mediating variables, and potential mechanisms (Brown & Hewstone, 2005). Meta-analyses have confirmed that the intergroup contact effect on prejudice is robust and persistent (Kende, Phalet, Van den Noortgate, Kara, & Fischer, 2017; Pettigrew & Tropp, 2006; Pettigrew, Tropp, Wagner, & Christ, 2011). This thesis is guided by intergroup contact theory, and explores novel areas and approaches to the study of prejudice reduction.

Overview of the thesis

The overarching aim of this thesis is to provide a social-cognitive perspective on intergroup contact, by examining how people look back and remember past intergroup contact, how people behave when engaging in contact, and how people look forward to future interactions with unfamiliar group members. This cognitive perspective is lacking in most research on intergroup contact. The second aim of this thesis is to go beyond standard measures of intergroup contact and outgroup attitudes, and explore experimental and behavioural methodologies to study intergroup contact. As the overarching theory of this thesis is intergroup contact, Chapter 1 provides a general introduction and overview of the existing intergroup contact literature. In this chapter, I review how prejudice is formed and measured, how and when intergroup contact reduces prejudice, and what other positive outcomes of intergroup contact have been established.

The first research strand of the thesis, consisting of Chapter 2 and 3, examines meta-cognitive experiences of retrieval fluency when remembering past intergroup contact, and how retrieval fluency affects people's perceptions of their contact with the outgroup, attitudes towards the outgroup, and intentions to engage in future contact with the outgroup. Inspired by the literature on attitude formation, evaluative judgment, and heuristics, two different paradigms were adapted that manipulate experiences of retrieval fluency when remembering past contact. Chapter 2 describes three experiments based on the ease-of-retrieval paradigm, in which people recalled specific instances of contact with the outgroup. Chapter 3 describes two experiments that utilise a behaviour salience paradigm, where previous intergroup contact is made salient through endorsement of statements about contact behaviours. Through both these paradigms, the fluency of contact retrieval is manipulated, and the effect on perceptions of contact, outgroup attitudes and future contact intentions is examined.

The second research strand of the thesis, consisting of Chapter 4 and 5, changes focus from the past to the future, and examines how people use their contact experiences with group members to inform decisions to trust novel group members in future encounters, a process termed member-to-member generalisation. This strand of research combines literature on individual-to-group generalisation and group-to-individual impression formation to examine how contact experiences

generalise beyond general attitudes and inform behaviour towards other group members. A novel paradigm was developed that utilises the Trust Game (Berg, Dickhaut, & McCabe, 1995) to create positive or negative interactions with ingroup or outgroup members in a controlled lab environment. Chapter 4 describes two experiments that focus on the generalisation of positive experiences in the Trust Game, and examines the influence of group membership on member-to-member generalisation. In Chapter 5, trust violation as well as reciprocation is included to examine how contact valence influences generalisation of trust behaviour. Changes in trust behaviour in outgroup and ingroup partners are tracked over time to examine generalisation.

The final chapter of the thesis provides an overall discussion of the thesis. This chapter gives an overview of the major findings, both in examining perceptions of past intergroup contact, and generalisation of contact to future behaviours. Moreover, the most important implications of the thesis are described in examining social-cognitive processes involved in intergroup contact and targeting issues with self-report measures. Lastly, the final chapter reflects on limitations of the research and future directions.

This chapter gives an overview of the literature on intergroup contact, which provides the theoretical base for the research in this thesis. Before reviewing research on intergroup contact, I first present a background on prejudice formation and the central role of social identity and social categorisation in understanding prejudice, as well as provide an overview of the measurement of prejudice. After this introductory section, I review the literature on intergroup contact as a method for prejudice reduction, from early hypothesis (Allport, 1954) to integrative theory (Brown & Hewstone, 2005). Moderating conditions and underlying affective and cognitive processes of contact generalisation are reviewed. The last section of the literature review describes outcomes of intergroup contact that go beyond self-reported outgroup attitudes as the sole outcome measure, as is also central to this thesis.

Prejudice and intergroup bias

Before diving into literature that examines intergroup contact as a mechanism to reduce prejudice, it must first be established what prejudice is and how it develops. The term prejudice refers to a negative attitude towards a group or towards members of a group (Stangor, 2009). Researchers use the term prejudice to refer to hostile feelings and negative attitudes towards a social group. These negative attitudes towards other groups can have detrimental consequences for intergroup relations and social cohesion, often leading to behavioural expressions of discrimination and violence (Cuddy, Fiske, & Glick, 2007; Kurdi et al., 2018; McConnell & Leibold, 2001; Schütz & Six, 1996). Prejudice differs from stereotyping, even though these two terms are often used in the same context. Stereotypes are traits or other characteristics that are most commonly associated with groups or group members. Thus, while a stereotype is a specific trait that is thought to be common or characteristic of the group, prejudice indicates a negative attitude or generally negative evaluation of a group (Stangor, 2009).

Prejudice can arise from very basic social cognitive processes of social categorisation, by differentiating between ingroups and outgroups (Fiske, 2000). Categorisation comes from the need to simplify and structure the large and overwhelming amount of information that people receive on a daily basis. There is a

basic need to divide people into groups, and to differentiate individuals from different groups as much as possible. In order to create a simple view of the world, we want to perceive people from the same group as very similar to each other, and very different from people from other groups (Dovidio, 2001; Hamilton & Trolier, 1986).

Social categorisation creates two types of groups, the groups we belong to (ingroups), and the groups that we do not belong to (outgroups). According to the influential Social Identity Theory (Tajfel, Billig, Bundy, & Flament, 1971; Tajfel & Turner, 1979), being a member of a group plays a vital role in shaping identity, maintaining self-esteem, and providing a sense of belonging. People are motivated to differentiate ingroups from outgroups, and keep their ingroup identities positive. Social identity is characterised by three components: self-categorisation (i.e. recognising membership to the group), group self-esteem (i.e. a positive or negative evaluations connected to being a member of the group), and commitment (i.e. feeling emotionally involved with the group) (Ellemers, Kortekaas, & Ouwerkerk, 1999).

Two different strategies can help to maintain a positive social identity: ingroup love and outgroup derogation (prejudice). These two strategies can exist separately and are independent from each other. Both high ingroup identification and negative attitudes towards outgroups can increase prejudice towards outgroups and influence intergroup attitudes (Brewer, 1999). Moreover, strong identification with the ingroup can lead to both favouritism and devaluation of ingroup members (Brewer, 1999; Castano, Yzerbyt, Paladino, & Sacchi, 2002; Marques, Yzerbyt, & Leyens, 1988). People who highly identify with the ingroup will often show preference for ingroup members over outgroup members. However, when ingroup members show negative deviant behaviour, they are punished more strongly than similarly behaving outgroup members (Black Sheep Effect; Marques et al., 1988).

Attitudes towards social groups are commonly measured using self-report measures such as Likert scales (e.g. Cinnirella, 1997; McConahay, 1986), feeling thermometers (Haddock, Zanna, & Esses, 1993), and semantic differential scales (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). These scales ask people explicitly how they feel towards specific groups, which traits they associate with the groups, and how much they feel part of their ingroup. However, implicit measures of group perceptions have been used more over the last few decades, for example the Implicit Association Test (IAT; Greenwald, Mcghee, & Schwartz, 1998), affective

priming (Fazio, Jackson, Dunton, & Williams, 1995), and semantic priming (Wittenbrink, Judd, & Park, 1997). These measures, by using reaction times and priming paradigms, aim to measure associations that lie outside of conscious awareness. Now, with neuroimaging methodologies become more widely available, the neural underpinnings of prejudice are also being studied more (for a review, see Amodio, 2014).

Expressing prejudice is generally frowned upon in modern Western societies, and these social norms and values often lead to suppression of prejudice. However, prejudice is often still learned from an early age through multiple processes of categorisation, social norms exposure, vicarious learning, and social-cognitive development (Aboud, 2003; Raabe & Beelmann, 2011; Rutland, 1999). Therefore, people often hold conflicting needs to express and supress prejudice (Crandall & Eshleman, 2003; Crandall, Eshleman, & O'Brien, 2002). When prejudiced beliefs are expressed, this is mostly accommodated by other beliefs that justify the prejudice. Moreover, social norms and beliefs can both suppress prejudice when it is perceived as unacceptable, but can also facilitate the expression of prejudice when it is normalised in a given social context (e.g. football fans expressing racial slurs during football matches). According to the justification-suppression model of prejudice, justification and suppression factors both interact with genuine prejudice to lead to how prejudice is expressed (Crandall & Eshleman, 2003).

Thus, while social norms and personal beliefs might prevent the expression of prejudice, the negative attitudes that people hold about groups still find a way to be expressed, and can lead to discrimination, exclusion, and violence. In a recent poll, 41% of the British public indicate that they have suffered from some form of prejudice (Dinic, 2016). According to the British Social Attitudes Survey, about one in four British people polled admit to being racially prejudiced (Kelley, Khan, & Sharrock, 2017). The number of hate crimes targeting race, sexual orientation and gender, religion, or disability, has increased over the last years (O'Neill, 2017). Moreover, in light of the EU referendum held in 2016, immigration is a highly salient topic within the UK, and EU immigrants have become a target for discrimination in the UK (Blinder & Richards, 2018). Together, these data show that prejudice is still prevalent and problematic within the UK, making research about reducing prejudice highly relevant.

Intergroup contact and prejudice reduction

Social scientists have studied ways to reduce prejudice and discrimination and to increase social cohesion for decades. One of the most robust ways of reducing prejudice studied over the last 60 years is intergroup contact. In his book *The Nature of Prejudice* (Allport, 1954), Gordon Allport described his original Contact Hypothesis. Allport stated that contact with outgroup members under optimal conditions reduces prejudice towards that individual and can generalise and reduce prejudice towards the outgroup as a whole. Allport held that intergroup contact would be effective under specific conditions, namely equal status between the groups within the contact situation, intergroup cooperation, common goals, and support of authorities, law, or custom (Allport, 1954).

Since the publishing of Allport's book, numerous studies have been conducted to test the intergroup contact hypothesis. The effect of intergroup contact on prejudice has been studied across a wide range of target outgroups, situations, and participant characteristics. In 2006, Thomas Pettigrew and Linda Tropp published a large meta-analysis to establish whether the contact hypothesis was robust (Pettigrew & Tropp, 2006). This meta-analysis spanned over 60 years of research, consisting of over 700 samples from over 500 studies, conducted in 38 different countries. The meta-analysis showed a small but reliable effect size, showing that intergroup contact does indeed reduce prejudice. This effect was found in a wide variety of domains, for different target groups, and across different participant criteria such as age and gender. This shows that intergroup contact is a reliable way of reducing prejudice and possibly improving intergroup relations (Pettigrew & Tropp, 2006).

Conditions and moderating influences of intergroup contact

In the original Contact Hypothesis (Allport, 1954), four conditions for optimal intergroup contact were specified, namely equal status within the contact situation, common goals, intergroup cooperation, and authority support. In their meta-analyses, Pettigrew and Tropp found that studies where a structured contact program was developed to meet Allport's optimal conditions showed a stronger reduction of prejudice than other samples. However, the contact effect was still visible when the conditions were not met (Pettigrew & Tropp, 2006; Pettigrew et al.,

2011). A multilevel examination of the contact conditions (Koschate & van Dick, 2011) additionally showed that cooperation acts as a mediator of the relationship between the other conditions and prejudice. Equal status, common goals, and authority support in intergroup contact lead to reduced prejudice through increased cooperation with the outgroup (Koschate & van Dick, 2011). In the following section, I will briefly review the four conditions that Gordon Allport described as necessary for successful contact, and describe three additional moderating factors to the effectiveness of contact, namely the influence of group salience, contact valence, and belief systems.

Equal status. Allport stated that the contact situation must be structured to be with equal partners. In situations under unequal conditions, contact is only likely to reinforce stereotypes and negative hierarchical perceptions of the outgroup. Interestingly, Pettigrew and Tropp (2006) found that, within samples that used structured contact programs, the existence of equal status in the contact situation did not affect the strength of the contact-prejudice effect. This shows that, when other conditions are met, equal status within the contact situation does not influence the effectiveness of contact on reducing prejudice (Pettigrew & Tropp, 2006).

While Allport focussed on equal status in the direct contact situation, Brewer and Kramer (1985) argue that the wider picture needs to be taken into account when considering status, bearing in mind historical and psychological status differences as well as status within the direct situation. This view is supported by research looking into the role of majority/minority group status in intergroup contact. Studies have found that the contact-prejudice relation is weaker among minority members than majority members (Binder et al., 2009; Tropp & Pettigrew, 2005; Vezzali, Giovannini, & Capozza, 2010). Moreover, cultural inequality and hierarchy has been found to play a role in the contact-prejudice relation. The effect of contact on prejudice is weaker in hierarchical cultures than egalitarian cultures (Kende et al., 2017).

Common goals and intergroup cooperation. In his book *The Nature of Prejudice*, Allport (1954) gives the example of a multi-ethnic athletic team. Ethnicity does not matter in the context of a sports team, as every team member is working together to achieve a common goal. Having a common goal to work cooperatively together with people from other groups increases the chances of contact to reduce prejudice towards the group. Cooperation and common goals are two conditions that

are strongly related to each other. Although the literature shows that people often display ingroup favouritism in cooperative settings (Balliet, Wu, & De Dreu, 2014), less ingroup bias occurs if intergroup cooperation is cross-cutting, where people from both groups have to share skills and knowledge to complete the task together (Brewer, 1996). However, it should be noted that Pettigrew and Tropp's (2006) meta-analysis again showed that samples that included common goals and cooperation did not differ in the contact effect size from samples that did not meet these criteria. Thus, while working cooperatively together with outgroup members towards a common goal is beneficial for contact, contact can be effective without this specific condition.

Support of authorities, law, or customs. The last condition that Allport described is support of authorities or social norms in engaging in contact with the outgroup. The importance in support by authorities and laws is that it can create a sociocultural structure in which opportunities for contact are improved. In Pettigrew and Tropp's (2006) meta-analysis, the structured contact programs that were designed to meet the optimal conditions all received authority sanction. When comparing programs that only had authority sanction to programs that met more of the conditions, no differences in the contact-prejudice effect were observed. These findings indicate that perhaps support from authorities is especially important to facilitate prejudice reduction. However, it should be noted that authority support alone is not enough to facilitate positive interactions and outgroup liking. If authorities support contact that is competitive or of unequal status, this can reduce the potential of contact to improve intergroup relations.

Group salience / typicality of group member. In addition to the four original conditions of intergroup contact, other moderators have been identified. Group salience during the contact situation is an important moderator for the *generalisation* of contact to the whole outgroup, which is of particular relevance to this thesis. Some theories postulate that prejudice is reduced by moving the focus away from group membership during contact and emphasising individualising characteristics (Bettencourt, Dill, Greathouse, Charlton, & Mulholland, 1997), while others state that group membership needs to be salient in order for contact experiences to generalise to the group as a whole (Hewstone & Brown, 1986). These theories of generalisation of contact are reviewed in detail in later sections of this chapter.

Studies have shown that the more salient the group is, or the more typical the outgroup member is perceived to be of the group, the stronger the relation is between contact and prejudice (Binder et al., 2009; Voci & Hewstone, 2003). This moderation of the contact effect by the group salience or member typicality has been shown in both experimental and self-report designs (Brown, Vivian, & Hewstone, 1999; Van Oudenhoven, Groenewoud, & Hewstone, 1996). Group salience increases contact effects on prejudice because a lack of group membership visibility and salience can lead to sub-typing (Brown & Hewstone, 2005; Hamilton & Sherman, 1994). In this case, the individual group member can be perceived as an exception, and categorised separately outside of the group (e.g. "Achmed is a friendly guy, but I still do not like Muslims").

Valence of contact. Most of the literature on intergroup contact has focussed on the effects of *positive* contact with the outgroup in reducing prejudice and increasing positive behaviour towards the outgroup. However, in daily life, not all interactions are positive and sometimes people have negative encounters with outgroup members. In the last ten years, people have started to examine and compare positive and negative intergroup contact. A *positive-negative contact asymmetry* has been observed, where negative contact has a stronger negative effect on prejudice than positive contact has a positive effect on prejudice (Barlow et al., 2012; Graf, Paolini, & Rubin, 2014; Hayward, Tropp, Hornsey, & Barlow, 2017).

It has been theorised that the observed asymmetry between the strength of positive and negative contact is caused by the fact that negative contact increases the salience of the outgroup more than positive contact, termed the *valence-salience hypothesis*. Higher salience of group membership during negative contact interactions, compared to positive interactions, leads to stronger generalisation of the contact experience to the outgroup as a whole (Paolini, Harwood, & Rubin, 2010). In addition to the effects on prejudice, Meleady and Forder (2018) showed that negative contact also reduces people's willingness to engage in future contact, which can maintain intergroup conflict and hostility.

However, it should be noted that not all studies observe the positive-negative contact asymmetry. For example, Aberson (2015) examined how positive and negative contact are related to affective dimensions (e.g. feeling thermometers) and cognitive dimensions of prejudice (e.g. stereotypes). The results showed that both positive and negative contact were equally predictive of affective dimensions of

contact, but negative contact was more strongly related to cognitive dimensions of prejudice (Aberson, 2015). Moreover, while negative contact has a stronger effect on prejudice, it has been found that positive contact occurs much more frequently (Graf et al., 2014), and extensive positive contact in the past can counteract the effects of negative contact in the present (Paolini et al., 2014). Lastly, a recent meta-analysis of the effects of positive and negative contact for both stigmatized and admired outgroups showed that negative contact generalises more for disadvantaged outgroups, while positive contact has a stronger effect for admired outgroups (Paolini & McIntyre, 2018).

Belief systems. Individual differences in beliefs around groups and hierarchy influence how people enter a contact situation, and how contact affects prejudice. Two important concepts are *Social Dominance Orientation* (SDO; Pratto, Sidanius, Stallworth, & Malle, 1994) and *Right-Wing Authoritarianism* (RWA; Altemeyer, 1988). Both SDO and RWA have been found to strongly relate to levels of prejudice (Whitley, 1999). SDO refers to a person's individual preference for inequality and hierarchy between social groups. People higher on SDO prefer hierarchy and believe that some groups should be superior to others (Pratto, Sidanius, & Levin, 2006; Pratto et al., 1994). RWA refers to individual levels of submission to authority, favourability of traditional values, and aggression towards outgroups when approved by authorities. The concept of the authoritarian personality was introduced in 1950 to offer an explanation of the rise of fascism in Germany in the 1930's (Adorno, Frenkel-Brunswik, Levinson, & Sanfored, 1950). While SDO and RWA are both strongly related to prejudice, RWA predicts prejudice towards "dangerous" groups, while SDO predicts prejudice towards "derogated" groups (Asbrock, Sibley, & Duckitt, 2010).

In addition to the relation of intergroup contact predicting prejudice, a reversed relation exists as well. People that are highly prejudiced or high in RWA often have less contact with outgroup members (Binder et al., 2009; Pettigrew, Christ, Wagner, & Stellmacher, 2007). However, once contact has been established, it is as effective in reducing prejudice for people high in prejudice or prejudice related traits, as for people lower in prejudice (Dhont & Van Hiel, 2009; Hodson, 2008, 2011; Hodson, Harry, & Mitchell, 2009; Maoz, 2003). Particularly, Dhont and Van Hiel (2009), and Hodson and colleagues (2009) demonstrated the moderating influence of authoritarianism (RWA) on the contact – prejudice relation, with people

high in RWA showing stronger effects of contact. Hodson (2008) demonstrated the same moderating influence for social dominance orientation (SDO). In his review paper, Hodson (2011) describes that contact is particularly effective for people high on these prejudice-related individual difference variables, because contact increase positive affective factors such as empathy and closeness, and reduces prejudice-exacerbating factors such as perceived outgroup threat.

To summarise, research over the last sixty years, since the formalisation of Allport's Contact Hypothesis, has established that positive interactions with outgroup members can generalise to the group as a whole and reduce prejudice. This is particularly effective when contact between group members is of equal status, is cooperative and with a common goal, and receives authority support. However, Pettigrew and Tropp's meta-analyses (2006, 2011) show that the contact-prejudice effect remains when these conditions are not present. Moreover, generalisation of the contact experience to the outgroup as a whole is moderated by the salience of the outgroup during the interaction, and negative contact can have stronger influences on attitudes and willingness to engage in future contact than positive contact. Lastly, belief systems relating to prejudice such as SDO and RWA also influence the effectiveness of contact.

Underlying processes of intergroup contact

Now that the moderating conditions of contact has been established, the next step is to examine how contact reduces prejudice, in other words the underlying processes and mechanisms of contact generalisation. This section is separated in two parts. Firstly, I review important affective mediators of the contact-prejudice relation that have been established in the literature. The second part of this review section describes the cognitive mechanisms that have been theorised to underlie contact generalisation.

Affective factors

Allport (1954) originally suggested that intergroup contact facilitates learning about the outgroup, and thus prejudice is reduced through increased knowledge. More recently, other mediators have been explored that target the emotional and psychological processes involved. These affective mediators (particularly anxiety

and empathy) have been found to have a stronger mediating influence than cognitive elements such as knowledge (Pettigrew & Tropp, 2008). Moreover, the role of intergroup threat (Tausch, Hewstone, Kenworthy, Cairns, & Christ, 2007) and ingroup norms (Tezanos-Pinto, Bratt, & Brown, 2010) have been studied in mediating the relation between intergroup contact and prejudice. Below I review these four affective processes involved in the contact-prejudice relation.

Intergroup anxiety. Intergroup anxiety has received much attention as a mediator of the contact-prejudice relation. The term refers to the discomfort or anxiety that people experience when interacting with outgroup members. Intergroup anxiety often arises from fear of negative consequences for the self and fear of negative evaluations by others (Stephan & Stephan, 1985). Intergroup contact has repeatedly been shown to reduce prejudice through a reduction in intergroup anxiety (Blascovich, Mendes, Hunter, Lickel, & Kowai-Bell, 2001; Paolini, Hewstone, Cairns, & Voci, 2004; Voci & Hewstone, 2003). Particularly the Blascovich et al. (2001) study demonstrated nicely how intergroup contact reduces threat responses. They observed that interactions with stigmatized partners created physiological signs of anxiety. However, people with more contact with the outgroup showed a much weaker physiological threat responses when interacting with an outgroup member (Blascovich et al., 2001).

Realistic and symbolic threat. Intergroup threat is the anticipation of negative consequences of intergroup interactions for the self or the ingroup (Tausch et al., 2007), and while related to anxiety, targets different psychological processes. In their integrated threat theory, Stephan & Stephan (2000) argue that the perception of threat is key to the development of prejudice. The authors distinguish between four different types of threat. Firstly, *realistic threats*, which are threats to the welfare, physical wellbeing, or power of the ingroup; secondly, *symbolic threats,* which are threats to the value and belief system of the ingroup, or the worldview. Thirdly, *intergroup anxiety*, which is described in the previous section, and lastly *negative stereotypes*, which are negative expectations about the behaviour of the outgroup, which is likely to result in conflict during interactions with the outgroup (Stephan & Stephan, 2000).

Although most research has focussed on the role of intergroup anxiety as mediator, intergroup threat might actually be a more inclusive and well-rounded conceptualisation of this variable. Some studies have shown that realistic and

symbolic threat both act as mediators to the effect of intergroup contact on prejudice. For example, Tausch et al. (2007) showed that threat mediated the relation between contact quantity and outgroup attitudes, but not between contact quality and outgroup attitudes. Additionally, Dhont & Van Hiel (2011) found support for perceived threat as a mediator of the relation between extended contact on prejudice.

Intergroup empathy. In addition to the reduction of negative feelings towards the outgroup (threat and anxiety), intergroup contact also increase positive feelings towards the group, particularly in the form of empathy and perspective taking. When people engage in contact with individual outgroup members, this enables them empathize with and take the perspective of the outgroup, which allows for a better understanding of how outgroup members view the world. These positive changes, in turn, lead to more positive attitudes towards the outgroup (Pettigrew et al., 2011). The mediating role of empathy and perspective taking in the contact-prejudice relationship has been observed many times. Pettigrew & Tropp (2008) showed that empathy and perspective taking are strong mediators of the contact effect on prejudice. This meta-analytic finding was supported by a large scale longitudinal study in South Africa (Swart, Hewstone, Christ, & Voci, 2011), demonstrating that cross-group friendships were positively associated with outgroup attitudes and perceived outgroup variability, mediated through increases in affective empathy.

Ingroup and outgroup norms. Social norms, or the rules and conventions within a group, strongly influence social behaviour, and are important in intergroup situations (Abrams, Wetherell, Cochrane, Hogg, & Turner, 1990; Asch, 1956; Sherif, 1936). Ingroup norms about the acceptance or rejection of intergroup contact, and the expression of positive or negative outgroup attitudes, influence the expression of prejudice and behaviour towards outgroup members (Boyanowsky & Allen, 1973; Crandall et al., 2002; Nesdale, Durkin, Maass, & Griffiths, 2005). Changes in the perception of ingroup norms have been found to mediate the contact-prejudice relation, but particularly for indirect, or extended contact (Tezanos-Pinto et al., 2010; Turner, Hewstone, Voci, & Vonofakou, 2008). Knowing other ingroup members that have contact with the outgroup changes people's perceptions of the ingroup norms, which in turn reduces prejudice. However, Tezanos-Pinto and colleagues (2010) also showed that changes in perceptions of ingroup norms did not play a role in the effect of direct contact on outgroup attitudes.

Not only the norms of one's own group play a role in success of intergroup contact, but perceptions of outgroup norms can also play a role. Beliefs about the willingness of the outgroup to engage in contact (Shelton & Richeson, 2005), as well as perceptions of valuing diversity (Tropp & Bianchi, 2006) have been shown to influence interest in intergroup contact. Moreover, extended contact has been shown to change perceptions of outgroup norms as well as ingroup norms, which both act as mediators of the contact-prejudice relation (Turner et al., 2008).

Cognitive factors

Over the last decades, a number of theories have been formalised that describe mechanisms through which generalisation of contact occurs. Some models state that the emphasis on ingroup and outgroup categories should be reduced in order for contact to be effective (decategorisation model), others describe how providing a new common identity leads to prejudice reduction (common ingroup identity, dual identities model), while others still describe the importance of heightened group salience in generalisation of intergroup contact (intergroup contact model). These models are described below.

Decategorisation. Brewer and Miller's (1984) decategorisation model emphasises the importance of getting to know the outgroup member, and reducing attention to the group membership of the interaction partner. The repeated focus on the individual characteristics of a person should make the category information less important and useful in forming impressions. By removing focus on group membership, greater *differentiation* between outgroup members and *personalisation* of ingroup and outgroup members is achieved, which in turn should make the existing categories less meaningful. According to the decategorisation model, intergroup bias is reduced because the ingroup is not deemed as important and therefore less positively perceived (Brewer & Miller, 1984).

Evidence for this theory comes particularly from research that shows that reducing the focus on a single group membership, either through cross-categorisation of different group members (Crisp & Hewstone, 1999), or through experimental manipulation of person-focussed contact (Bettencourt, Brewer, Croak, & Miller, 1992; Koschate, Oethinger, Kuchenbrandt, & van Dick, 2012), reduces ingroup favouritism and increases intergroup pro-sociality. Moreover, more personal and intimate forms of contact, in the form of cross-group friendship, has been shown to

be most effective in reducing prejudice (Davies, Tropp, Aron, Pettigrew, & Wright, 2011).

Recategorisation. The common ingroup identity model (Dovidio, Gaertner, Anastasio, Bachman, & Rust, 1993; Gaertner & Dovidio, 2000; Gaertner, Dovidio, & Bachman, 1996) argues that the ingroup and outgroup should be recategorised into one common superordinate group. Instead of removing categories, they propose to create new categories that include both ingroup and outgroup members. By changing the group boundaries, the outgroup is no longer perceived as an outgroup and bias should be reduced. According to the common ingroup identity model, Allport's (1954) conditions of cooperation and mutual goals are particularly effective in reducing prejudice because working together leads to the development of a common identity that binds all members together (Dovidio et al., 1993). Outgroup attitudes become more positive through intergroup contact because the outgroup is now perceived to be part of the ingroup (Gaertner & Dovidio, 2000). The effectiveness of creating a common ingroup for reducing ingroup bias has been established experimentally in multiple studies, in comparison to situations where the original groups were made salient, and in comparison to a personal individualised approach (for a review, see Gaertner & Dovidio, 2000).

Intergroup salience. A potential problem with both the decategorisation and common ingroup approach is the transfer of positive experiences to novel group members that were not in the original interaction. The intergroup contact model (Brown & Hewstone, 2005; Hewstone & Brown, 1986) states that group membership of the individual needs to be salient and the outgroup member must be perceived as prototypical for generalisation to occur via intergroup contact. Otherwise, the individual outgroup member can be subtyped: the disconfirming outgroup member is placed under a subcategory and the attitudes towards the whole group do not change. The central tenet of the intergroup contact model is that contact needs to have an *intergroup* component, instead of being *inter-individual* such as in the decategorisation model, or *intra*group such as in the common ingroup identity model (Brown & Hewstone, 2005).

The importance of group salience in generalisation of contact has been demonstrated experimentally in multiple strands of research (for a detailed account, see Brown & Hewstone, 2005). Some of the evidence stems from research on counter-stereotypes, which shows that generalisation of exposure to stereotype

disconfirming information occurs most strongly when the information comes from an otherwise typical group member (Johnston & Hewstone, 1992; Wilder, 1984; Wilder, Simon, & Faith, 1996). Moreover, studies have manipulated the typicality of individuals within the contact situation, and the perceived homogeneity of the outgroup, and demonstrated that generalised evaluations of the group were most influenced when contact was with highly typical individuals from highly homogeneous outgroups (Brown et al., 1999; Van Oudenhoven et al., 1996).

Dual identities model. Lastly, the dual-identities model combines elements of the common ingroup identity model and intergroup salience model in suggesting that, in order to lower bias and create generalisation of the experiences, a superordinate group should be created while also maintaining the distinct group identities (Dovidio, Gaertner, & Validzic, 1998). Thus, both a superordinate group is created to bring people closer together, while also keeping ingroup and outgroup categories salient to create the opportunity for generalisation to other outgroup members. A number of studies have shown that the combination of salient categories and the introduction of a superordinate group are effective in generalising experiences to the whole group (González & Brown, 2003, 2006). Dual identities are particularly valuable when there are differences in size of the groups, and have been shown to be efficient for minority group members (Dovidio, Gaertner, & Kafati, 2000).

Outcomes of intergroup contact beyond attitudes

The last section of this literature review on intergroup contact describes additional outcomes of intergroup contact that go beyond prejudice reduction. While the largest part of research on intergroup contact examines outgroup attitudes as main outcome variable, recent studies have established that intergroup contact can also influence behaviour, both on an individual level and a societal level. This research is briefly reviewed in the following section.

Political involvement

Intergroup contact has the ability to change behaviour that goes beyond abstract attitudes, and can motivate people to get involved in political intergroup issues, such as voting behaviour for the 2016 UK referendum on leaving the EU

(Brexit). However, from a minority perspective intergroup contact can reduce perceptions of discrimination and injustice, and therefore reduce support for collective action. Both the activating and demobilizing effects of intergroup contact on political behaviour are described below.

Voting intentions. Views about outgroups, immigration, and prejudice have been shown to also play a role in particular political behaviours, such as voting in the EU referendum in the United Kingdom (de Zavala, Guerra, & Simão, 2017; Meleady, Seger, & Vermue, 2017; Van de Vyver, Leite, Abrams, & Palmer, 2018). These studies found that voting behaviour in the UK referendum about whether to stay in or leave the EU was related to personal factors such as prejudice, RWA, and SDO. This relation between prejudice and voting behaviour was mediated by social factors such as European identity and perceived threat of immigrants (de Zavala et al., 2017; Van de Vyver et al., 2018). Higher prejudice and perceived threat of immigrants was related to a higher tendency to vote Leave. Moreover, Meleady and colleagues showed that positive intergroup contact could counteract this effect of prejudice, and was related to higher tendencies to vote Remain in the referendum. Thus, perceptions of outgroups and contact with these groups does not only influence attitudes and individual behaviours, but affects large-scale political movements as well.

Collective action support. An important outcome of intergroup contact that has received more attention over the last decade is the willingness to challenge intergroup inequality. Studies have shown that positive intergroup contact also influences people's tendencies to take action to defend and protect the rights of disadvantaged groups (Becker, Wright, Lubensky, & Zhou, 2013; Dixon, Durrheim, & Tredoux, 2007). While positive contact can have a demobilising effect for disadvantaged groups, due to reduced perceptions of discrimination (Dixon et al., 2010), there is some evidence that positive contact can lead advantaged groups to show more support for collective action (Cakal, Hewstone, Schwär, & Heath, 2011; Reimer et al., 2017). More recently, the opposite effect has also been shown for negative contact. Negative contact with people from advantaged groups leads to stronger support for collective action among people from disadvantaged group, mediated by increased anger and perceptions of discrimination (Hayward, Tropp, Hornsey, & Barlow, 2018; Reimer et al., 2017). Thus, positive contact can have the negative effect of demobilising people from disadvantaged groups in challenging

inequality and supporting collective action, and negative contact can make people from disadvantaged groups more likely to support collective action. However, for advantaged groups, positive contact might lead to more support for collective action.

Cooperation and pro-social behaviour

In addition to political involvement, the effects of intergroup contact have been examined in the domain of pro-social behaviour towards both individual group members and whole groups. Most studies still use self-report measures to examine intentions for pro-sociality towards the outgroup, but some experimental work with imagined contact has explored face-to-face interactive behaviour between group members.

The first step to improving relations between groups is for people to have good intentions for their behaviour towards the group as a whole. According to the theories of reasoned action (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and planned behaviour, behaviour can be predicted by people's intentions for performing the behaviour, and their perceived behavioural control. These behavioural intentions capture people's motivation and willingness to exert effort to perform the behaviour. Intentions, in turn, are influenced by attitudes, subjective norms, and perceived behavioural control (Ajzen, 1985, 1988, 1991). Therefore, attitudes towards the outgroup, changed through intergroup contact, can influence intentions to behave more positively and cooperatively towards the outgroup, which in turn influence intergroup behaviour.

As direct cooperative behaviour can be difficult to measure, many researchers have investigated intentions for contact or intentions towards cooperation. These outcomes have particularly been examined in relation to imagined contact, as this manipulation of contact lends itself well for experimental designs. For example, Pagotto and colleagues (Pagotto, Visintin, de Iorio, & Voci, 2013) showed that people who imagined a positive contact interaction with a Muslim person indicated more cooperative behavioural intentions towards Muslims. Vezzali and colleagues (Vezzali, Capozza, Stathi, & Giovannini, 2012) found that children who had imagined positive contact with an immigrant child exhibited more positive behavioural intentions towards immigrants. Christ et al. (2010) examined effects of extended and direct contact in segregated and mixed neighbourhoods, and found that extended contact increased positive behavioural intentions for people in segregated,

but not mixed neighbourhoods. This study shows the potential for extended contact in areas where direct contact is difficult to change people's willingness to interact with the outgroup. Lastly, Turner, West, and Christie (2013) demonstrated that people who imagined a contact situation with an asylum seeker or gay individual displayed a greater tendency to approach the targeted outgroup. Together, these studies provide strong evidence for the effect of indirect or imagined contact on changing intentions for cooperation and willingness to engage in future contact with the outgroup.

In addition to asking people for their intentions, some studies on intergroup contact aimed to measure actual prosocial behaviour. In the different studies, prosocial behaviour is conceptualised in different ways. Some researchers have examined how intergroup contact increases cooperative choices in a Prisoner's Dilemma game (Meleady & Seger, 2017), while others have looked at expressions of helping behaviour towards outgroup members (Koschate et al., 2012), or time spend with the outgroup (Vezzali, Crisp, Stathi, & Giovannini, 2015). Imagined contact has been shown to lead to more prosocial behaviour in natural settings (Vezzali et al., 2015), and in lab settings (Meleady & Seger, 2017). Koschate and colleagues found that personal contact predicted prosocial behaviour towards individual outgroup members, while task-oriented contact was a better predictor of prosocial behaviour towards the group as a whole (Koschate et al., 2012).

Others have examined more subtle, nonverbal indicators of prosocial behaviour. Turner and West (2011) found that people who imagined contact with an obese person arranged the seating in a future interaction with an obese person closer to each other that people in the control condition. It has also been shown that imagined contact leads to improved interaction quality when interacting with an outgroup member (Birtel & Crisp, 2012; West, Turner, & Levita, 2015). Together, these recent studies show the development of intergroup contact research to expand beyond the traditional measures of prejudice, and examine how contact makes people behave more positively towards outgroup members.

Summary

In this literature review of prejudice formation and prejudice reduction through intergroup contact, I have provided an extensive overview of the state of research on intergroup contact. Obtaining a social identity from belonging to a group fulfils our basic needs of belonging and self-esteem. However, in order to maintain a positive self-esteem derived from our group memberships, social identity can lead to derogation of outgroups and prejudice. Over the last sixty years, a large and substantial body of research has established that contact with individual outgroup members can reduce prejudice towards the group, particularly when conditions of equal status, cooperation, shared goals, support from authorities, salience of groups, and positive valence are achieved. Moreover, both affective and cognitive processes have been established that mediate the generalisation of contact to attitudes about the group. Intergroup contact reduces perceived threat and intergroup anxiety, increases empathy with the outgroup, and changes perceived ingroup and outgroup norms. Moreover, contact with the outgroup can change perceptions of group boundaries. Group salience and a shared superordinate group together lead to strong generalisation of contact to outgroup attitudes. Lastly, recent studies have extended work on intergroup contact beyond outgroup attitudes, and examined influences on behaviour on an interpersonal and contextual level.

The thesis perspective

While many affective and attitudinal aspects of intergroup contact and intergroup relations have been studied in detail over last few decades, there are a number of directions yet to explore. The overarching aim of the thesis is to integrate social-cognitive theories with intergroup contact theory in the examination of a) how meta-cognitive experiences of fluency in remembering past contact influences intergroup perceptions, attitudes, and intentions for future contact, and b) how present contact experiences generalise and inform behaviour in future intergroup encounters. Cognitive processes involved in intergroup contact, such as social categorisation, memory, and generalisation, have not received the scientific attention it deserves. Therefore, these two strands of research aim to go beyond standard self-

report measures of contact and attitudes, and utilise experimental and behavioural methodologies to study intergroup contact from a social-cognitive perspective.

For the first main research question of the thesis, I explore how people remember their past intergroup experiences, how question-framing can influence fluency of this recall process, and consequently how people draw upon their meta-cognitive experiences of fluency in assessing their contact with the group and their attitudes towards the group. By using theories and paradigms from the field of meta-cognition in evaluative judgments and heuristics, I examined whether contact retrieval fluency influences self-perceptions of the amount of intergroup contact one has with the outgroup, and in turn their attitudes towards that group, and their intentions to engage in future contact. Can we make recall of past positive contact experiences more easy and fluent? If so, does the recall fluency of past intergroup contact change people's perceptions of contact, and in turn reduce prejudice? These research questions are explored in Chapter 2 and 3.

From looking back to looking ahead, my second main research question in this thesis is how present positive and negative contact experiences inform behaviour towards novel group members in future encounters. This process of member-to-member generalisation is examined in relation to trust. The second strand of research explores how people use their contact experiences to make decisions to trust new group members. In the novel paradigm that was designed using iterated Trust Games, I investigate how group membership and interaction valence influence member-to-member generalisation of trust behaviour. These research questions are central to the second strand of the thesis in Chapter 4 and 5. Together, these two lines of research examine social-cognitive processes of intergroup processes as applied to intergroup contact theory, both in looking back on, experiencing present, and looking forward to contact with the outgroup.

CHAPTER 2

Remembering past contact:

Meta-cognitive experiences of retrieval fluency in recalling intergroup contact

In this first empirical chapter, I examine how meta-cognitive feelings of fluency during recall of past intergroup contact can influence perceptions, attitudes, and behaviour towards outgroups. The existing research on intergroup contact has paid little attention to the cognitive processes around the contact-prejudice relation. Particularly, the vast majority of these studies utilise self-report measures of contact frequency, which should be heavily influenced by recall of past contact experiences from memory. Memories of past contact can be used directly or indirectly in forming judgments of contact frequency, and in turn guide attitudes and behaviour. Research in cognitive psychology (Schwarz, 2004; Schwarz & Bohner, 2001; Tversky & Kahneman, 1973) has demonstrated that recall processes can be impacted by subtle priming and framing manipulations, such as in experiences of retrieval fluency. This research combines social and cognitive literatures to examine how contextual factors influence ease and fluency of intergroup contact recall, and consequently the implications for intergroup attitudes and behaviour.

This research on retrieval fluency of past contact takes a construction approach to the study of attitudes, based on literature which argues that attitudes are constructed temporarily based on salient and relevant cues in the moment (Schwarz, 2004; Taylor & Fiske, 1978; Wilson & Hodges, 1992). In relation to outgroup attitudes, I argue that these attitudes can be influenced by presently salient cues about past contact with the outgroup, such as fluency experiences during recall. Meta-cognitive feelings of retrieval fluency in recalling contact experiences are manipulated through the ease-of-retrieval paradigm (Schwarz et al., 1991). In the following sections, I provide an overview of the construction approach to attitudes, with self-perception theory as a relevant theory that describes attitude construction processes based on past behaviour (Bem, 1972). Next, the literature on meta-cognition in evaluative judgment is introduced, and I describe how retrieval fluency can influence attitudes and judgments. After describing the aims and hypotheses of this research strand, a pilot study and two full experiments are presented that examine the effect of recalling few or many instances of past contact on experienced ease and fluency, and consequently on perceptions of contact and attitudes towards the outgroup.

Attitudes as temporary constructions

Wilson and Hodges (1992) argue that people often construct their attitudes, instead of retrieving an existing attitude from memory, and this construction of attitudes is performed based on a subset of presently available information. While traditional views described attitudes as being stable constructs in memory that can be retrieved when required, this theory states that a "true attitude" does not exist. People construct attitudes based on an internal database of different types of information, such as experience, knowledge, previous behaviour, mood, and varying beliefs. However, people mostly do not use their whole database, and instead construct their attitude from certain elements of their database that are most salient and relevant in the moment. How people feel about a specific topic can depend on when and how they are asked about their attitudes, and the type of thought process that goes into reporting the attitude (Tesser, 1978; Wilson & Hodges, 1992).

The construction perspective of attitude formation indicates that attitudes can be unstable over time; they can be construed spontaneously for novel objects, and they be influenced by contextual and situational cues (Ferguson & Bargh, 2003; Schwarz & Bohner, 2001; Wilson & Hodges, 1992). From this perspective, it is argued that stable attitudes are the product of consistent associations between the object of evaluation and specific information over time, leading to a stable construction of the attitude based on easily and chronically accessible information (Schwarz, 1998, 2004; Schwarz & Bohner, 2001). It is thus argued that retrieval of existing attitudes is not required to explain stable attitudes.

This perspective of attitude construction is supported by multiple lines of research showing how attitudes can be highly sensitive to context. People are often influenced by the context of the attitude question (Tourangeau & Rasinski, 1988), the thought process that they engage in when formulating their attitude (Wilson, 1990), the accessibility of relevant information (Tversky & Kahneman, 1973; Wyer Jr. & Srull, 1989), and the salience of their own previous behaviour (Bem, 1972). To illustrate, it has been shown that the order of survey questions can influence attitudes expressed towards specific societally relevant topics (Judd, Drake, Downing, & Krosnick, 1991), and that rumination about at attitude object can either polarize or moderate existing attitudes (Millar & Tesser, 1986). In this thesis, I focus specifically on the influence of meta-cognitive feelings of ease produced by the

accessibility of relevant information, and salience of previous behaviour relevant to attitudes.

Self-perception theory

One of the most prominent theories that takes a construction approach to attitudes is self-perception theory (Bem, 1972). This theory argues that people infer their attitudes from the behaviours that are salient to them at that specific time. The first postulate of self-perception theory is that "*Individuals come to 'know' their own attitudes, emotions, and other internal states partially by inferring them from observations of their own overt behaviour and/or the circumstances in which this behaviour occurs*" (Bem, 1972, p. 5). This means that, instead of retrieving pre-existing attitudes, self-perception supports a construction perspective of attitudes through making inferences from one's own behaviour. Attitudes are not perceived as stable dispositions or existing in associations of concepts in the mind, but as self-descriptive statements that are produced when requested based on external cues available (Salancik & Conway, 1975).

The second postulate of self-perception theory is that "*to the extent that internal cues are weak, ambiguous, or uninterpretable, the individual is functionally in the same position as an outside observer [...] who must necessarily rely upon those same external cues to infer the individual's inner states*" (Bem, 1972, p. 5). Self-perception theory takes a behaviourist approach, where people do not rely on internal perceptions and beliefs, but use external cues to infer the inner states. The attitude inference from behaviour is made particularly when people perceive their behaviour not to be controlled by contextual or external influence (i.e. when it is voluntary and deliberate). Behaviour is used as a source of information for attitudes when the behaviour is considered relevant to the attitude (Nisbett & Valins, 1972; Zanna, 1973).

Self-perception theory has been used in application to a number of different findings within social psychology over the last few decades. It has been linked to William James' theory of emotional experience and emotional behaviour (Laird & Bresler, 1990, 1992) in studies that show that people's emotional experience was changed based on the manipulation of emotionally expressive behaviour, such as facial expressions (Adelmann & Zajonc, 1989). Self-perception theory can also be used to explain the process underlying the foot-in-the-door persuasion technique

(Freedman & Fraser, 1966). After agreeing to an initial request, people make inferences about their motivations and attitudes towards the target based on their agreement, and in term are willing to show more supportive behaviour in the future (Burger, 1999; Burger & Caldwell, 2003).

The aim of this research strand is to apply the construction approach to attitudes of self-perception theory to intergroup contact and prejudice. If outgroup attitudes can be constructed based on salient past behaviours, than changing perceptions of past intergroup contact might influence prejudice. The perceptions of intergroup contact are manipulated in this research through retrieval fluency, based on the ease-of-retrieval paradigm.

Retrieval fluency in evaluative judgments

Meta-cognitions, or thoughts about the thought process, can be used as heuristics in evaluative judgments. One important meta-cognition that is used in evaluation and judgment is the experienced ease during the thought process (Schwarz, 1998; Schwarz et al., 1991; Tversky & Kahneman, 1973). Tversky and Kahneman (1973, 1974) introduced the availability heuristic, which showed that the ease by which arguments are retrieved from memory is used as information in judgments of frequency. When the likelihood of an event is judged based on the retrievability of instances, events that are easier to remember will be judged as more likely to occur. For example, someone may judge the likelihood of heart attacks among specific age groups by recalling specific occurrences of heart attacks in someone's social circles, or estimate the frequency of words starting with the letter r of having an r as a third letter by producing words with an r as first or third letter. Ease in retrieving examples of heart attacks or words that start with an r influences judgments of frequency of these events (Tversky & Kahneman, 1974).

This heuristic was originally introduced as a mechanism for assessing probabilities and frequencies of events, but it has been found to apply to other forms of judgments as well, including evaluative judgments. Tversky and Kahneman's (1973, 1974) work on the availability heuristic was later used by Schwarz and colleagues (1991) to develop the ease-of-retrieval paradigm. Schwarz developed a paradigm where the number of examples produced and the ease of producing these examples would produce opposite effects. They asked participants to write down either six or twelve examples of moments when they behaved either very assertively

or very unassertively. Afterwards, participants rated their own assertiveness. Schwarz showed that producing a large number of examples was perceived to be more difficult than producing a small number of examples, and this perceived difficulty influenced ratings of people's own assertiveness. Participants that produced twelve examples of assertive behaviours rated themselves as less assertive than people that wrote down six examples. The reverse effect was found when participants were producing examples of unassertive behaviour. Thus, even though people were producing more examples of assertiveness in the difficult condition, people still rated themselves as less assertive in this condition. Schwarz argues that the meta-cognitive feeling of difficulty that people experienced while recalling many examples of assertiveness led them to infer that they were not as assertive as they might have thought (Schwarz et al., 1991).

The ease-of-retrieval effect on judgments has been shown in many domains. From product evaluations (e.g. Wänke et al., 1997), policy agreement (e.g. Tormala et al., 2002), witness statements (Sheaffer, Goldsmith, & Pansky, 2018), judgments of the self (e.g. Schwarz et al., 1991), to social perceptions and judgments (Dijksterhuis, Macrae, & Haddock, 1999; Petty, Briñol, Tormala, & Wegener, 2007). Importantly, in the attitude domain it has been found that ease in generating positive thoughts about an object makes people like the object more (Haddock, Rothman, & Schwarz, 1996; Wänke, Bless, & Biller, 1996). For example, in the study by Wänke, Bless, and Biller (1996), participants recalled either three or seven arguments in favour or against using public transportation. Participants who listed seven pro-reasons reported less favourable attitudes towards public transport than participants who recalled three pro-reasons. Conversely, participants who listed seven contra-reasons displayed more favourable attitudes towards public transport than participants who listed three contra-reasons (Wänke et al., 1996).

The mechanism behind the influence of meta-cognitive experiences of fluency or ease is that people use these meta-cognitive experiences as a source of information and make inferences during the thought process (Schwarz, 2004). When you notice that you find it difficult to come up with examples of, say, a number of good restaurants in London, this can lead you to infer a number of things. First, you might infer that you do not know London that well. This inference would most likely not affect your evaluation of London restaurants. However, you might also infer that London does not have that many good restaurants. Otherwise, you might infer that

your memory for restaurants is not very good. These different inferences from meta-cognitive feelings, also referred to as naïve theories in the literature, can lead to different conclusions, and influence the evaluative judgment of the attitude object, depending on the inferences made (Schwarz, 2004).

Ease-of-retrieval in social perceptions

The ease-of-retrieval paradigm has been studied in many domains of evaluative judgments, and a few studies have investigated how these meta-cognitive experiences influence judgments of others and groups. Rothman and Hardin (1997) showed that outgroup judgments were more susceptible to ease-of-retrieval effects than ingroup judgments. People who recalled three impolite behaviours from outgroup members rated the outgroup as more impolite than people who recalled six impolite behaviours. However, the reverse effect was found when recalling impolite behaviours from ingroup members (Rothman & Hardin, 1997)**.** Dijksterhuis et al. (1999) asked people to list either three or eight stereotypical gender traits and later make a judgment about a female secretary. They observed an ease-of-retrieval effect on the stereotypicality of the judgment, with more stereotypical judgments after listing three than eight stereotypical traits, but only for people low in gender prejudice. Weick and Guinote (2008) replicated these findings, and additionally showed that people in high power positions are more sensitive to the ease-of-retrieval effect than are powerless people. The authors argue that power makes people process information in a more simplified manner and therefore rely more on ease-of-retrieval experiences (Weick & Guinote, 2008).

Lastly, Vázquez, Yzerbyt, Dovidio, and Gómez (2016) investigated ease-of-retrieval effects in thinking about meta-stereotypes and outgroup attitudes. They asked people to list either three or seven positive or negative traits that they think the outgroup attributes to the ingroup (meta-stereotypes), after which they evaluated the outgroup. Vazquez and colleagues found an ease-of-retrieval effect on the outgroup evaluations. People that provided positive meta-stereotypes gave more positive outgroup evaluations in the easy three traits condition compared to the difficult seven traits condition. In contrast, people that provided negative meta-stereotypes gave more negative evaluations of the outgroup in the easy condition compared to the difficult condition (Vázquez et al., 2016).

Research aims and hypotheses

In the next two chapters, the influence of contact-based retrieval fluency on self-perceptions of contact, outgroup attitudes, and intentions for future contact is examined. Two different approaches for manipulating retrieval fluency are applied, this chapter employs the ease-of-retrieval paradigm to recalling past contact experiences. Chapter 3 uses a linguistic device, based on self-perception theory, to manipulate the salience of past contact behaviours through endorsement of behaviour statements. In both these approaches, the general hypothesis is that contact-based retrieval fluency makes people reflect on how much contact they have with the group. When people experience ease or difficulty in recalling specific contact interactions, this can lead to inferences being made about their contact with the group ("I must have a lot/ little positive contact with this group", "I might be the sort of person who often interacts with people from different groups").

A new concept was suggested for this reflection on contact, namely *self-perception of contact*. This concept indicates the reflection or evaluation of people's own contact with the outgroup and is predicted to directly relate to the meta-cognitive experiences of fluency. The experience of fluency should lead people to reflect on their contact with the group and draw inferences about how much contact they have with the group. This concept is different from the standard measure of contact frequency, as it asks people to provide their own reflections on contact instead of an accurate account of their daily experiences of contact. Therefore, a new measure was developed for this key concept of self-perceptions, which is described in the Method section of the pilot study below.

It was hypothesised that self-perception of contact is related to outgroup attitudes and future contact intentions. According to self-perception theory (Bem, 1972), people use their own responses and behaviours as cues to their attitudes. From this theory, it follows that people draw inferences about their attitudes towards the group when they become aware of their past engagement in frequent intergroup contact. Moreover, these self-perceptions of contact were also predicted to influence intentions for behaviour towards the group in the future, as past experiences are used to inform intentions for future behaviour (Ouellette & Wood, 1998). Together, I propose a theoretical model where meta-cognitive experiences of retrieval fluency lead to changes in self-perceptions of contact, which in turn influence outgroup

attitudes and future contact intentions (see Figure 1 below for a graphical representation).
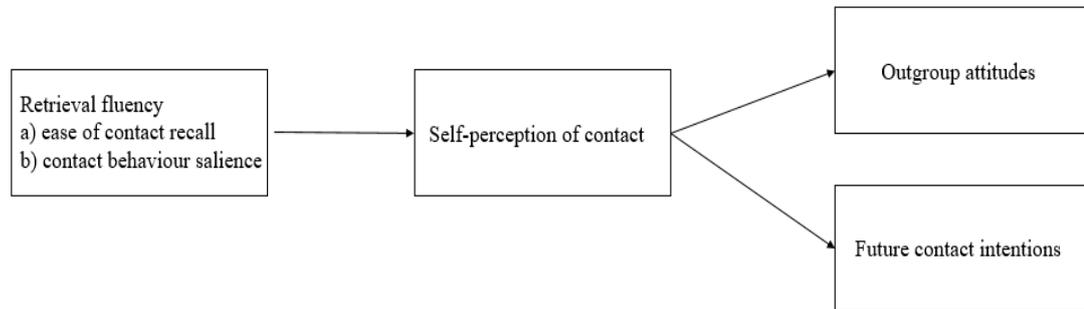
Figure 1. Schematic representation of the relation between retrieval fluency, self-perception of contact, outgroup attitudes, and future contact intentions.

Based on this theoretical model, the following predictions were made. Firstly, the manipulation of recalling one or five examples of past positive intergroup contact induces a meta-cognitive feeling of ease or difficulty. Secondly, the manipulation of contact-based retrieval fluency leads to higher self-perceptions of contact. People who experience ease in recalling one previous interaction with an outgroup member show higher self-perceptions of contact than people who experience difficulty in recalling five different interactions. Note that this effect is counterintuitive to the contact-prejudice relation. Recalling many examples of past contact is cognitively difficult, which leads people to infer a lack of contact. Thirdly, the manipulation of contact-based retrieval fluency is related to both outgroup attitudes and future contact intentions, with more difficulty leading to less positive outgroup attitudes and future contact intentions. This effect of retrieval fluency on attitudes and contact intentions is argued to occur through changes in self-perception. Therefore, the last prediction is that the relation between the manipulation of contact-based retrieval fluency and attitudes and behaviour towards outgroups is mediated by self-perceptions of contact. If people see themselves as the kind of people who engage in frequent contact with the outgroup, they infer that they have positive attitudes towards the outgroup.

Overview of studies

In this chapter, the ease-of-retrieval paradigm is applied to intergroup contact theory, to examine whether and how meta-cognitive feelings of ease or difficulty in recalling previous intergroup contact can influence perceptions of past contact experiences and subsequent outgroup attitudes. A pilot and two full experiments were conducted where participants were asked to describe either one or five different positive interactions that they have had with people from the target outgroup. These numbers were based on an earlier pilot study with university students, where participants were asked to write down as many interactions that they could remember with certain outgroup members, up to a maximum of ten different interactions (see appendix A for a report on this first pilot study). From the low amounts of recalled interactions in this pilot, it was decided that recalling only one interaction should be relatively easy, while recalling five different interactions should be perceived as difficult for most participants. After the contact recall task, participants completed measures of task difficulty, self-perceptions of contact, future contact intentions, and outgroup attitudes.

The pilot study was ran on Prolific Academic to establish whether the contact recall manipulation was successful on this platform in creating a difference in experienced ease or difficulty, and to examine the contact recall manipulation towards two different outgroups, namely homosexual people and people from ethnic minorities. Online data collection platforms such as Prolific Academic are commonly used in psychological research and has been shown to provide reliable data from more representative samples (Buhrmester, Kwang, & Gosling, 2011). Experiment 1 was also conducted using Prolific Academic to collect a large and diverse sample that is needed for mediation modelling (Fritz & MacKinnon, 2007). Experiment 2 aimed to compare the online sample with a student sample in a laboratory setting, and measured potential moderating variables in a separate online survey beforehand, namely importance and certainty of pre-existing outgroup feelings and frequency of daily contact with the outgroup.

Pilot Study: Exploring contact recall in an online setting

In this pilot, a sample of Prolific Academic users was recruited and asked to recall positive interactions that they remembered having with either homosexual people or people from an ethnic minority background. This pilot was implemented to test whether participants performing the study online would follow instructions and actually provide the asked number of interactions, and whether they experienced different levels of difficulty while recalling either one or five interactions with the target outgroups. The outcome variables of interest, self-perceptions of contact, future contact intentions, and outgroup attitudes, were included to examine any trends in hypothesised directions.

Method

Participants and design

The participant pool consisted of 91 Prolific Academic users. Participants that indicated being part of the outgroup that they answered questions about (homosexual people or people from an ethnic minority background) were removed from data analysis. This resulted in the exclusion of 15 participants. The remaining 76 participant (49% female, $M = 35.78$ years old, $SD = 10.88$) consisted of 58% British participants. All participants received £0.85 pounds for their time. The average completion time was 7.20 minutes.

A 2 (number of interactions recalled: one-recall vs five-recall) x 2 (group: homosexual people vs. ethnic minority) between-subjects design was utilised. The experienced difficulty of the task and the number of interactions recalled were used to assess whether the manipulation of difficulty was successful.

Materials

Questionnaires were included to measure perceived difficulty of the recall task, outgroup attitudes, and self-perceptions of contact. Each of these measures is described below.

Difficulty of the recall task. The perceived task difficulty was measured with three items, adapted from Vázquez, Yzerbyt, Dovidio, & Gómez (2016).

Participants rated the following aspects of the task of providing examples of positive interactions with outgroup members: amount of difficulty in completing the task, amount of time required completing the task, and amount of effort invested in order to complete the task. Each of these aspects was rated on a 10-point scale from *very little* (1) to *a lot* (10), and all items were combined to create a composite average score ($\alpha = 0.80$).

Self-perceptions of contact. Two self-designed items were used to measure self-perceptions of contact, namely "I frequently experience positive contact encounters with X", and "I am the sort of person who often interacts with X", with X being replaced by the target outgroup. The items were presented on a seven-point scale from *strongly disagree* (1) to *strongly agree* (7). A composite average score was created of self-perceptions of contact ($\alpha = 0.85$).

Outgroup attitudes. Outgroup attitudes were measured with a feeling thermometer (Haddock et al., 1993) and a six-item semantic differential scale, adapted from Wright, Aron, McLaughlin-Volpe, and Ropp (1997), see Appendix B for a full list of items. For the feeling thermometer, participants were asked to indicate their overall feelings towards the outgroup by moving a 100-point slider from zero (*very cold*) to 100 (*very warm*) to the appropriate value. The semantic differential scale was presented on a seven-point scale (see Appendix B). All six semantic-differential items were combined into an average score of outgroup attitudes ($\alpha = 0.93$).

Procedure

Participants completed the survey online. After receiving information about the study and giving consent, the target outgroup was randomly selected for each participant. All instructions and questions were adapted to fit the target outgroup. The first part of the survey consisted of the contact recall task. Participants were randomly placed in either the one-recall or the five-recall condition. They received instructions about the task, to describe either one positive interaction with an outgroup member, or five different positive interactions (see Appendix C for the full instructions). For the one-recall condition, participants were provided with one text box and continued onto the next questionnaire after providing some text input. For the five-recall condition, a textbox was shown on each page, and participants were instructed to describe only one interaction in each textbox. For each textbox, there

was no restriction on the length of the text, but participants were required to provide some text input to continue to the next screen.

The second part consisted of the outcome measures, as described above. First, participants were asked to rate the difficulty, time and effort needed to complete the recall task. Second, participants completed the newly designed measure of self-perceptions of contact. Next, participants completed the outgroup attitudes measures, consisting of the feeling thermometer and the semantic differential scale. The last part of the survey consisted of demographic questions, including items about sexual orientation and ethnicity to assess whether participants might perceive the target outgroup as an ingroup.

Data analysis

The data was analysed using the statistics program R version 3.4.2 (R Core Team, 2017) in RStudio (RStudio Team, 2015). The effect of the recall manipulation and target outgroup on the perceived task difficulty and the number of interactions recalled were analysed using ANOVAs. The differences between conditions on the outcome variables were only examined exploratory with descriptive statistics. Correlations between the experienced difficulty, number of interactions recalled, and the outcome variables were examined.

Results

Manipulation checks

An ANOVA was performed with the number of interactions recalled (one vs five recalls) and the target outgroup (homosexual people vs. people from ethnic minorities) predicting the composite difficulty ratings. A significant main effect of number interactions recalled was observed, $F(1, 72) = 6.18$, $p = .015$, $_{partial}\eta^2 = 0.08$. Participants in the five-recall condition perceived the task as more difficult ($M = 5.67$, $SD = 2.17$) than participants in the one-recall condition ($M = 4.29$, $SD = 2.58$). No effect of group, $F(1, 72) = 0.05$, $p = .832$, $_{partial}\eta^2 = 0.00$, nor a Recall x Group interaction, $F(1, 72) = 0.02$, $p = .876$, $_{partial}\eta^2 = 0.00$, was observed.

A second ANOVA, examining the number of different contact experiences that participants actually recalled, confirmed that participants in the five-recall condition recalled significantly more interactions ($M = 4.26$, $SD = 1.46$) than

participants in the one-recall condition ($M = 0.92$, $SD = 0.28$), $F(1, 72) = 181.65$, $p <$ .001, $_{partial}\eta^2 = 0.71$. The mean number of instances that participants reported shows that most participants adhered to the instructions, and either provided one or five instances of positive contact with the target outgroups. No effect of group, $F(1, 72) = 0.76$, $p = .387$, $_{partial}\eta^2 = 0.00$, nor a Recall x Group interaction was observed, $F(1, 72) = 0.54$, $p = .463$, $_{partial}\eta^2 = 0.00$.

Outcome variables

Table 1 shows the means and standard deviations of the manipulation check and outcome variables for the different difficulty conditions, and for the different target outgroups. While the manipulation was successful in creating differences between the two conditions in perceived difficulty and number of interactions recalled, no differences were observed on the three outcome variables. Moreover, participants indicated more positive attitudes towards homosexual people than towards people from ethnic minorities, but similar difficulty in recalling interactions with both groups.

Table 2 shows the correlations between the composite difficulty scores and the outcome variables. Perceived difficulty was positively correlated with the number of interactions recalled, indicating that people who recalled more interactions also found this the task more difficult. Perceived difficulty was negatively correlated with the three outcome variables, but the correlations did not reach significance.

Table 1

Means and standard deviations of the manipulation checks and outcome variables of the pilot study, separate for each recall condition and outgroup

	Difficulty manipulation		Target outgroup	
	One recall	Five recalls	Homosexual people	Ethnic minority
Perceived difficulty	$M = 4.29$ $SD = 2.58$	$M = 5.67$ $SD = 2.17$	$M = 5.00$ $SD = 2.67$	$M = 4.99$ $SD = 2.25$
No. interactions recalled	$M = 0.92$ $SD = 0.28$	$M = 4.26$ $SD = 1.46$	$M = 2.40$ $SD = 1.97$	$M = 2.89$ $SD = 2.00$
Self-perception of contact	$M = 4.93$ $SD = 1.49$	$M = 4.78$ $SD = 1.65$	$M = 5.00$ $SD = 1.46$	$M = 4.69$ $SD = 1.67$
Feeling thermometer	$M = 72.54$ $SD = 22.38$	$M = 72.03$ $SD = 24.25$	$M = 78.80$ $SD = 20.33$	$M = 65.03$ $SD = 24.30$
Outgroup attitude	$M = 5.42$ $SD = 1.25$	$M = 5.24$ $SD = 1.33$	$M = 5.71$ $SD = 1.05$	$M = 4.90$ $SD = 1.40$

Table 2

Correlations between all variables of interest of the pilot study

Variable	1	2	3	4
1. Difficulty	-			
2. Number recalled	0.33**	-		
3. Feeling Thermometer	-0.15	0.02	-	
4. Outgroup Attitude	-0.19†	-0.05	0.88**	-
5. Self-Perception	-0.17	0.07	0.71**	0.72**

Note. † indicates $p < .10$ * indicates $p < .05$; ** indicates $p < .01$

Discussion

The pilot study was successful in finding the desired effect of the recall manipulation on the perceived difficulty of the task. Participants in the five-recall condition rated the contact recall task as more difficult than participants in the one-recall condition did. However, no differences between the two conditions were observed on the outcome variables. The correlations between perceived difficulty and the outcome variables were in the predicted direction. Participants who perceived the contact recall task as more difficult reported less positive attitudes towards the target outgroup, as well as reporting lower perceptions of their own contact with the outgroup. However, most likely due to low power in this pilot, the correlations did not reach significance. These promising results indicate that Prolific Academic is a suitable platform to use for the retrieval fluency studies.

The differences between the two outgroups, homosexual people and people from an ethnic minority background, were small. Participants indicated more positive attitudes and stronger self-perceptions of contact towards homosexual people than towards people from ethnic minorities. Although not reported in the results section, the difference in perceived difficulty between the one-recall and five-recall condition was somewhat larger for homosexual people. Therefore, homosexual people were selected as target outgroup for the Experiment 1, examining the effect of metacognitive experiences of contact recall on self-perceptions and outgroup attitudes.

Experiment 1: A first test of contact-based retrieval fluency

As the online pilot using Prolific Academic seemed to be successful in manipulating the experienced ease in recalling interactions, Experiment 1 collected a better-powered sample in order to examine the effect of the contact-based retrieval fluency manipulation on the three outcome variables of interest: self-perceptions of contact, outgroup attitudes, and future contact intentions. It was hypothesised that people in the five-recall condition would find the recall task more difficult than people in the one-recall condition, which would lead them to make inferences about how much contact they have with the group (i.e. lower self-perceptions of contact). The difficulty in recalling positive contact interactions was predicted to change people's attitudes towards the outgroup (i.e. less positive outgroup attitudes) and reduce people's interest in interacting with the outgroup in the future (i.e. lower future contact intentions), compared to people who experienced ease in recalling positive contact interactions. Specifically, mediation by self-perception of contact was predicted on the effect of the number of recalled interactions on outgroup attitudes and future contact intentions. Intentions for future contact were measured as an additional dependent variable, as the salience of past intergroup interactions was predicted to increase feelings of preparedness to interact with the outgroup again in the future. The target outgroup for this study was homosexual people.

Method

Participants and design

The sample consisted of 439 participants[1] from the online platform Prolific Academic. Participation to the survey was restricted through the Prolific platform. The survey was only accessible for people who had not participated in the previously conducted pilot study, and who were heterosexual. In total, 30 participants were removed from analysis because they either did not pass an attention check (25

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[1] The sample size was based on the simulation paper by Fritz and MacKinnon (2007), which demonstrates that, to achieve a power of .80 for partial mediation where the α path is small (manipulation to self-perception of contact) and the β is large (self-perception of contact to outgroup attitudes), a sample of 414 participants is required.

participants) or indicated that they were not heterosexual (two participants indicated being bisexual, three participants preferred not to indicate their sexual orientation). In the remaining sample of 409 participants (76% female, M_{age} = 34.38 years old, SD = 9.98 years), 204 participants received the one-recall condition, and 205 participants received the five-recall condition. Most of the participants were of British nationality (92%), and white (91%). Participants received £0.85 pounds for their time. The average completion time was five and a half minutes.

This study consisted of a between-subjects design, with the main manipulation the number of interactions with the outgroup recalled (one-recall vs. five-recall). The effects of this manipulation were examined on three different outcome variables: self-perceptions of contact with the outgroup, outgroup attitudes, and intentions for future contact.

Materials

The same questionnaires were used in this study as were described in the pilot study, with the exception that the feeling thermometer scale was removed, and a measure of future contact intentions was added. This measure existed of two items adapted from Husnu & Crisp (2010), including "In the future, how much do you intend to interact with homosexual people?", and "In the future, how much contact do you think you will have with homosexual people?" These items were presented on a nine-point scale from *not at all* (1) to *very much* (9), and they were combined into a composite average score to represent future contact intentions (r = 0.80, α = 0.89).

Procedure

The same procedure was used as described in the pilot study. The recall task was presented in the same way as in the pilot study (see Appendix C for instructions to the recall task). After completing the contact recall task, participants were again asked to indicate the perceived difficulty, and complete the outcome measures of outgroup attitudes, self-perception of contact, and future contact intentions. Participants were directed to a debriefing page after completing the survey, before they submitted their answers.

Data analysis

The analyses consisted of four parts. First, the success of the manipulation was assessed by performing the non-parametric version of independent sample t-tests, namely Wilcoxon Rank-Sum tests, on the difficulty rating and the number of interactions actually recalled. Second, the effect of the manipulation on the three outcome variables was assessed. Third, correlations were performed on the relation between the difficulty ratings and the outcome variables. Fourth, mediation analyses were performed using Hayes' (2013) PROCESS macro (Model 4) in SPSS. The other analyses were performed in R.

Results

Manipulation checks

Firstly, the experienced task difficulty was compared between the one-recall and five-recall condition. As Figure 2 below indicates, the data of the number of statements selected was not normally distributed for both recall conditions. A Shapiro-Wilk test for normality confirms the non-normal distributions, one-recall, $W = 0.95$, $p < .001$, five-recall, $W = 0.98$, $p = .005$. Therefore, a Wilcoxon Rank-Sum test was performed to compare the recall conditions on the experienced task difficulty. Participants in the one-recall condition ($M = 3.76$, $SD = 2.00$, $Mdn = 3.67$) perceived the task as easier than participants in the five-recall condition ($M = 5.26$, $SD = 2.05$, $Mdn = 5.67$), $W = 12392$, $p < .001$, $N = 409$, $r = -0.35$[2].

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[2] The value r is an indicator of effect size, calculated by dividing the z-value by the square root of N.
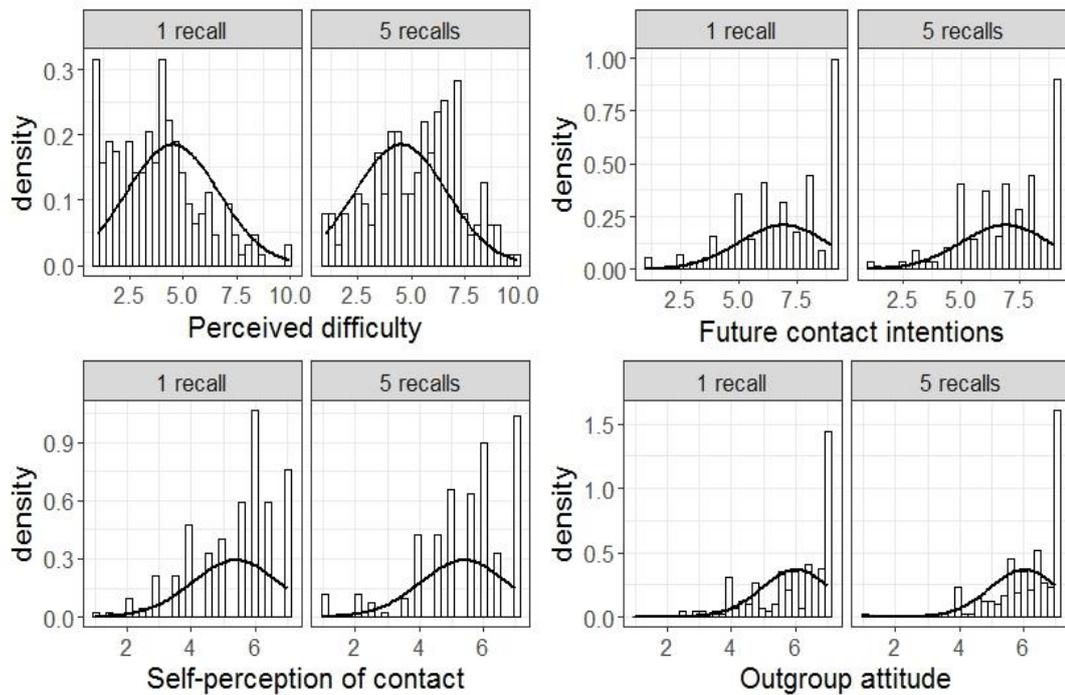
Figure 2. Density plots with normality lines of each of the outcome variables of interest for Experiment 1. Separate plots are displayed for the one-recall and five-recall conditions.

Second, the number of actual interactions described during the task was coded, and a second Shapiro-Wilk test indicates that this variable again is not normally distributed, one-recall, $W = 0.308$, $p < .001$, five-recall, $W = 0.66$, $p < .001$. A Wilcoxon Rank-Sum test showed that participants in the one-recall condition reported significantly lower numbers of interactions ($M = 0.92$, $SD = 0.28$, $Mdn = 1$) than participants in the five-recall condition ($M = 4.33$, $SD = 1.11$, $Mdn = 5$), $W = 773.5$, $p < .001$, $N = 409$, $r = -0.90$. Again, most participants adhered to the instructions and either provided one or five interactions.

Outcome variables

As Shapiro-Wilk tests for normality confirmed the non-normality of each of the outcome variables as visually presented in Figure 1 (also see Table 3), Wilcoxon Rank-Sum tests were performed for each of the outcome variables.

Table 3

Shapiro-Wilk tests of normality for each of the outcome variables of Experiment 1,

separate for the recall conditions

	Self-perception	Outgroup attitude	Future contact
One-recall	$W = 0.91, p < .001$	$W = 0.85, p < .001$	$W = 0.90, p < .001$
Five-recall	$W = 0.87, p < .001$	$W = 0.84, p < .001$	$W = 0.91, p < .001$

Self-perceptions of contact. No significant effect of the recall manipulation was observed on perceptions of contact, $W = 20506, p = .733, N = 409, r = -0.02$. Participants in the one-recall condition reported similar perceptions of their level of contact ($M = 5.37, SD = 1.34, Mdn = 5.75$) as participants in the five-recall condition ($M = 5.40, SD = 1.40, Mdn = 5.50$).

Outgroup attitudes. Participants in the one-recall condition ($M = 5.93, SD = 1.17, Mdn = 6.33$) did not differ in their attitudes towards the outgroup from participants in the five-recall condition ($M = 6.10, SD = 1.01, Mdn = 6.33$), indicated by a non-significant effect of the recall manipulation, $W = 19588, p = .261, N = 409, r = -0.06$.

Future contact intentions. No significant effect of the recall manipulation on future contact intentions was found, $W = 20650, p = .826, N = 409, r = -0.01$. Participants in the one-recall condition reported similar future contact intentions ($M = 6.85, SD = 1.96, Mdn = 7.00$) as participants in the five-recall condition ($M = 6.92, SD = 1.87, Mdn = 7.00$).

Correlations

As the manipulation itself was not successful in influencing the outcome variables, correlations between the rating of difficulty and the outcome variables were examined. As all variables were not normally distributed, Kendall's Tau was calculated for all relations (see Table 4). The experienced difficulty in the task correlated positively with the number of interactions recalled, and correlated negatively with self-perceptions of contact, outgroup attitudes, and future contact intentions. The negative correlations for difficulty in the task indicate that, with higher perceived difficulty of the task, people reported lower perceptions of contact, less positive outgroup attitudes, and lower contact intentions.

Table 4

Kendall Tau correlations between all variables of interest for Experiment 1

Variable	1	2	3	4	5
1. Task difficulty	-				
2. Number recalled	0.20***	-			
3. Self-Perception	-0.12**	0.08*	-		
4.Outgroup attitude	-0.10**	0.08*	0.45***	-	
5. Future contact	0.09*	0.07	0.64***	0.47***	-

Kendall Tau correlations between all variables of interest for Experiment 1

*Note. * p < .05; ** p < .01, *** p < .001*

Exploratory analyses

The correlations in Table 4 show that experienced difficulty was related to the outcome variables as predicted. However, the manipulation of the number of interactions recalled, which influenced difficulty, did not show an effect on any of the outcome variables. To explore the discrepancy further, a median-split factor was created on perceived difficulty scores (*Mdn* = 4.33, N_{easy} = *191,* $N_{difficult}$ = *218),* and the distribution of participants over the recall conditions and difficulty levels was explored. As Table 5 shows, only 126 of 204 participants in the one-recall condition perceived the task as easy (62%), and 140 out of 205 participants in the five-recall condition perceived the task as difficult (68%). A chi-square test showed a significant relation between the condition and task difficulty with the frequencies shown below, $\chi^2(1) = 35.92$, $p < .001$. Therefore, exploratory analyses were performed to examine the effect of task difficulty, instead of recall condition, on the outcome variables.

Table 5

Number of participants in each cell of the Recall Condition x Task Difficulty

interaction for Experiment 1

	Easy	Difficult	Total
One recall	126	78	204
Five recalls	65	140	205
Total	191	218	409

Self-perceptions of contact. No significant effect of task difficulty was observed on perceptions of contact, $W = 22437$, $p = .171$, $N = 409$, $r = -0.07$. Participants who perceived the task as easy reported similar perceptions of their level of contact ($M = 5.51$, $SD = 1.25$, $Mdn = 6$) as participants who experienced difficulty in the recall task ($M = 5.28$, $SD = 1.45$, $Mdn = 5.50$).

Outgroup attitudes. The effect of task difficulty on outgroup attitudes was significant, $W = 23142$, $p = .048$, $N = 409$, $r = -0.10$. Participants who perceived the task as easy ($M = 6.14$, $SD = 1.02$, $Mdn = 6.67$) reported significantly more positive attitudes towards homosexual people than participants who perceived the task as difficult ($M = 5.91$, $SD = 1.15$, $Mdn = 6.17$).

Future contact intentions. No significant effect of task difficulty on future contact intentions was found, $W = 22258$, $p = .222$, $N = 409$, $r = -0.06$. Participants who perceived the task as easy reported similar future contact intentions ($M = 7.02$, $SD = 1.82$, $Mdn = 7.00$) as participants who experienced difficulty in the recall task ($M = 6.77$, $SD = 1.98$, $Mdn = 7.00$).

Mediation

Lastly, a model was examined of self-perception of contact mediating the effect of difficulty in recalling contact on outgroup attitudes and future contact intentions. Two separate models were created for the two outcome variables (see Figure 3). The analysis was conducted using bootstrapped mediation tests of the indirect effect of the perceived difficulty in recalling contact, as continuous variable, on future contact intentions and outgroup attitudes through self-perception of contact (based on 5000 bootstrapped resamples) using Hayes' (2013) PROCESS macro in SPSS (Model 4). The results support this mediation hypothesis for both outcome variables. The experienced difficulty in recalling contact was predictive of outgroup

attitudes through decreased self-perceptions of intergroup contact (indirect effect = -0.06, 95% CI [-0.09, -0.03]). Difficulty in recalling contact was also predictive of future contact intentions, again through decreased self-perceptions of intergroup contact (indirect effect = -.07, 95% CI [-.10, -.03]). Full path estimates are shown in Figure 3.
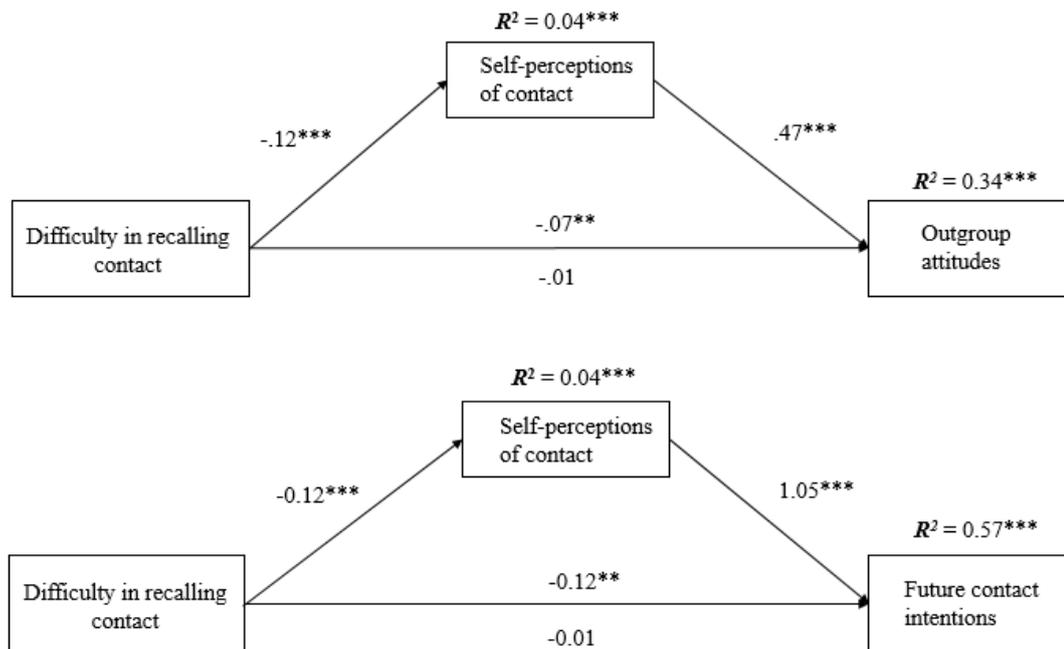
Figure 3. Mediational model of the relationship between the perceived difficulty of recalling contact and outgroup attitudes (above) and future contact intentions (below), through self-perception of contact of Experiment 1.

Note. The coefficient above the path from the independent variable to the dependent variable represents the effect without the mediator in the model, and the coefficient below the path represents the effect with the mediator included in the model.
*p < .05, **p < .01, ***p < .001.

Discussion

Experiment 1 examined the influence of the meta-cognitive experience of retrieval fluency, manipulated through ease in recalling past contact experiences, on self-perceptions of contact, outgroup attitudes, and future contact intentions. It was predicted that people who recalled five different previous interactions would experience more difficulty than people who recalled only one previous interaction

with an outgroup member. This feeling of ease or difficulty would lead to changes in self-perceptions of contact, and in turn in outgroup attitudes and future contact intentions. Participants in the five-recall condition were predicted to show lower self-perceptions of contact, lower intentions for future contact, and less positive outgroup attitudes, compared to participants in the one-recall condition.

As in the pilot study, the manipulation was successful in creating a feeling of ease or difficulty in recalling one or five interactions. However, a substantial number of participants in the one-recall condition reported high difficulty, and a number of participants in the five-recall condition reported ease in the recall task. Potentially because of this discrepancy, no effect of the number of recalled interactions was observed on any of the outcome variables in the full dataset. However, significant negative correlations were observed between experienced difficulty in the task and self-perception of contact, outgroup attitudes, as well as future contact intentions. One of the aims of this study was to examine the mediational role of self-perception of contact on the effect of the number of recalls on outgroup attitudes. However, as no direct effect of the recall manipulation on outgroup attitudes was observed, the mediation analysis was performed with perceived difficulty in the task as the independent variable. This analysis showed that higher perceived difficulty in recalling past contact predicted less positive attitudes and lower future contact intentions through reductions in self-perceptions of contact.

The results present a discrepancy between the success of the manipulation on perceived difficulty, the observed correlations between and mediation effects of perceived difficulty and the outcome variables, but no direct effect of the recall manipulation on the outcome variables. Therefore, an exploratory analysis was performed with the median-split factor created from the difficulty ratings. While the mean scores for the two groups were in the predicted direction for the difficulty variable (i.e. people who found the recall task easy reported higher self-perceptions of contact, future contact intentions, and outgroup attitudes), only the effect of difficulty on outgroup attitudes was significant.

The effects of difficulty on attitudes, both in the mediation analysis and median-split t-test, could be explained by meta-cognitive influences, but there are other explanations. As the number of recalled instances was not taken into account, it could be the case that people who experienced ease in recalling interactions simply have more contact with the group, and therefore the effect of difficulty could be a

"standard contact effect" (more intergroup contact leads to better attitudes), instead of a meta-cognition effect. Moreover, people with more negative attitudes towards the outgroup could also have more difficulty in recalling contact due to memory biases (Olson & Cal, 1984; S. M. Smith, Fabrigar, Powell, & Estrada, 2007), explaining the relation between difficulty and outgroup attitudes. These issues will be addressed in more detail in the general discussion of Chapter 3, when all the results of the first strand of research are reviewed and discussed. As the main effect of the retrieval fluency manipulation was not successful in this study, Experiment 2 examined the moderating influence of attitude strength on the effect of contact-based retrieval fluency on self-perceptions, outgroup attitudes, and future contact intentions.

Experiment 2: Moderating influence of attitude strength

In Experiment 2, the general design of Experiment 1 was replicated with a student sample, conducted in the laboratory. Participants were again asked to recall and describe either one or five positive interactions that they have had with people from the target outgroup, which was changed to South Asian people (i.e. people from India, Pakistan, or Bangladesh) to suit the student sample[3]. This national outgroup was predicted to be more effective in producing ease in recalling one interaction but difficulty in recalling five interactions with the students, as students are likely to have experienced some contact with South Asian people, but not on a daily basis. This would lead to students being able to recall some interactions, but having difficulty recalling many past contact experiences.

As no main effect of retrieval fluency was observed in Experiment 1, Experiment 2 also aimed to examine the potential moderating role of strength of pre-existing attitudes on the effect of retrieval fluency on perceptions and attitudes. Attitude strength has been shown to moderate contextual effects on attitudes and evaluative judgments, with weak attitudes but not strong attitudes being sensitive to contextual cues and salient information. In a recent paper by Nayakankuppam and colleagues (Nayakankuppam, Priester, Kwon, Donovan, & Petty, 2018), the attitude strength moderation model of evaluative judgment is described. The authors propose that evaluative judgments can either be retrieved from existing attitudes held in memory, or can be constructed based on salient information.

The occurrence of retrieval or construction processes is dependent on attitude strength. The retrieval perspective applies to strong attitudes, but attitudes are constructed when the object of evaluation is associated with a weak attitude. In this model, strong attitudes are characterised by high elaboration on the attitude, high accessibility of the attitude, and confidence or certainty of the attitude (Nayakankuppam et al., 2018). In relation to outgroup attitudes, when people are very certain of their attitude, can easily access the attitude, and have often elaborated on their attitude towards the outgroup, this indicates a well-practiced and strong outgroup attitude which is less likely to be changed by retrieval fluency cues.

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[3] A survey of attitudes towards a number of outgroups among UEA students indicated highly positive attitudes towards the LGBTQ community (see Appendix H), which could lead to ceiling effects.

Moreover, Greifeneder and colleagues (2011) reviewed multiple moderators to the ease-of-retrieval effect on evaluative judgments, and showed that the malleability of the judgment, operationalised as attitude strength, moderates the ease-of-retrieval effect. The effect of meta-cognition on judgments is stronger when the judgment is more open to extraneous influences, when it is more malleable and flexible. Very strong and stable judgments or beliefs are less likely to be influenced by cognitive feelings. This was also supported by findings from Dijksterhuis and others (1999), who showed that the ease of retrieving stereotype gender traits influenced the stereotypicality of a portrayal of a female secretary, but only when people had low levels of prejudice beforehand (Dijksterhuis et al., 1999). Lastly, Holland, Verplanken, and Knippenberg (2002) have demonstrated that strong attitudes predict behaviour, but weak attitudes are guided by previous behaviour (Holland, Verplanken, & Van Knippenberg, 2002), supporting self-perception theory (Bem, 1972).

From these findings on the role of attitude strength on evaluative judgments and sensitivity to retrieval fluency effects, it was hypothesised that strength of pre-existing attitudes towards the outgroup would moderate the effect of contact-based retrieval fluency. It was hypothesised that the manipulation of retrieval fluency would influence self-perceptions of contact and outgroup attitudes for people with weak attitudes towards the outgroup, measured as importance and certainty of attitudes (Haddock, Rothman, Reber, & Schwarz, 1999). The manipulation would be less effective, or non-effective, for people with strong attitudes towards the outgroup. Pre-existing outgroup attitudes were measured with a feeling thermometer, and people were asked to report how certain they were about their feelings, and how important these outgroup feelings were to them. The moderating variables of outgroup feelings, certainty and importance of outgroup feelings, as well as quantity of intergroup contact, were measured in a separate online session taking part two weeks before the main laboratory session. Daily contact quantity was added as a measure for exploratory purposes. This study was preregistered via the Open Science Framework before data collection commenced (https://osf.io/z7a2q/).

Method

Participants and design

The sample consisted of 167 undergraduate students[4], participating for course credit. In total, 28 participants had to be removed from data analysis. For five participants, the data of the online session and the laboratory session could not be matched. Moreover, an a priori decision was made to remove the data of 23 participants from analysis due to Asian ethnicity, as the target outgroup was South Asian people. The final sample consisted of 139 participants (86% female, $M_{age} =$ 20.17, $SD_{age} = 3.50$), with 72 participants in the one-recall condition, and 67 participants in the five-recall condition.

This study consisted of the same between-subjects factorial design as was utilised in Experiment 1. Additionally, the moderating influence of importance and certainty of pre-existing feelings towards the outgroup, as well as intergroup contact quantity were examined.

Materials

The same questionnaires as in Experiment 1 were included to measure difficulty of the task, outgroup attitudes, self-perceptions of contact, and future contact intentions. Therefore, only the newly added measures for the moderators are described below. The instructions for each measure mentioned the outgroup as Asian people, where it was specified that "the term Asians refers to people living in the UK who are of Indian, Pakistani, or Bangladeshi origin, rather than Chinese, Japanese, or Korean.

Outgroup feelings. Outgroup feelings were measured with a feeling thermometer (Haddock et al., 1993), where participants were asked to indicate their overall feelings towards Asian people by moving a slider on a 100 point scale from *very cold* (0) to *very warm* (100) to the appropriate value.

Importance and certainty of outgroup feelings. The importance and certainty of the outgroup feelings were measured with the following two items adapted from Haddock, Rothman, Reber, & Schwarz (1999), "How certain are you

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[4] The sample size of Experiment 2 was based on a power calculation in GPower (Faul, Erdfelder, Lang, & Buchner, 2007) for an independent samples two-tailed *t*-test. An effect size *d* of 0.50 was used, based on the results of the *t*-tests with difficulty in Experiment 1. This power calculation, based on a power of 0.80, resulted in a suggested sample size of 128 (64 participants in each condition).

of your feelings towards Asian people?", and "How important are your feelings towards Asian people to you personally?". These two items were presented on 7-point Likert scales from *not at all certain/important* (1) to *very certain/important* (7).

Intergroup contact quantity. Intergroup contact quantity was measured with one item, "On average, how frequently do you have contact with Asian people?", which was adapted from Meleady, Seger, and Vermue (2017). This question was presented on a 7-point Likert scale from *never* (1) to *extremely frequently* (7).

Procedure

The study consisted of two parts, an online survey to measure the moderators and a lab session for the main task that took place at least 24 hours after completing the online survey. Participants signed up to both parts via the online system SONA and could only sign up to part two after completing part one. The data of the two parts were matched for each participant through student numbers that participants provided in both the online survey and the lab session.

For the online survey, participants completed the following measures after indicating informed consent: the feeling thermometer, the items for certainty and importance of outgroup feelings, and intergroup contact quantity. Participants then completed demographic questions and received a page with debriefing information in which they were asked to sign up for part two via SONA.

The lab session was performed in a group lab where up to 14 participants could take part at the same time. After reading the information sheet and signing the consent forms, participants were asked to provide either one example or five different examples of positive social interactions that they had with an Asian person. The same instructions were used as in the previous studies. Participants were presented with large text boxes where they could write down any details about the interaction that they wanted, and they could not continue to the next screen without providing a response in each text box.

After completing the contact recall task, participants completed the three difficulty ratings of the recall task, as well as the outgroup attitudes scale, the self-perception of contact items, and the intentions for future contact items. Lastly, participants completed the same demographic questions again, and received a debriefing sheet before leaving the room.

Data analysis

The same (non-parametric version of) *t*-tests and correlational analyses were conducted as in Experiment 1. Additionally, multiple regression analyses were performed to examine the moderating effect of pre-existing outgroup feelings, certainty and importance of the feelings, and contact quantity on the effect of the number of recalls on the outcome variables.

Results

Manipulation check

Figure 4 below indicates that the data for task difficulty appears normally distributed. A Shapiro-Wilk test for normality confirms the normal distributions, one-recall, $W = 0.97$, $p = .064$, five-recall, $W = 0.99$, $p = .614$. Therefore, an independent samples *t*-test was performed to compare the recall conditions. Participants in the one-recall condition ($M = 3.36$, $SD = 1.39$, $Mdn = 3.17$) perceived the task as easier than participants in the five-recall condition ($M = 4.70$, $SD = 1.78$, $Mdn = 5.00$), $t(124) = -4.93$, $p < .001$, $d = 0.84$.
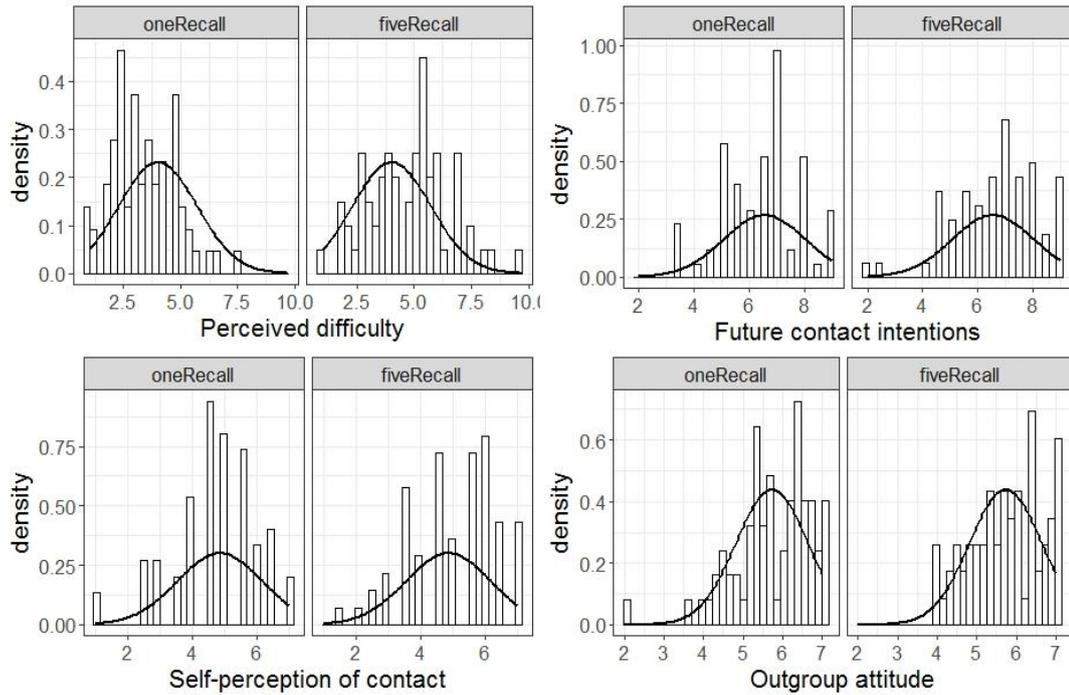
Figure 4. Density plots with normality lines of each of the outcome variables of interest for Experiment 2. Separate plots are displayed for the one-recall and five-recall conditions.

Second, the number of actual interactions described during the task was coded. All participants in the one-recall condition completed the one recalled interaction, while only nine participants in the five-recall condition described less than five interactions. Together, these results indicate that the manipulation was successful in varying the number of interactions recalled and inducing feelings of difficulty for the higher number of interactions recalled.

Effect of recall on outcome variables

As Shapiro-Wilk tests for normality confirmed the non-normality of each of the outcome variables (see Table 6), Wilcoxon Rank-Sum tests were performed for each of the outcome variables.

Table 6

Shapiro-Wilk tests of normality for each of the outcome variables of Experiment 2, separate for the recall conditions

	Self-perception	Future contact	Outgroup attitude
One-recall	$W = 0.96, p = .014$	$W = 0.96, p = .023$	$W = 0.92, p < .001$
Five-recall	$W = 0.95, p = .016$	$W = 0.95, p = .015$	$W = 0.95, p = .012$

Self-perceptions of contact. No significant effect of the recall manipulation was observed on self-perceptions of contact, $W = 2133.5, p = .238, N = 139, r = -0.10$. Participants in the one-recall condition reported similar perceptions of their level of contact ($M = 4.72, SD = 1.29, Mdn = 5.00$) as participants in the five-recall condition ($M = 4.98, SD = 1.36, Mdn = 5.00$).

Outgroup attitudes. The second Wilcoxon Rank-Sum test was performed to examine the effect of the manipulation on outgroup attitudes. Participants in the one-recall condition ($M = 5.73, SD = 0.94, Mdn = 5.75$) did not differ in their attitudes towards the outgroup from participants in the five-recall condition ($M = 5.73, SD = 0.88, Mdn = 5.83$), $W = 2454, p = .861, N = 139, r = -0.01$.

Future contact intentions. No significant effect of the recall manipulation on future contact intentions was found, $W = 2164, p = .293, N = 139, r = -0.09$. Participants in the one-recall condition reported similar future contact intentions ($M = 6.44, SD = 1.42, Mdn = 6.50$) as participants in the five-recall condition ($M = 6.66, SD = 1.58, Mdn = 7.00$).

Correlations

Next, Kendall Tau correlations were examined between all variables of interest (see Table 7). Task difficulty was positively correlated with number of recalled interactions and negatively correlated with self-perception of contact, future contact intentions, and outgroup attitudes. These negative correlations indicate that, with higher perceived difficulty and time needed to complete the task, people reported less positive outgroup attitudes, lower perceptions of contact and lower contact intentions.

Table 7

Kendall Tau correlations between all variables of interest of Experiment 2

Variable	1	2	3	4	5
1. Difficulty	-				
2. Number recalled	0.29***	-			
3. Self-Perception	-0.19**	0.10	-		
4. Outgroup Attitude	-0.10	0.00	0.41***	-	
5. Future Contact	-0.21**	0.08	0.45***	0.62***	-

Note. * $p < .05$; ** $p < .01$; *** $p < .001$

Moderation

Moderated regression analyses were performed to for each of the moderators (outgroup feelings, certainty, importance, contact quantity) and each of the outcome variables (self-perceptions, outgroup attitudes, future contact intentions). Table 8 below shows the change in explained variance after including the moderator variable for each regression analysis. Marginally significant moderation of the recall manipulation was observed on self-perception of contact and for some effects on outgroup attitudes, but not on future contact intentions. The moderation effects for each of the three marginally significant moderators on self-perceptions of contact are described below[5].

Outgroup feelings. Adding the Number Recall x Feelings interaction to the model predicting self-perceptions of contact marginally significantly increased the variance explained, and the interaction was marginally significant, $t(134) = 1.89$, $p = .061$. The effect of number of recalled interactions on self-perceptions of contact was only significant for people with very positive outgroup feelings (+1 *SD*), $b = 0.67$, $SE = 0.28$, 95% CI [0.11, 1.23]. The positive effect indicates that participants with positive outgroup feelings who recalled five interactions indicated more positive self-perceptions of contact than participants with positive outgroup feelings who recalled only one interaction. The recall effect for people with negative outgroup feelings (-1 *SD*) was in the predicted negative direction but did not reach significance, $b = -0.09$, $SE = 0.28$, 95% CI [-0.65, 0.47] (see Figure 5a).

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[5] The marginally significant moderation effect of contact frequency on outgroup attitudes was similar to the effect of self-perceptions of contact, while the effect of outgroup feelings was reversed.

Importance of outgroup feelings. Adding the Number Recall x Importance interaction to the model predicting self-perceptions of contact marginally significantly increased the variance explained, interaction term, $t(134) = 1.88$, $p =$ .062. As for outgroup feelings, the effect of number of interactions recalled on self-perceptions of contact was only significant for participants who indicated high importance of their outgroup feelings (+1 *SD*), $b = 0.63$, *SE* = 0.30, 95% *CI* [0.03, 1.22]. The positive effect indicates higher self-perceptions of contact for people in the five-recall condition than people in the one-recall condition. Again, the recall effect for participants who indicated low importance of outgroup feelings (-1 *SD*) was in the predicted negative direction, but did not reach significance, $b = -0.18$, *SE* = 0.30, 95% *CI* [-0.77, 0.42] (see Figure 5b).

Contact quantity. Adding the Number Recall x Contact interaction to the model predicting self-perceptions of contact marginally significantly increased the variance explained, interaction term, $t(135) = 1.84$, $p = .069$. The effects were in the same direction as for the other two moderating variables, but they did not reach significance at any level of the moderating variable of contact quantity. The recall effect was positive for participants with high amounts of contact (+1 *SD*), $b = 0.52$, *SE* = 0.28, 95% *CI* [-0.04, 1.07], and was negative for participants with low amounts of contact (-1 *SD*), $b = -0.21$, *SE* = 0.28, 95% *CI* [-0.76, 0.34] (see Figure 5c).
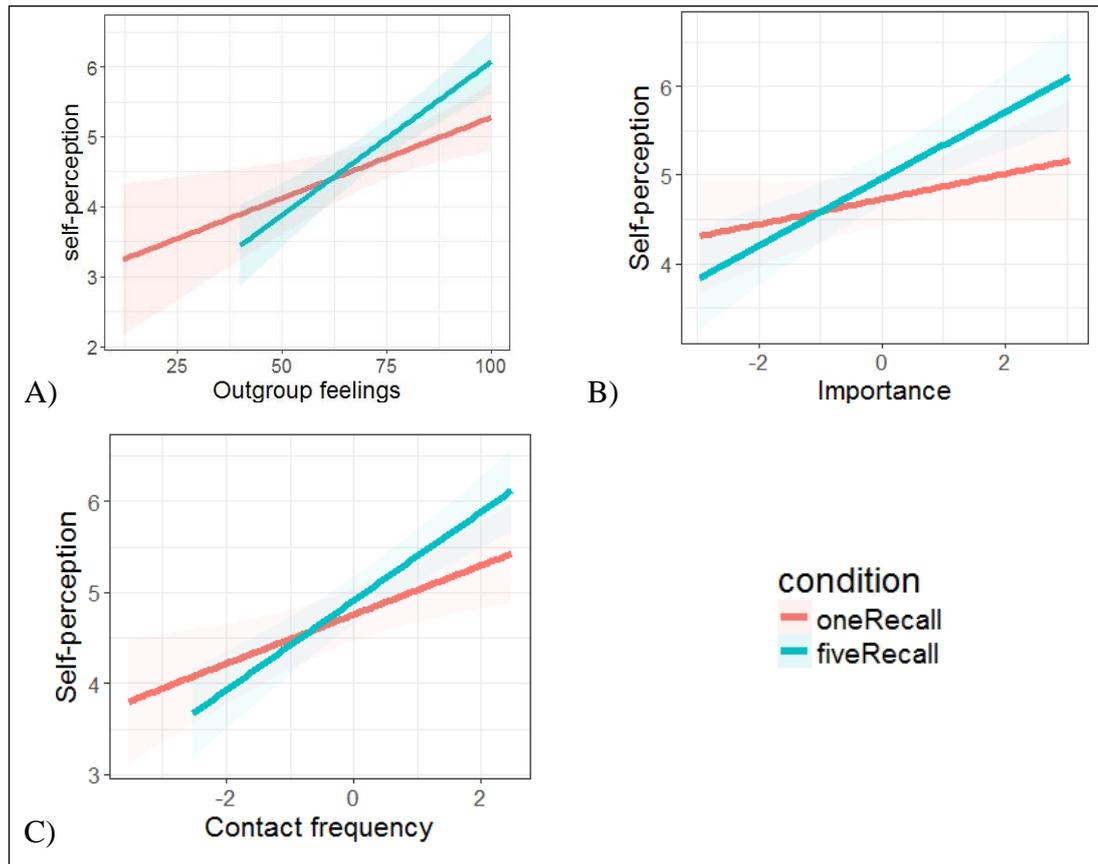
Figure 5. Simple slopes of condition for importance of outgroup feelings (panel A), importance of outgroup feelings (panel B), and daily contact frequency (panel C) on self-perception of contact for Experiment 2.

Table 8

Moderated regression outcomes for the four moderators and three outcome variables of Experiment 2

	Outcome variable		
Moderator	Self-perception	Outgroup attitude	Future contact
Outgroup feelings	$\Delta R^2 = 0.02$,	$\Delta R^2 = 0.02$,	$\Delta R^2 = 0.00$,
	$F(1, 134) = 3.58, p = .061$	$F(1, 134) = 4.11, p = .045$	$F(1, 134) = 0.01, p = .915$
Certainty of feelings	$\Delta R^2 = 0.01$,	$\Delta R^2 = 0.00$,	$\Delta R^2 = 0.00$,
	$F(1, 133) = 2.03, p = .157$	$F(1, 133) = 0.26, p = .609$	$F(1, 133) = 0.35, p = .556$
Importance of feelings	$\Delta R^2 = 0.02$,	$\Delta R^2 = 0.01$,	$\Delta R^2 = 0.00$,
	$F(1, 134) = 3.55, p = .062$	$F(1, 134) = 1.48, p = .226$	$F(1, 134) = 0.30, p = .588$
Contact quantity	$\Delta R^2 = 0.02$,	$\Delta R^2 = 0.02$,	$\Delta R^2 = 0.01$,
	$F(1, 135) = 3.37, p = .069$	$F(1,135) = 3.10, p = .081$	$F(1,135) = 2.62, p = .108$

Exploratory analyses

As in Experiment 1, a discrepancy was observed between the effect of recall condition on the outcome variables and the correlations between difficulty and the outcome variables. Therefore, the distribution of participants over the recall conditions and perceived difficulty levels was explored, as in Experiment 1. A median-split factor was created from the difficulty rating ($Mdn = 4.00$, $N_{easy} = 67$, $N_{difficult} = 72$). As Table 9 shows, only 46 out of the 72 participants in the one-recall condition (64%) perceived the task as easy and 46 out of the 67 participants in the five-recall condition (69%) perceived the task as difficult. A chi-square test showed a significant relation between the condition and task rating with the frequencies shown below, $\chi^2(1) = 13.45$, $p < .001$. Therefore, exploratory analyses were performed to examine the effect of task difficulty, instead of recall condition, on the outcome variables.

Table 9

Number of participants in each cell of the Recall Condition x Task Rating interaction of Experiment 2

	Easy	Difficult	Total
One recall	46	26	72
Five recalls	21	46	67
Total	67	72	139

Self-perceptions of contact. A significant effect of experienced task difficulty on self-perceptions of contact was observed, $W = 3037.50$, $p = .008$, $N = 139$, $r = -0.23$. Participants who perceived the task as easy reported higher self-perceptions of contact ($M = 5.11$, $SD = 1.36$, $Mdn = 5.50$) than participants who experienced difficulty in the task ($M = 4.60$, $SD = 1.26$, $Mdn = 4.50$).

Future contact intentions. A significant effect of recall difficulty was also observed on future contact intentions, $W = 3132.50$, $p = .002$, $N = 139$, $r = -0.26$. Participants who perceived the task as easy reported higher future contact intentions ($M = 6.94$, $SD = 1.45$, $Mdn = 7.00$) than participants who perceived the task as difficult ($M = 6.17$, $SD = 1.45$, $Mdn = 6.50$).

Outgroup attitudes. The last Wilcoxon Rank-Sum test was performed to examine the effect of recall difficulty on outgroup attitudes. Participants who perceived the task as easy ($M = 5.83$, $SD = 0.87$, $Mdn = 6.00$) did not differ in their attitudes towards the outgroup from participants who experienced difficulty ($M = 5.63$, $SD = 0.95$, $Mdn = 5.67$), $W = 2704.50$, $p = .217$, $N = 139$, $r = -0.10$.

Discussion

Experiment 2 aimed to replicate and extend the findings from the first study in a controlled laboratory environment. In addition to examining the effect of contact recall on self-perceptions of contact, outgroup attitudes, and future contact intentions, the moderating influence of pre-existing attitude strength and intergroup contact frequency were explored. The results of Experiment 2 were largely consistent with Experiment 1. The manipulation was successful in creating a difference in experienced difficulty of the recall task between the one-recall and five-recall conditions. However, the ease-of-retrieval manipulation had no overall influence on the outcome variables, as observed in Experiment 1. Experienced difficulty in the recall task correlated negatively with self-perceptions of contact, outgroup attitudes, and future contact intentions. Based on this discrepancy, exploratory analyses were again performed with difficulty as a predictor of the outcome variables. People who experienced ease in recalling past contact reported higher self-perceptions of contact and intentions for future contact than people who found it difficult to recall past contact interactions. The effect of difficulty on outgroup attitudes was in the predicted direction, but did not reach significance.

Experiment 2 also aimed to explore potential moderating variables in the effect of number of recalled interactions on the outcome variables. It was hypothesised that people with weak pre-existing attitudes towards the outgroup would be influenced by the meta-cognitive feelings in their perceptions and attitudes towards the group, whereas people with strong pre-existing attitudes would not show an effect of the recall manipulation (Greifeneder, Bless, & Pham, 2011; Haddock et al., 1999; Nayakankuppam et al., 2018). Moderation effects were observed for pre-existing outgroup feelings, importance of these feelings, and contact frequency, on the effect of number of recalls on self-perceptions of contact. No moderation was

observed for the other outcome variables. The moderation was in the predicted direction, where people who reported more negative feelings towards the outgroup, who reported low importance of their outgroup feelings, or who reported very little daily contact with the outgroup, showed the predicted effect of number of recalled interactions of self-perceptions of contact. However, for people with average to high levels of daily contact and who indicated high importance of their positive feelings towards the outgroup, a reversed effect was found, also named a "content effect". For most people, recalling a higher number of positive interactions led to a more positive self-perception of contact.

General Discussion

In this chapter, the meta-cognitive influence of contact-based retrieval fluency was examined on self-perception, outgroup attitudes, and intentions for future contact. Based on the availability heuristic (Tversky & Kahneman, 1973), and the ease-of-retrieval paradigm designed by Norbert Schwarz (Schwarz, 2004; Schwarz et al., 1991), this paradigm asks people to recall either one or five different positive past contact experiences with outgroup members. The general hypothesis was that recalling many interactions is perceived as more difficult than recalling one interaction. This meta-cognitive feeling of difficulty when recalling many instances of past intergroup contact should lead to lower perceptions of contact and less positive outgroup attitudes.

The pilot study, using the online platform Prolific Academic, established that recalling five different positive interactions with outgroup members was perceived as more difficult than recalling one interaction. The success of the manipulation in inducing feelings of ease or difficulty when recalling few or many previous contact experiences was confirmed in the Experiment 1 and Experiment 2. Participants followed instructions by describing either one or five different interactions with the outgroup. Moreover, the number of interactions recalled correlated positively with the experienced difficulty of the task, confirming the success of the manipulation.

However, no effect of the number of interactions recalled on either self-perceptions of contact, future contact intentions, or outgroup attitudes was observed in all studies. Overall, people who recalled five different interactions reported similarly positive attitudes and behaviour towards the outgroup as people who recalled only one interaction. Significant negative correlations were observed between the experienced difficulty and the outcome variables, indicating that participants who found the recall task more difficult also reported less positive self-perceptions of contact, outgroup attitudes, and future contact intentions. Moreover, mediation analysis in Experiment 1 indicated that difficulty in recalling past contact experiences was predictive of less positive outgroup attitudes and future contact intentions through decreased self-perceptions of contact. This direction was predicted from the literature, as the experienced difficulty in producing many examples of positive interactions should make people reflect on their contact with the group, and in turn change their evaluation of the group.

The distribution of people in the two recall conditions and the related difficulty levels indicated that a substantial minority of people in both the one-recall and five-recall condition did not perceive the task as easy or difficult as predicted. Therefore, the effect of perceived difficulty on the three outcome variables, irrespective of number of recalled interactions, was examined via a median split factor created from the ratings of recall difficulty. For Experiment 1, the results trended in the predicted direction but did not reach significance. For Experiment 2, it was found that people who found it easy to recall past intergroup contact also reported higher self-perceptions of contact, higher intentions for future contact, and more positive outgroup attitudes than people who found the recall task difficult.

This effect of difficulty on the outcome variables could be explained either as a meta-cognition effect, or as a contact-effect. People who found it difficult to recall past contact could also have had less contact with the outgroup, and therefore experience more difficulty and report less positive attitudes towards the outgroup. Thus, while the effects of difficulty observed in Experiment 1 and 2 could give an indication of the influence of meta-cognition on outgroup attitudes; no strong conclusions can be drawn at this point as no direct effect of the manipulation of difficulty through recalled interactions was observed.

Experiment 2 explored potential moderators of the recall effect, which could explain why the manipulation was not successful in creating the effect on the outcome variables for the whole sample. Based on the literature on attitude strength (Haddock et al., 1999; Krosnick & Petty, 1995) and moderation of the effect of meta-cognition in judgment (Greifeneder et al., 2011; Nayakankuppam et al., 2018), the moderating influence of pre-existing outgroup feelings, and the importance and certainty of those feelings were examined. Moreover, contact frequency was explored as a potential moderator variable as well. The models showed partial support for the moderation hypothesis. A small moderating effect was observed of outgroup feelings, importance of outgroup feelings and contact frequency on the effect of the number of interactions recalled on self-perceptions of contact.

For people who reported relatively negative feelings towards the outgroup, low importance of their feelings towards the outgroup, and little contact with the outgroup, the effect of the manipulation was as predicted. Recalling five different interactions with the outgroup led to lower self-perceptions of contact than recalling only one interaction. However, a reverse effect of the recall manipulation was

observed for people who reported average to positive outgroup feelings, who reported average to high importance of these outgroup feelings, and for people with average to high amounts of daily contact. For this group, recalling five interactions led to higher self-perceptions of contact than recalling one interaction. This suggests a "content" effect, meaning that the self-perceptions of contact were not driven by the meta-cognitive experience of ease or difficulty, but by the content of the recalled interactions. It should be noted that the moderation effects were rather small, and no effects were observed for future contact intentions as outcome variable. Therefore, no strong conclusions can be drawn regarding the moderating effect of attitude strength and contact frequency. The weakness of the moderation effects could be explained by a lack of power to establish the small effects or could be due to a lack of variance in the scores of the different variables in the student sample.

Together, the results from Experiments 1 and 2 show little evidence for the effect of meta-cognitive experiences of ease in recalling past contact on perceptions, outgroup attitudes, or future contact intentions. Theoretical accounts of why the manipulation of contact-based retrieval fluency was not successful, as well as limitations and future directions, are provided in the general discussion of Chapter 3, where all results of the first strand of research are reviewed and discussed together.

Conclusion

In this chapter, the ease-of-retrieval paradigm was adapted to explore the effect of intergroup contact recall on self-perceptions, outgroup attitudes, and future contact intentions. In this paradigm, people were asked to recall one or five different past interactions that they had with the outgroup, with the aim to induce meta-cognitive feelings of ease or difficulty. The experience of fluency in recalling interactions with the outgroup was predicted to influence people's perceptions of their prior contact with the outgroup, which in turn should lead to changes in attitudes and behaviour towards the outgroup. In the two studies conducted, I found limited support for this hypothesis. Experienced difficulty was successfully manipulated through the number of recalled interactions, but the manipulated did not affect the outcome variables of interest. However, an effect of difficulty in recalling contact was observed. Participants who experienced difficulty in recalling interactions, reported lower self-perceptions of contact, less positive outgroup attitudes, and lower future contact intentions, compared to participants that experienced ease in recalling contact. Lastly, the effect of the recall manipulation on self-perceptions of contact was weakly moderated by pre-existing outgroup feelings, importance of pre-existing feelings and frequency of daily contact. Together, these studies show little evidence of the effect of meta-cognitive feelings of ease or difficulty during recall of intergroup contact on people's perceptions of contact and attitudes towards the outgroup. In the next chapter, a second method is examined that aimed to manipulate experiences of fluency while recalling past contact through a behaviour salience paradigm.

CHAPTER 3

Manipulating retrieval fluency through salience of past intergroup contact behaviours

In this chapter, a second method of manipulating the ease and fluency of recalling past contact is examined, and how this manipulation influences self-perception, outgroup attitudes, and future contact intentions. This second manipulation of contact-based retrieval fluency relies on a linguistic device to make previous behaviour salient, adapted from Salancik and Conway (1975). Based on self-perception theory (Bem, 1972), it was hypothesised that making past intergroup contact behaviour salient will lead people to reflect on their contact with the group, which should shape their attitudes towards the outgroup and inform intentions for future contact. The main research question for this chapter is whether manipulating the salience of past contact behaviours can influence perceptions of contact, and subsequently attitudes towards the outgroup.

Two experiments are presented that examine the influence of contact-based retrieval fluency, manipulated through salience of past contact behaviours, on perceptions, attitudes, and behavioural intentions. In the first sections of this chapter, the relevant literature on the behaviour-attitude relation is reviewed, and the paradigm of behaviour salience is described. Next, the research aims and hypotheses for this chapter are outlined. The first experiment of this chapter explores the potential of the linguistic manipulation of past contact behaviours, while the second experiment systematically examines the effectiveness of the salience manipulation on the outcome variables, and potential moderation of the effects by attitude strength.

The behaviour-attitude relation: salience of past behaviour and attitudes

"People who have behaved in a certain way at one point in time are likely to do so again" (Albarracín & Wyer, 2000, p 5).

Although lay beliefs often assume that people's behaviour is guided by their beliefs and attitudes, it has been established that a reverse behaviour-attitude relation is prevalent as well. Self-perception theory (Bem, 1972), as reviewed in the previous chapter, describes how people infer their attitudes from their own past behaviour that is salient at a time, when internal cues are weak or uninterpretable. Past behaviour can be used as a heuristic to produce an attitude when requested (Salancik & Conway, 1975).

Following from this theory, research has shown that our attitudes can be shaped by inferences that we draw from our own previous behaviour (Albarracín & Wyer, 2000; Bem, 1972; Fazio, Zanna, & Cooper, 1977). This influence of past behaviour on attitudes occurs particularly when behaviours are not in line with current attitudes (Dissonance Theory; Fazio et al., 1977; Festinger, 1957), and when attitudes are weak (Chaiken & Baldwin, 1981; Holland et al., 2002). These different theories and findings show that people do not always base behaviour on existing attitudes but can construct their attitudes based on behavioural cues. However, which past behaviours are remembered and salient in the moment can vary over time. Memory is not perfect, and people are not always capable or motivated to retrieve all relevant information to construct their attitudes (information-processing framework; Kanfer & Ackerman, 1989). Therefore, studies have explored how manipulations of the salience of past behaviour in the moment can guide attitudes towards a subject.

Manipulation of behaviour salience: a linguistic paradigm

Salancik and Conway (1975) argued that attitudes that are inferred from previous behaviour are not so much derived from the behaviour exactly, but from the information that people have about their behaviour. If you can manipulate someone's recall of their behaviour, you can influence the inferences they draw from that behaviour about their attitude. In their studies, Salancik and Conway (1975) developed a linguistic device to influence the salience of different types of behaviours. Participants were asked to review their own behaviour by responding to a number of behaviour statements in the general format of "I do X". The assumption was that, whether the person endorses the statement or not, they will produce consistent thoughts with their endorsement or non-endorsement of the statement. This thought process makes certain past behaviour more salient, which leads people to draw inferences regarding their attitudes towards the environment. Thus, endorsing more behaviour statements makes this behaviour more salient, and therefore influences attitudes.

In their paper, Salancik and Conway (1975) manipulated the likelihood of endorsement by extending the statement "I do X" with either "on occasion", or with "frequently". The likelihood of endorsing a statement "I do X on occasion" is higher than the likelihood of endorsing "I do X frequently". Participants were either presented with pro-religious statements framed as occurring "on occasion" and anti-

religious statements as occurring "frequently" (the pro-religion salience condition), or with pro-religious statements framed as "frequently" and anti-religious statements as occurring "on occasion" (the anti-religion salience condition). The results showed that people in the pro-religion condition endorsed more pro-religious statements than in the anti-religion condition. This higher endorsement of past pro-religious behaviours led people to report more favourable attitudes towards religion. People in this condition also perceived themselves as more religious than people for whom anti-religious statements were made salient. Thus, endorsing many statements of past religious behaviour led people to perceive themselves as more religious and report more positive religious attitudes (Salancik & Conway, 1975).

Chaiken and Baldwin (1981) used the same behaviour salience paradigm to examine the influence of pre-existing attitude strength on the manipulation of behaviour salience. They argued that the internal cues of pre-existing attitudes would act as a moderator to the salience manipulation. Pre-existing attitudes override the effect of salient behaviours, but only for people with well-defined, strong prior attitudes. Attitude strength was assessed by examining the level of affective-cognitive consistency (i.e. the structural consistency between the affective and cognitive components of their attitude). In this study, participants were presented with ecology behaviour statements, and the statements were framed in such a way to either increase endorsement of pro-ecology statements or endorsement of anti-ecology statements. The results showed that the salience manipulation of pro-ecology or anti-ecology behaviours influenced environmentalist attitudes for people that showed poorly defined, weak attitudes. For people with strong pre-existing attitudes, the salience manipulation did not affect post-manipulation attitudes (Chaiken & Baldwin, 1981). Thus, self-perception theory shows that, under certain circumstances, people use their previous behaviour as a cue to inform their attitudes. Therefore, attitudes can be altered by making certain past behaviours more salient than other behaviours. However, this only seems to occur when the pre-existing attitude is weak or poorly defined.

Research aims and hypotheses

The aim of this chapter was to examine how contact-based retrieval fluency, manipulated through salience of past contact behaviours, influences self-perceptions of contact, outgroup attitudes, and future contact intentions. The ease-of-retrieval

paradigm that was used in the previous chapter was unsuccessful in influencing perceptions and attitudes. Therefore, in this chapter a second method was adapted to examine whether meta-cognitive experiences of retrieval fluency in remembering past contact can influence attitudes towards the outgroup. The aim was to make past positive intergroup contact behaviours salient by asking participants to endorse statements of past contact behaviours, and to manipulate salience with the use of the linguistic device developed by Salancik and Conway (1975).

Two experiments are described in this chapter that examine the influence of salience of past contact behaviours on outgroup attitudes. The salience paradigm consisted of a list of 25 positive or neutral intergroup contact behaviours, and participants were asked to endorse statements that were true for them. Examples of behaviour statements are "I have had a relaxed interaction with someone from an ethnic minority", and "I have worked together with someone from an ethnic minority group". These contact behaviours were made more or less salient by adding "occasionally" or "frequently" in the statement (see appendix D for the full list of statements and instructions). The linguistic manipulation aimed to make it more or less easy to endorse the contact behaviour statements. It is easier to endorse behaviours described as occurring occasionally, compared to occurring frequently. The manipulated ease in endorsing more contact behaviours was hypothesised to influence self-perceptions of contact (i.e. whether the person perceives himself or herself as the type of person who engages in intergroup contact), outgroup attitudes, and future contact intentions. In both studies, half of the participants received the high salience version of the list, which consisted of all "occasionally" framed statements, while the other half of participants received the low salience version, which consisted of all "frequently" framed statements.

In Experiment 3, a student sample completed a pen-and-paper survey where the checklist was presented on a sheet of A4 paper. In Experiment 4, the sample size was increased and a more representative sample was used through Prolific Academic. Experiment 3 aimed to establish whether the contact salience manipulation was successful in making people endorse more statements in the high salience condition than the low salience condition. The outcome variables were examined in an exploratory manner. Experiment 4 was confirmatory in nature and preregistered through the OSF (https://osf.io/w5eph/). Experiment 4 also included a pre-measure of the same moderating variables as examined in Experiment 2.

The first prediction was that manipulating the framing of frequency of the behaviour statements would lead people to endorse more statements in the high salience condition ("occasionally") than in the low salience condition ("frequently"). It is easier to endorse behaviour statements described as occurring on occasion than occurring frequently, and therefore people endorse more statements. The second prediction was that the experiential information of ease in endorsing many past contact behaviours should influence people's self-perceptions of intergroup contact ("It is easy to select many statements of past contact; therefore I must have a lot of contact with this group"). Heightened self-perceptions of contact, in turn, should influence attitudes towards the outgroup ("I engage in much positive contact with this outgroup, I must like this group"). People in the high salience condition were predicted to have more positive outgroup attitudes than in the low salience condition. Moreover, the salience of past positive contact with the outgroup should also lead to higher intentions to engage in future contact, as past behaviour is predictive of future behaviour (Albarracín & Wyer, 2000).

Experiment 3: Exploring the contact behaviour salience manipulation

Experiment 3 was the first exploratory investigation of the salience manipulation of intergroup contact with a student sample. Participants completed a pen-and-paper survey in class. The main aim of Experiment 3 was to establish whether the linguistic manipulation of frequency of previous contact was effective in manipulating how many contact behaviours were endorsed. The effect of the manipulation on the three outcome variables, self-perception of contact, outgroup attitudes, and future contact intentions, were additionally explored.

Method

Participants and design

The sample consisted of 182 Psychology undergraduate students[6]. Only the data from participants from the ethnic majority (White) was used in this study, as people from ethnic minorities was the target outgroup. Therefore, the data of 37 participants was removed from analysis due to a minority (non-White) ethnicity. The final sample consisted of 145 White participants (81% female, $M_{age} = 19.92$, $SD_{age} = 4.02$), with most participants being British (91%). In the final sample, 72 participants were in the high salience ("occasionally") condition, and 73 participants were in the low salience ("frequently") condition. Participants received course credit for their participation.

The design consisted of a between-subjects factorial design. The main independent variable of interest was the salience condition (high salience / "occasionally" vs low salience / "frequently"). The main outcome variables were self-perceptions of intergroup contact, outgroup attitudes, and future contact intentions. The number of contact behaviour statements selected was analysed as a manipulation check.

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[6] The sample size was informed by a power calculation using GPower. A two-tailed independent samples *t*-test with effect size *d* of 0.50 (an estimated medium effect size) and a power of 0.80 requires a sample of 128 participants, with 64 participants in each group.

Materials

The survey consisted of a list of positive contact behaviours as the manipulation and a number of questionnaires to measure the outcome variables, as well as a number of demographic questions. The manipulation and each of the outcome variables questionnaires are described below. For each measure, the outgroup was specified as people from ethnic minorities. No further instructions were provided regarding a specific ethnicity of the outgroup.

Manipulation. The contact behaviour salience was adapted from Salancik and Conway (1975) and Chaiken and Baldwin (1981). I constructed 25 neutral to positive intergroup contact behaviours and varied the framing of the statements by either including "occasionally" or "frequently" for the two versions of the survey (see appendix D for a full list of statements and instructions). Each statement was described with the target outgroup as "someone / a person from an ethnic minority group". For example, in the high salience condition, the manipulation consisted of statements such as; "I have occasionally welcomed someone from an ethnic minority group", "I have occasionally worked together with someone from an ethnic minority group", and "I have occasionally offered help to someone from an ethnic minority group". Participants in the low salience condition received the exact same behaviour statements, but "occasionally" was replaced with "frequently". Participants were asked to read each statement and to tick the box behind the statement they considered the statement to be true, and to leave the box empty if they considered the statement not to be true.

Self-perceptions of contact. The measure of self-perceptions of contact that was developed for the previous chapter was expanded with a third item, namely "I am the sort of person who has a lot of friends who are from ethnic minority backgrounds". The three items were presented on a 7-point scale from *strongly disagree* (1) to *strongly agree* (7). A composite mean score was created of self-perceptions of contact ($\alpha = 0.85$).

Outgroup attitudes. Outgroup attitudes were again measured with a six-item semantic differential scale, as used in Chapter 2 (see Appendix B). Participants were asked to indicate how they feel towards people from ethnic minorities by selecting the appropriate point on the scale. The scores of all six items were combined into a mean aggregate score of outgroup attitudes ($\alpha = 0.93$).

Future contact intentions. Future contact intentions were measured with the same two items as used in the previous chapter, adapted from Husnu & Crisp (2010). These items were presented on a 9-point scale from *not at all* (1) to *very much* (9). A composite mean score of these two items was created to represent future contact intentions ($\alpha = 0.83$).

Procedure

The data for this study was collected through a pen-and-paper survey that was distributed during undergraduate psychology lectures. Some participants completed the survey during the lecture; others completed it at other times. All participants received the instruction that they could fill out the survey in their own time and hand it back to the experimenter when they finished. The experimenter remained present in the lecture theatre to collect responses.

The survey consisted of the following parts: the informed consent page, welcome instructions, the intergroup contact behaviour checklist, the six-item semantic differential outgroup attitudes measure, the three-item self-perception of contact measure, the two-item future contact measure, demographic questions, and a debriefing sheet. With the self-perception of contact items, an attention-check question was also included (i.e. "it is important that you read the statements carefully. Please tick 1 – strongly disagree"). Participants were instructed to remove the debriefing sheet from the survey package before handing the survey back to the experimenters. The informed consent page was removed from the rest of the survey to keep responses anonymous, and names of the participants were recorded in a separate document from the coded responses.

Data analysis

The data was again analysed using the statistics program R version 3.4.2 (R Core Team, 2017) in RStudio (RStudio Team, 2015). The effect of the salience manipulation on the number of statements selected and the outcome variables was examined through the non-parametric equivalent of independent *t*-tests, the Wilcoxon Rank-Sum test. Additionally, correlations were examined between the number of statements selected and the three outcome variables.

Results

Manipulation check

Firstly, the number of contact behaviour statements that people selected was compared between the high salience ("occasionally") and the low salience ("frequently") condition. As Figure 6 below indicates, the data of the number of statements selected was not normally distributed for both of the salience conditions. A Shapiro-Wilk test for normality confirms the non-normal distribution in both conditions, high salience, $W = 0.60$, $p < .001$, low salience, $W = 0.87$, $p < .001$. Therefore, a Wilcoxon Rank-Sum test was performed to compare the salience conditions on the number of statements selected. Participants in the high salience condition ($M = 22.47$, $SD = 4.74$, $Mdn = 25$) selected significantly more statements than participants in the low salience condition ($M = 20.07$, $SD = 5.05$, $Mdn = 22$), $W = 3614$, $p < .001$, $N = 145$, $r = -0.33$.
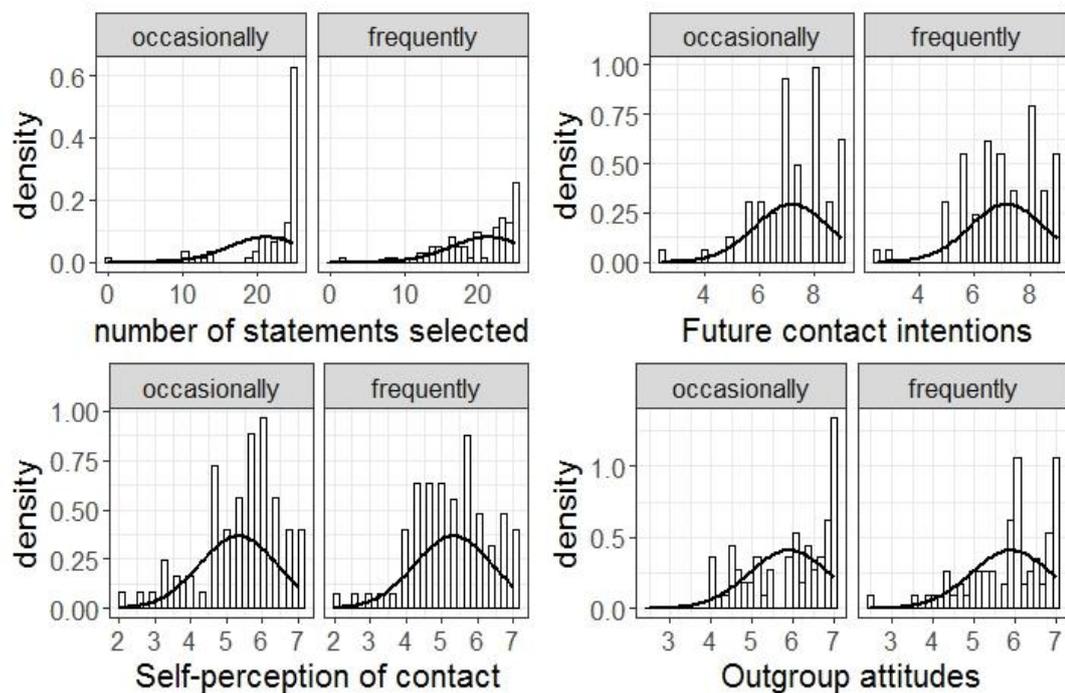
Figure 6. Density plots with normality lines of each of the outcome variables of interest of Experiment 3. Separate plots are displayed for the high ("occasionally") and low ("frequently") salience conditions.

Effects on outcome variables

Next, the effect of the behaviour salience manipulation on the outcome variables was examined. Shapiro-Wilk tests for normality confirmed the non-normality of each of the outcome variables (see Figure 6 and Table 10). Therefore, non-parametric equivalents of t-tests were performed to compare the salience conditions on each of the outcome variables. The descriptive statistics, tests for normality, and test statistics for each of the outcome variables are reported in Table 10. While the mean and median scores in the two different conditions were in the predicted direction for all outcome variables (i.e. higher scores in the high salience condition than the low salience condition), no significant differences were observed between the salience conditions[7].

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[7] A number of low score outliers were observed for the number of statements selected in the high salience condition, based on the interquartile range calculation of outliers, as originally proposed by Tukey (Tukey, 1977). These outliers could indicate disengagement from the task, as most participants selected high numbers of statements. If these outliers are removed, the difference between the two conditions on all outcome variables is enhanced, and the difference between conditions becomes marginally significant for self-perceptions of contact ($W = 2722$, $p = .067$, $r = -0.16$) and for future contact intentions ($W = 2705$, $p = .077$, $r = -0.15$). However, as the low number of statements selected could also be valid responses from people with very little contact, these analyses are not reported in the main text.

Table 10

Descriptive statistics and normality tests for each of the outcome variables and each

salience condition of Experiment 3, and comparisons between conditions

		Self-perception	Outgroup attitudes	Future contact
High salience	*M*	5.40	5.91	7.30
("occasionally")	*SD*	1.10	0.99	1.29
	Mdn	5.67	6.08	7.50
	W^a	0.94, $p = .001$	0.88, $p < .001$	0.92, $p < .001$
Low salience	*M*	5.24	5.87	7.03
("frequently")	*SD*	1.08	0.97	1.43
	Mdn	5.33	6.00	7.00
	W^a	0.97, $p = .059$	0.91, $p < .001$	0.94, $p = .001$
Difference	W^b	2932.50	2728.50	2926.50
(Rank-Sum	*p*	.227	.691	.234
Test)	*r*	-0.10	-0.03	-0.10

Note. [a] Outcome of the Shapiro-Wilk test of Normality. [b] Outcome of Wilcoxon

Rank-Sum test for comparison between conditions.

Correlations

Kendall Tau correlations between the number of statements selected and the

outcome variables (see Table 11) showed a positive relation between the number of

statements selected and all three outcome variables. Correlations were stronger with

self-perception of contact and future contact intentions than with outgroup attitudes.

These positive correlations indicate that more contact behaviour statements selected

was related to higher self-perception of contact, more positive outgroup attitudes,

and stronger intentions for future contact.

Table 11

Kendall Tau correlations between the number of statements selected, self-perceptions of contact, outgroup attitudes, and future contact intentions for Experiment 3

Variable	1	2	3
1. Number statements selected	-		
2. Self-perception contact	0.43***	-	
3. Outgroup attitudes	0.21**	0.36**	-
4. Future contact intentions	0.36***	0.55***	0.40***

Note. *** $p < .001$

Discussion

Experiment 3 was designed to explore whether the linguistic device implemented in the salience manipulation of previous contact behaviours (i.e. "occasionally" versus "frequently" occurring behaviours) was successful in influencing how many contact behaviours people endorsed, and whether it could potentially influence people's perceptions of their contact, outgroup attitudes, and future contact intentions. Participants from a student sample indicated their agreement with statements describing positive intergroup contact behaviours that occurred either occasionally or frequently. The results showed that participants in the high salience ("occasionally") condition endorsed significantly more statements than participants in the low salience ("frequently") condition did. The distribution of number of statements selected shows that most people in the high salience condition selected all 25 statements. Participants in the low salience condition showed more variation in how many statements they selected, and overall selected fewer statements. This indicates that the manipulation was successful in making people endorse more contact behaviour statements when they were framed as occurring occasionally, as compared to when behaviours occurred frequently.

As the manipulation was successful in varying how many behaviour statements were endorsed, the effect of the salience manipulation on the outcome variables of interest was examined. No significant effects of the manipulation on the three outcome variables were observed, but the mean and median scores were in the

predicted direction. As the effects were small and some ceiling effects occurred in the scores on the outcome variables, the non-significance of the effect could be due to low power. Moreover, when outliers based on the number of selected statements were removed, the effect of the salience manipulation on self-perceptions and future contact intentions approached significance[7]. As the means are in the predicted direction, this suggests that the manipulation might be effective when tested with a larger sample size.

In addition to the effects of the manipulation, correlations were examined between the number of contact behaviour statements that people endorsed and the outcome variables. Results showed that the number of behaviours selected correlated positively with all three outcome variables, although more strongly with self-perceptions of contact and future contact intentions than outgroup attitudes. This indicates that people who endorsed more contact behaviours, irrespective of condition, reported higher self-perceptions of contact, future contact intentions, and to some extent also more positive attitudes towards the outgroup. This positive correlation could be interpreted in two ways. First, it could indicate that people who endorsed more contact behaviours experienced higher salience of previous contact, and this salience related to people's self-perceptions of contact and their intentions for future contact. However, the positive correlations could also indicate that people who endorse more statements, irrespective of condition, simply have more contact with the outgroup and therefore show higher self-perceptions of contact and future contact intentions. This would be an indication of the classic intergroup contact effect. In the next study, intergroup contact frequency was measured during a pre-test in order to control for this effect when examining the salience effect.

As a first study exploring the potential effect of the contact salience manipulation, the results of Experiment 3 were promising. It was shown that making past contact behaviour more salient, through getting people to endorse more contact behaviour statements, might make people more willing to engage in future contact with the group and can change people's perceptions of their contact with the outgroup. These small effects were observed even within the student sample, where attitudes towards ethnic outgroups and contact with ethnic minorities are relatively high. As the observed effect sizes were small, Experiment 4 aimed to replicate and extend these findings in a larger and more representative sample.

Experiment 4: Replication and moderating processes

After establishing the potential of the salience manipulation in Experiment 3, Experiment 4 was designed to extend these findings in a larger and more representative sample. The aim was to examine the manipulation of salience of previous contact behaviour in a sample with larger variation in views towards and contact with the ethnic minority outgroup. Therefore, this study was conducted online, using a sample from the platform Prolific Academic. Experiment 4 was very similar in design and methodology as Experiment 3. It was hypothesised that people in the high salience condition would endorse more contact behaviour statements than people in the low salience condition, and that this higher endorsement would lead to higher self-perceptions of contact, a higher willingness to engage in future contact with the outgroup, and more positive outgroup attitudes.

In addition to the replication, the potentially moderating influence of pre-existing outgroup feelings and the strength of these feelings (i.e. importance and certainty) was explored on the effect of the salience manipulation, as was also examined in the ease-of-retrieval studies of Chapter 2. Chaiken and Baldwin (1981) showed that the salience manipulation was only successful for people with weak prior attitudes towards the target of evaluation. Strong attitudes are resistant to change and are better predictors of behaviour than weak attitudes, whereas weak attitudes are influenced by previous behaviour (Haddock et al., 1999; Holland et al., 2002; Krosnick & Petty, 1995). Therefore, the strength of pre-existing feelings towards the target outgroup was examined in Experiment 4 as potential moderator to the effect of the salience manipulation. It was predicted that the manipulation would be most effective in changing self-perceptions of contact, and in turn outgroup attitudes and future contact intentions, for people with relatively weak pre-existing attitudes towards the outgroup.

Lastly, frequency of daily intergroup contact was measured in addition to attitude strength and controlled for in additional analyses. In the previous chapter, contact frequency was analysed as a moderator, as the fluency manipulation required recall of specific contact experiences and should thus be strongly influenced by reported contact frequency. The manipulation of retrieval fluency in this chapter is less reliant on specific contact experiences and reported contact frequency is therefore only controlled for in the analyses. The moderating and control variables

were measured in a separate first session that took place two weeks before the main study.

Method

Participants and design

The sample consisted of 352 participants[8], collected from the online platform Prolific Academic. The following pre-screening criteria were in place. Only White British participants who currently live in the UK, and who identified as a mono-cultural individual, could take part in the study. These criteria were selected as people from ethnic minorities were again the target outgroup. In total, three participants were removed from analysis due to non-white ethnicity or due to missing information to match the data from the two sessions. The final sample consisted of 349 white British participants (70% female, M_{age} = 37.89, SD_{age} = 12.44), with 173 participants in the high salience ("occasionally") condition, and 176 participants in the low salience ("frequently") condition. Participants received £1.50 for their time, including £0.50 for completing session one of the study, and £1.00 for completing session two. Average completion time was 2.00 minutes for the first session, and 4.74 minutes for the second session, respectively.

The same design was adopted as in Experiment 3. Contact behaviour salience was the main between-subject factor, and the main outcome variables were self-perceptions of contact, outgroup attitudes, and future contact intentions. Additionally, pre-existing outgroup feelings, importance, and certainty of these outgroup feelings were included as moderator variables.

Materials

The same salience manipulation and measures of the outcome variables were used as in Experiment 3. Moreover, the same moderating and control variables were measured beforehand as in Experiment 2 (see Chapter 2), namely outgroup feelings, importance and certainty of these feelings, and frequency of intergroup contact.

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[8] The sample size was informed by a power calculation using GPower. A two-tailed independent samples t-test with effect size d of 0.30 (the effect size of the t-test of Experiment 3) and a power of 0.80 requires a sample of 352 participants, with 176 participants in each group.

Procedure

The study consisted of two sessions that were both completed online via the Prolific Academic platform. For the first session, participants first received information about the study and indicated consent to take part. Next, they completed the outgroup feeling thermometer and the questions regarding importance and certainty of outgroup feelings, as well as contact frequency. Lastly, participants completed demographic questions and received debriefing information.

For the main session of the study, Prolific Academic participants who completed part one received an invitation to complete part two 12 days after part one was completed. For the main session, participants again first received information about the study and indicated consent. Next, the contact behaviour checklist was displayed on the screen, and participants were asked to indicate which of the statements they considered to be true, by ticking a box placed behind the statement. Half of the participants received the high salience version of the behaviour checklist ("occasionally"), and half of the participants received the low salience version ("frequently"). After completing the checklist, participants completed the measures of outgroup attitudes, self-perceptions of contact, and future contact intentions. Lastly, participants completed demographic questions and received a written debriefing before submitting their answers.

Data analysis

The same non-parametric versions of *t*-tests and correlations as Experiment 3 were performed to analyse the data. Additionally, ANCOVAs were performed to control for the amount of daily contact with the outgroup in the effect of condition on all three outcome variables. Furthermore, moderated regression analyses were performed for each of the three moderator variables, outgroup feelings, importance of outgroup feelings, and certainty of outgroup feelings.

Results

Descriptive statistics

As one of the aims of Experiment 4 was to examine a wider sample with more diverse views on the outgroup in questions (i.e. people from ethnic minorities),

Table 12 shows the descriptive statistics of the outcome variables measured in both Experiment 3 and Experiment 4 for comparison. The descriptive statistics show that the mean and median scores of all three variables are higher in Experiment 3 than in Experiment 4. Moreover, the standard deviation and range of scores is larger in Experiment 4 than in Experiment 3 for all variables, indicating a wider range of scores on the variables of interest.

Table 12

Descriptive statistics of the outcome variables for Experiment 3 and Experiment 4

	Self-perception		Outgroup attitude		Future contact	
	Exp. 3	Exp. 4	Exp. 3	Exp. 4	Exp. 3	Exp. 4
Mean	5.32	4.45	7.16	6.36	5.89	5.34
SD	1.09	1.33	1.36	1.79	0.98	1.15
Median	5.33	4.33	7.50	6.50	6.00	5.33
Range	2 - 7	1 - 7	2.5 - 9	2 - 9	2.5 - 7	2 - 7

Manipulation check

Firstly, the number of contact behaviour statements that people selected was compared between the high salience ("occasionally") and the low salience ("frequently") condition. As Figure 7 below indicates, the data of the number of statements selected was not normally distributed for both the conditions. A Shapiro-Wilk test for normality confirms the non-normal distribution in both conditions, high salience, $W = 0.80$, $p < .001$, low salience, $W = 0.92$, $p < .001$. Therefore, a Wilcoxon Rank-Sum test was performed to compare the salience conditions on the number of statements selected. Participants in the high salience condition ($M = 20.29$, $SD = 5.77$, $Mdn = 22$) selected significantly more statements than participants in the low salience condition ($M = 15.34$, $SD = 7.84$, $Mdn = 17$), $W = 21111$, $p < .001$, $N = 349$, $r = -0.34$.
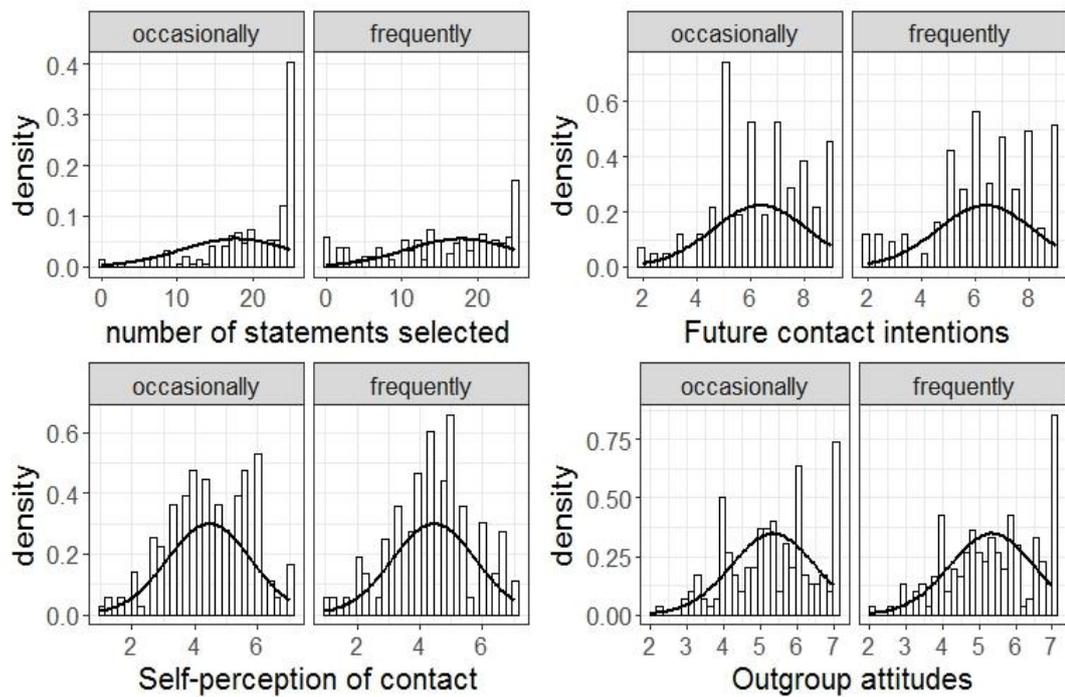
Figure 7. Density plots with normality lines of the distribution of the four main outcome variables of Experiment 4.

Effect on outcome variables

Shapiro-Wilk tests confirmed that all the outcome variables were significantly non-normal in both the high salience and low salience condition (see Figure 7 and Table 13). Therefore, to examine differences between the salience conditions for all three outcome variables, the non-parametric Wilcoxon Rank-Sum test was used. No significant differences were observed between the high and low salience condition in any of the outcome variables. People in the high-salience condition reported similar self-perceptions of contact, future contact intentions, and outgroup attitudes as people in the low-salience condition. The outcomes of the non-parametric tests, as well as descriptive statistics, can be found in Table 13 below.

Table 13

Descriptive statistics and normality tests for each of the outcome variables and each

salience condition of Experiment 4, and comparisons between conditions

		Self-perception	Outgroup attitudes	Future contact
High salience	*M*	4.48	5.32	6.34
("occasionally")	*SD*	1.33	1.13	1.73
	Mdn	4.33	5.33	6.00
	W[a]	0.98, $p = .006$	0.96, $p < .001$	0.96, $p < .001$
Low salience	*M*	4.41	5.36	6.38
("frequently")	*SD*	1.34	1.17	1.85
	Mdn	4.33	5.33	6.50
	W[a]	0.98, $p = .007$	0.95, $p < .001$	0.95, $p < .001$
Difference	*W*[b]	15636	14967	14716
(Rank-Sum)	*p*	.661	.785	.589
	r	-0.02	-0.01	-0.03

Note. [a] Outcome of the Shapiro-Wilk test of Normality. [b] Outcome of Wilcoxon

Rank-Sum test for comparison between conditions.

Correlations

In addition to the comparisons between conditions, the correlations between
the number of statements selected and the outcome variables was examined. As all
variables were not normally distributed, Kendall's Tau was calculated for all
relations (see Table 14). The correlations show that all variables are positively
related to each other. People that selected a higher number of contact behaviour
statements also reported more positive outgroup attitudes, higher self-perceptions of
contact, and higher future contact intentions. The correlation between the number of
statements selected and outgroup attitudes was somewhat smaller than the
correlation between number of statements selected and the other two outcome
variables.

Partial correlations between the variables were also determined, when
controlling for reported intergroup contact frequency as measured in the first session
of the study. When the self-reported amount of daily contact is controlled for,
correlations decreased but the number of endorsed behaviours still correlated

significantly with self-perception of contact, outgroup attitudes, and future contact intentions.

Table 14

Kendall Tau correlations and partial correlations for the relations between the number of statements selected, self-perception of contact, outgroup attitudes, and future contact intentions for Experiment 4

Variable	1	2	3
1. Number statements selected	-		
2. Self-perception contact	0.39***		
	0.32***	-	
3. Outgroup attitudes	0.27***	0.44***	
	0.23***	*0.39****	-
4. Future contact intentions	0.37***	0.63***	0.45***
	0.30***	*0.55****	*0.40****

Note. Partial correlations are reported underneath the correlations and are controlled for reported contact frequency. *** $p < .001$

Controlling for previous contact

As the contact salience manipulation requires people to select statements relating to previous contact behaviours displayed towards people from the outgroup, the amount of previous contact with the group is relevant. Three separate ANCOVAs were performed to control for the effect of previous contact. Salience condition and frequency of daily contact were entered as separate predictors of the outcome variables. After controlling for frequency of daily contact, still no effect of condition was observed on self-perceptions of contact, $F(1, 346) = 0.28$, $p = .597$, on outgroup attitudes, $F(1, 346) = 0.15$, $p = .694$, or on future contact intentions, $F(1, 346) = 0.07$, $p = .797$.

Moderation

      The moderating influence of pre-existing outgroup feelings, certainty of outgroup feelings, and importance of outgroup feelings was examined on the effect of the salience condition on self-perceptions of contact, future contact intentions, and outgroup attitudes. Moderated regression analyses were performed for each of outcome variables (see Table 15 for the outcomes of all moderation effects). No significant moderation effects were observed for the relation between the salience manipulation and the three outcome variables of interest. Neither outgroup feelings, certainty, or importance of pre-existing outgroup feelings moderated the effect of the salience manipulation significantly.

Table 15

Moderated regression outcomes for the three moderators and three outcome variables for Experiment 4.

	Self-perception	Outgroup attitude	Future contact
Outgroup feelings	$\Delta R^2 = 0.00$,	$\Delta R^2 = 0.00$,	$\Delta R^2 = 0.00$,
	$F(1, 345) = 0.17, p = .677$	$F(1, 345) = 0.02, p = .898$	$F(1, 345) = 1.24, p = .266$
Certainty of feelings	$\Delta R^2 = 0.00$,	$\Delta R^2 = 0.00$,	$\Delta R^2 = 0.00$,
	$F(1, 345) = 0.08, p = .778$	$F(1, 345) = 1.70, p = .194$	$F(1, 345) = 0.08, p = .783$
Importance of feelings	$\Delta R^2 = 0.02$,	$\Delta R^2 = 0.01$,	$\Delta R^2 = 0.00$,
	$F(1, 345) = 0.73, p = .394$	$F(1, 345) = 3.45, p = .068$	$F(1, 345) = 0.45, p = .504$

Note. The moderating variables are distributed over rows, the outcome variables are distributed over columns

Discussion

The aim of Experiment 4 was to replicate and extend the findings from Experiment 3 in a larger and more representative sample with more variation in views towards the outgroup. Experiment 4 again examined the effect of the contact-behaviour salience manipulation on self-perceptions of contact, outgroup attitudes, and future contact intentions. Moreover, pre-existing outgroup feelings, strength of outgroup feelings, and frequency of daily contact with the group were measured two weeks before the main experiment and explored as moderators and control variables. The online sample from Prolific Academic showed more variation in scores on the three outcome variables of interest than the student sample from Experiment 3, as well as somewhat less positive views overall. This indicates that indeed the online sample displayed a wider range of views towards the outgroup.

The results of Experiment 4 again showed that participants in the high salience condition ("occasionally") selected significantly more contact behaviour statements than in the low salience condition ("frequently") did. Thus, framing the contact behaviours as occurring occasionally led to people endorsing these behaviours, compared to when the contact behaviours were framed as occurring frequently, indicating a successful manipulation. However, while a difference between the conditions was observed in the number of statements selected, no other effects of the salience manipulation were observed on any of the outcome variables. Contrary to hypotheses, participants in the high and low salience condition did not differ on their self-perceptions of contact, future contact intentions, or outgroup attitudes. This finding did not change when controlling for frequency of daily contact with the outgroup.

In addition to the main effects, the moderation effect of strength of pre-existing outgroup feelings was examined. Based on the findings from Chaiken and Baldwin (1981), it was predicted that the effect of the salience manipulation would be stronger for people with weak attitudes towards the group than people with strong attitudes. However, no moderation of pre-existing outgroup feelings, certainty, or importance of pre-existing outgroup feelings were observed on any of the outcome variables. There was no effect of condition on the outcome variables, either for people with positive or negative, weak or strong attitudes.

Lastly, the correlations between the number of statements selected and the

outcome variables were all positive, indicating that people who endorsed more contact behaviours also reported higher self-perceptions of contact, future contact intentions, and outgroup attitudes. In the discussion section of Experiment 3, it was mentioned that the positive correlations between number of statements selected and the outcome variables could be due to higher salience or might be explained by a higher frequency of contact with the outgroup. In Experiment 4, a self-report measure of contact frequency was taken during the first session. Partial correlations when controlling for this measure of frequency of contact showed that the number of contact-behaviour statements endorsed was still positively correlated with self-perceptions of contact, future contact intentions, and outgroup attitudes. This might indicate that the experience of fluency in selecting more statements is related to higher perceptions of contact and attitudes towards the group. However, as the analysis controlling for contact frequency still did not result in an effect of the salience manipulation on the outcome variables, no clear conclusions can be drawn.

Why was the manipulation unsuccessful in changing perceptions of contact or attitudes towards the outgroup, while the results of Experiment 3 appeared promising? Two potential explanations can be offered for the null-effects. Firstly, it is possible that the online version of this manipulation is not strong enough to evoke the experiential feelings of ease when selecting behaviour statements. Perhaps the Prolific Academic sample did not engage actively enough in the task. Secondly, it is also possible that the statements did not target deliberate and strong contact behaviours, which are required for changes in attitudes. Self-perception theory argues that people use their own previous behaviour to infer their attitudes when that behaviour was not influenced by external pressures. However, many of the contact behaviours that were described in the list of statements could have been attributed to situational or other external circumstances (i.e. contact might have occurred by chance in public, without the deliberate choice from the participant). Therefore, future work should conduct this study in the lab with a pen-and-paper survey to maximize the physical experience of endorsing statements, and the statements should target deliberate and conscious choices to engage in contact, instead of chance encounters.

General discussion

In this chapter, a behaviour salience paradigm was adapted that aimed to manipulate the salience of past contact experiences, and thereby change people's perceptions of their contact with the group, outgroup attitudes, and future contact intentions. The behaviour salience paradigm, adapted from Salancik and Conway (1975) and Chaiken and Baldwin (1981), and inspired by self-perception theory (Bem, 1972), asked people to endorse statement of previous contact behaviour, such as "I have welcomed someone from an ethnic minority group" or "I have worked with someone from an ethnic minority group". The salience of the behaviour was manipulated by changing the framing of frequency of these previous contact behaviours as occurring "occasionally" or "frequently".

In both studies described in this chapter, people who received statements framed as occurring occasionally (the high salience condition) endorsed more contact behaviours than people who received the statements framed as occurring frequently (the low salience condition). The experiential feelings of ease or difficulty in selecting many or few contact statements should lead to inferences being made about the amount of contact, changing self-perceptions of contact ("I am selecting many statements, therefore I must have a lot of contact"). The meta-cognitive feelings around the contact retrieval and endorsement of contact behaviours were predicted to influence attitudes towards the outgroup and intentions for future contact with the group, through changes in self-perceptions. Endorsing many past contact behaviours should make positive contact more salient, and this contact can lead to changes in attitudes toward the outgroup ("I have a lot of positive interactions with this group, I must like this group").

The first exploratory study using a student sample showed promising results in the predicted direction, with people in the high salience condition reporting slightly higher self-perceptions of contact and future contact intentions than people in the low salience condition did. As the effect was small, the second study utilised a large and more representative sample to examine the contact-behaviour salience paradigm. In this study, no effect of the manipulation on any of the outcome variables was observed. Participants in the high salience and low salience condition reported similar self-perceptions of contact, future contact intentions, and outgroup attitudes. Additionally, no moderating effect was observed of strength of pre-existing

outgroup feelings, as was found in the Chaiken and Baldwin (1981) research.

However, in both studies, the number of statements that people selected correlated positively with all outcome variables, and most strongly with self-perceptions of contact. This correlation was observed irrespective of the condition, indicating that the more contact behaviours people endorsed, the higher self-perceptions of contact with the outgroup they reported. Moreover, significant positive partial correlations were observed between the number of contact-behaviour statements endorsed and the outcome variables when controlling for self-reported contact frequency. The partial correlations indicate that there might be a relation between the salience of previous contact, and not just the amount of contact, and perceptions of contact and outgroup attitudes. Correlations, however, do not indicate causality, and the experimental manipulation was unsuccessful in influencing self-perceptions and attitudes. Therefore, no clear conclusions can be drawn at this point as to the effect of salience of previous contact behaviour on attitudes towards the group.

As suggested in the discussion of Experiment 4, it is possible that the salience manipulation was not successful in influencing the outcome variables because the statement endorsement manipulation is not strong enough online and requires physical endorsing of statements, or because people did not engage with the task enough in the online setting lacking environmental control. A more theoretical explanation of the null-effect of the salience manipulation is that the contact behaviours that were described in the task did not elicit inferences from behaviour to attitudes because external explanations could be provided. According to self-perception theory (Bem, 1972), past behaviour is particularly used as a cue to infer attitudes when the behaviour is self-motivated and cannot be attributed to external influences. If the contact behaviours used in this study can be attributed to chance encounters instead of actively motivated engagement in contact, people might not infer their outgroup attitudes based on past contact behaviours.

In the next sections of this general discussion, the findings are discussed more broadly, including both the ease-of-retrieval studies from Experiment 1 and 2, as well as the behaviour salience studies from this chapter. A mini meta-analysis was performed on the data of Experiment 1 to Experiment 4 (see Appendix E), which showed that there was no main effect of the manipulation of meta-cognitive feelings accompanying contact recall on either self-perceptions of contact, future contact

intentions, and outgroup attitudes, when considering all five studies conducted in this part of the thesis. The sections below will outline three different theoretical accounts of why no effects of manipulated fluency on perceptions, attitudes, or behavioural intentions were observed in this thesis.

Naïve theories in meta-cognition

Why were outgroup attitudes not influenced by manipulations of meta-cognitive feelings of contact retrieval fluency? There is ample evidence supporting the ease-of-retrieval effect from the availability heuristic (e.g. Dijksterhuis, Macrae, & Haddock, 1999; Rothman & Hardin, 1997; Schwarz, 2004; Tormala, Petty, & Briñol, 2002) and the attitude inference process from previous behaviour (Albarracín & Wyer, 2000; Bem, 1972; Goldstein & Cialdini, 2007; Zanna, 1973). The first argument to make in why the manipulations of contact-based retrieval fluency did not influence attitudes towards the outgroup, is the importance of the naïve theories that people hold about their experiences.

Schwarz (2004) described several naïve theories regarding the conclusions that are drawn from meta-cognitive experiences of accessibility and fluency. Naïve theories are inferences that people make about why it is easy or difficult to come up with examples or provide information. People might link their recall experience to the outside world, to their own memory of events, or their attention and interest in certain factors. A general naïve theory that supports the accessibility and ease-of-retrieval effect is that "*the more exemplars exist, the easier it is to bring them to mind*" (Schwarz, 2004, p 9). When people make this assumption, they draw conclusions from their accessibility experience about how many exemplars exist in the world. When people find it difficult to provide examples of a category, or remember certain events, they conclude that these exemplars or events must not be very frequent. In the contact recall studies, this would mean that experiencing difficulty in recalling instances of contact would lead people to infer that they must not have much contact with the group. I attempted to capture this inference process by measuring self-perceptions of contact. This inference can then lead people to draw positive or negative conclusions about the group.

However, other assumptions can be made based on the accessibility experience, which focus on the personal experience. For example, Schwarz (2004) describes a naïve theory that makes inferences about one's memory: *Examples from*

categories that are well represented in memory are easier to recall than examples from categories that are poorly represented in memory" (Schwarz, 2004, p 11). Holding this theory would lead to conclusions about how well you remembered events if you experience ease or difficulty in recalling them. For example, when people find it difficult to recall intergroup contact, they might infer that their memory for interactions is not very good. Moreover, another theory emphasises the specific knowledge, interest, or relevance that people have in a certain topic. *"The more I know about something, the easier it is to come up with examples"* and *"Things that are important to me are better represented in memory than things that are unimportant"* (Schwarz, 2004, p 12). These naïve theories of memory would lead people to draw conclusions about their knowledge or interest in the topic. For example, experiencing difficulty in recalling contact might lead people to infer that they have no particular interest in intergroup interactions (e.g. "I don't see ethnicity when interacting with others"). Thus, depending on which naïve theory is believed, people make different inferences about the meaning of their meta-cognitive experiences. If people infer that their memory is not very good, that they do not pay attention to race in their interactions, or that their contact is explained by external circumstances, this would not lead to inferences being drawn about contact and outgroup attitudes.

In the current line of research, it was hypothesised that people who experience difficulty in recalling specific instances of contact, or who find themselves endorsing very many or few previous contact behaviours, would infer that this is indicative of their amount of contact (i.e. self-perceptions of contact), and of the outgroup (i.e. outgroup attitudes). This hypothesis relies on a specific naïve theory of frequency, and it is possible that the inconclusive effects on the outcome variables were due to the naïve theories that people hold. Perhaps people did not draw conclusions about how much contact they had based on their meta-cognitive experiences in recalling contact. It is possible that people drew other conclusions from their accessibility experiences.

Alternatively, perhaps people did not have a naïve theory about how contact with the group informs attitudes towards the group. The quantity and quality of intergroup contact might be viewed as separate to attitudes towards the group. In other words, people might not believe that their contact with the outgroup is indicative or influential for their attitudes towards the outgroup (i.e. "I might not

have much contact with the outgroup, but this does not mean that I do not like the group"). A reason for this lack of naïve theories of the contact-attitude relation could be that people perceive other factors as stronger influences on their attitudes, such as beliefs about equality (Whitley, 1999), or normative influences from the environment (Abrams et al., 1990). Moreover, people might provide external justifications for their (lack of) contact with the group (e.g. "I have no opportunity to interact with the group, it is not my fault").

In summary, in order for meta-cognitive experiences of contact recall to influence attitudes towards the group, people must hold naïve theories about how recall experiences inform their perception of contact ("it is easy to recall contact, therefore I must have a lot of contact"). Moreover, inferences need to be made about the relation between intergroup contact and attitudes ("I have a lot of contact with this outgroup, I must like this outgroup"). The theories that people hold about their contact with the group and their attitudes towards the group have not received much attention in the scientific literature. In future research, these naïve theories should be examined in more detail. Firstly, people should measure inference processes from contact-based retrieval fluency to self-perceptions, and from intergroup contact to outgroup attitudes. Secondly, experimental manipulations of these naïve theories should be explored. People might be primed towards different inference processes, for example through false feedback, which might lead to stronger effects of the recall of previous contact on attitudes towards the outgroup.

The problem of recalling previous contact

The second alternative explanation focuses on the potential issues around remembering intergroup contact, both in encoding the contact as "intergroup", and in retrieving interactions that are not consistent with existing attitudes. Recalling specific interactions with outgroup members might be difficult, especially if group membership of the outgroup member was not salient during the interaction, or when the interaction was not meaningful enough to be encoded in memory. Moreover, it is also possible that the memory process of recalling contact is biased by people's attitudes towards the group and their self-perceptions of contact. These two issues are described below.

Intergroup contact theory (Brown & Hewstone, 2005; Hewstone & Brown, 1986) states that salience of group membership during contact is required for

generalisation towards the outgroup as a whole. Research has shown that the effect of intergroup contact on prejudice is stronger when group membership is more salient or when the outgroup member is perceived as more typical of the outgroup (Brown et al., 1999; Van Oudenhoven et al., 1996; Voci & Hewstone, 2003). Moreover, it has been shown that negative contact makes group membership of the outgroup member more salient than positive contact. This could potentially explain why negative contact appears to have a stronger influence on outgroup attitudes than positive contact (Paolini et al., 2010). From these findings, it is clear that social categorisation into ingroup and outgroup is required for an interaction to be perceived and remembered as an intergroup encounter. Other interactions, while being with an outgroup member, might not be remembered as being on the intergroup level, but only as an inter-individual interaction. Interactions where group membership is salient might be limited, and therefore people might have difficulty accurately remembering which interactions they have had with outgroup members.

From this research, memory process could be biased by current attitudes towards the group and self-perceptions of contact. In other words, attitudes might influence contact recall. If people have very positive views about the outgroup, and want to see themselves as being the kind of person who has a lot of contact with the group, they might be more likely to remember instances of contact that are congruent with those views. The influence of current attitudes on the memory of previous behaviour has been examined in other domains. Firstly, memory research has established the effect of pre-existing knowledge structures, or schemas, on memory processes, with memory being enhanced for information that is congruent with existing knowledge (Graesser & Nakamura, 1982; van Kesteren, Ruiter, Fernández, & Henson, 2012). Memory of past behaviour has been shown to be biased to be in line with current attitudes (Olson & Cal, 1984). Moreover, people generally have a tendency to seek out information that is congruent with their beliefs and attitudes (Frey, 1986), and this selective attention and exposure bias can lead to biases in memory (S. M. Smith et al., 2007). People have a bias to attend to and remember information that fits with their point of view.

From this research, it can be argued that people who perceive themselves as having much contact with the group, who perceive themselves as not being prejudiced and open towards outgroups, would more easily recall more positive

contact encounters that they experienced with the group. The data from Experiments 1 to 4 show positive correlations between the measure of recall (difficulty in recalling contact, or number of contact behaviours endorsed) and the outcome variables. People who found it easy to recall positive contact, or who endorsed many contact statements, also indicated higher self-perceptions of contact and more positive outgroup attitudes. At this point, it cannot be conclusively stated whether people who find it easy to recall contact have more positive attitudes, or whether people who have positive attitudes find it easier to recall contact. It is likely that current attitudes towards the outgroup would influence memories of previous contact, particularly in influencing how easily instances of positive interactions with outgroup members come to mind.

The idea that self-perceptions of contact and outgroup attitudes can influence how people remember past contact is important in relation to self-report measures of contact. When people are asked to indicate how frequently they have contact with an outgroup on a seven-point Likert scale, how do they come to this judgment? Do people try to remember specific instances of contact and extrapolate from that? Do people make a guess based on an average week of their life? In making those guesses, or remembering instances of contact, people could be influenced by how they want to perceive themselves and how they perceive the group. Thus, a potential direction for future research is to examine how accurate people's estimates of intergroup contact are, and to what extent they might be influenced by biased memories of specific instances of contact driven by their self-perceptions and outgroup attitudes.

Differences between types of attitudes

The last alternative explanation for the null-effect of the meta-cognitive manipulation of contact retrieval fluency focusses on the difference between affective- and cognitive-based attitudes. One possible explanation for the null-results in this research is that the effect is dependent on the type of attitude that is measured. Perhaps meta-cognitions only influence judgments and attitudes when they are formed from a cognitive basis, as has been the main direction of study in previous research (e.g. product evaluations: Wänke et al., 1997; policy agreement: Tormala et al., 2002, Wänke et al.,1996; stereotypes: Dijksterhuis et al., 1999).

Attitudes about outgroups have a strong affective component, relying on both

social identity (Tajfel & Turner, 1979), feelings of threat and anxiety (Stephan & Stephan, 1985, 2000), and ideological beliefs (Hodson & Costello, 2007; Whitley, 1999). Intergroup contact has been shown to reduce prejudice through changes in affective characteristics such as threat, anxiety, and empathy (Pettigrew & Tropp, 2008). Moreover, attitudes towards outgroups, and particularly the expressions of prejudice, are heavily influenced by social norms (Boyanowsky & Allen, 1973; Crandall et al., 2002; Nesdale et al., 2005). The norms that society dictates about which groups are acceptable to like or to dislike, has a strong influence on the attitudes that people express towards different groups. Particularly ingroup norms about contact and attitudes has been shown to mediate the effect of indirect forms of contact on changing attitudes (Tezanos-Pinto et al., 2010; Turner et al., 2008).

Together, the affective component of outgroup attitudes and the influence of social norms on expression of these attitudes, might mean that subtle manipulations of past behaviour are not strong enough to influence such attitudes. In order to make people more positive towards the outgroup, we need more than just a subtle reminder of previous experiences. Perhaps a more vivid memory experience that focusses on affective components could be more effective in reducing prejudice. For example, targeting memories of feelings towards an outgroup might be more effective in influencing outgroup attitudes (e.g. remember a time when you felt pleasant and comfortable in interacting with an outgroup member). Imagined contact manipulations, though not relying on memory but on imagination, tap into these processes. When the imagination of a contact situation is vivid and detailed, effects on attitudes and contact intentions are stronger (Husnu & Crisp, 2010).

Limitations and future directions

From the issues discussed above, a number of limitations to the research arise and many avenues for future directions are possible. I will discuss limitations and future directions regarding the strength of the contact recall manipulations, the importance of levels of prejudice and contact frequency for the effectiveness of retrieval fluency manipulations, and the importance of self-perceptions of contact.

Firstly, the manipulations of contact in both the current chapter and the previous chapter appear to be too subtle to influence attitudes. The aim was to manipulate the ease of recalling instances of contact, or the salience of previous contact behaviours. Although in all studies the manipulation check showed that the

effect was generally present (i.e. people in the difficult condition rated the task as more difficult than in the easy condition, and people in the high salience condition selected more statements than in the low salience condition), it was also evident that the manipulation was not successful for everyone. Median-split factors of the manipulation check variables (not reported in the main text for Experiment 3 and 4) indicated a substantial minority of participants was in the "wrong cell". About 20 to 30 percent of participants either did not endorse many contact statements or found contact recall difficult when it was made easy, or they did endorse many statements or found the recall task easy when it was intended to be difficult. This indicates that both the ease-of-retrieval manipulation and the behaviour salience manipulation were not strong enough to induce the desired effect.

If the weakness of the manipulation was the main reason why no effects were found in this research, then future studies should aim to strengthen the manipulation of contact recall. With regard to the contact salience manipulation, this could potentially be achieved by adding negative contact-behaviours to the list of statements. In the original paradigm from Salancik and Conway (1975), participants were presented with both pro-religious and anti-religious statements, and both these types of statements were varied in the frequency framing. In this research, I chose not to include negative contact statements, as pilot studies indicated that people are generally reluctant to describe or indicate negative contact with the outgroup. However, asking people to compare positive and negative statements could make the salience of previous positive contact experiences stronger. Thus, a potential future direction of research is to examine the potential of meta-cognitive influences of recalling negative intergroup contact.

Moreover, other manipulations of fluency experiences in recalling past contact could be explored. A common strategy within meta-cognition research is the study of processing fluency. When the process is more fluent, a meta-cognitive feeling of ease is produced, which has been shown to influence judgments (Schwarz, 2004), and even affect intergroup processes (Lick & Johnson, 2015; Pearson & Dovidio, 2013; Petty et al., 2007). For example, West and Bruckmüller (2013) demonstrated that perceptual fluency, manipulated through the readability of the font of the instructions, moderates the effect of imagined contact on prejudice. Thus, future studies should explore how the manipulation of processing fluency in

recalling intergroup contact influences attitudes and perceptions towards the outgroup, by inducing meta-cognitive feelings of ease.

A second consideration in this line of research is the direction in which the manipulation is changing attitudes. From an intergroup contact perspective, the aim is to reduce existing prejudice through engaging in contact with the outgroup. However, attitudes towards the target outgroups were already rather positive in the current samples. It is unclear at this point to what extent social desirability concerns play a role in the reported views of the outgroup. Regardless, it seemed that the contact recall manipulation was more successful in reducing perceptions of contact and attitudes and behaviour towards the outgroup when experiencing difficulty in recalling contact, instead of increasing perceptions and behaviour when experiencing ease in recall. As perceptions of the outgroup were already positive, there was less room to change these attitudes when experiencing ease in recalling contact, which would be the main aim of the manipulation. Future studies should examine the contact-based retrieval fluency paradigm in a sample that holds and expresses prejudice towards a target outgroup.

Relatedly, it is important to consider the potential of the recall manipulation for strongly prejudiced individuals or in segregated communities. If people are prejudiced towards a certain outgroup, will they have experienced any positive interactions with that group? Alternatively, will these people interpret any interaction with an outgroup member as positive, regardless of what actually occurred? The influence of pre-existing prejudice towards the outgroup could influence the effectiveness of retrieval fluency manipulations. The intergroup contact literature suggests that intergroup contact is particularly successful in reducing prejudice for those people that have the strongest prejudice to begin with (Hodson, 2011). Moreover, Experiment 2 showed that contact frequency to some extent moderated the effect of the recall manipulation on self-perception of contact and outgroup attitudes. People who reported relatively low levels of contact showed the predicted effect of the manipulation, while people with average to high levels of contact showed a content effect. Together, this suggests that the manipulation of recalling previous contact would be more successful for people with high levels of prejudice, if the feeling of ease can be generated. This hypothesis should be explored in future studies. However, it should be noted that the contact recall manipulation might not be suitable in a context of full segregation between groups, where no contact is

available to reflect upon. In these settings, imagined or vicarious contact might be a more suitable strategy to reduce prejudice.

The third and last issue is the importance of self-perception of contact in the contact-prejudice relation. This novel concept was introduced in the research conducted for this thesis, and I developed a brief three-item measure of people's perceptions of their contact with the group. As this is a novel concept, the measure that was developed has not been validated or examined in detail. The results from Experiments 1 to 4, however, show good evidence for the predictive value of this measure. For future studies, a full-length measure of self-perception of contact should be developed, and requires validation in terms of both reliability, internal validity, and external validity. In what way do perceptions of contact relate to actual frequency and quality of contact? Are self-perceptions of contact malleable through contact interventions? Are self-perceptions of contact related to other individual values and beliefs, such as the desire to respond without prejudice (Plant & Devine, 1998), Social Dominance Orientation (Pratto et al., 1994), and ingroup identification (Brewer, 1999)? These research questions require further examination in future work.

Conclusion Chapter 2 and Chapter 3

In this research project, two different paradigms were adapted that aimed to manipulate feelings of fluency in recalling past contact, in order to change people's perceptions of previous contact with the outgroup, and in turn reduce prejudice and increase willingness for future contact with the outgroup. Based on the literature on attitude formation and evaluative judgments, it was hypothesised that experiencing ease and fluency in recalling instances of past positive contact with the outgroup would make people more positive towards the outgroup, through positive changes in people's self-perceptions of contact. Within these two paradigms, people either freely recalled a number of contact experiences, or indicated how many contact behaviours they have performed in the past. Through subtle changes in question framing, the aim was to change meta-cognitive experiences of retrieval fluency in looking back at past contact.

This research made a start in examining a new perspective on the relation between intergroup contact and prejudice and aimed to combine theories and paradigms on evaluative judgment and attitude formation with work on prejudice reduction and intergroup contact. While the manipulations of retrieval fluency during contact recall were not successful in influencing self-perceptions and attitudes, this work highlights a novel perspective to intergroup contact and raises important new questions to examine. How is contact recall affected by question framing? How do people perceive their contact and form judgments about their contact with the outgroup? Do outgroup attitudes also influence perceptions and memory of contact? Although this research did not show the effectiveness of this novel technique on reducing prejudice, the contribution of this line of research is the examination of mechanisms through which outgroup attitudes are formed, and judgments about contact are made. The novel concept of self-perceptions of contact was introduced, which emphasises the importance of own perceptions in forming attitudes about other groups.

The previous two chapters examined how remembering past contact can influence perceptions and attitudes in the present. The next question to ask is how actual contact experiences affect subsequent attitudes, and more importantly, behaviour towards novel group members. The next two chapters describe the second strand of research in this thesis, which shift focus from remembering past contact to generalisation processes to influence future contact behaviour.

CHAPTER 4

From past to future: Generalisation of positive contact experiences in trust towards novel group members

Imagine that you are travelling by train for a business meeting in another city. On the train, a Muslim man wearing traditional clothing takes a seat next to you. You get chatting, and before you know it, you have talked to him for the rest of your journey, having a pleasant conversation about many topics. When you get off the train and get to your business meeting, a Muslim woman wearing a headscarf meets you at the front desk. From intergroup contact theory, it is assumed that the pleasant interaction with the Muslim man on the train can change your attitudes towards Muslims as a group. However, does your behaviour towards other members of the group also change, such as the Muslim woman at the meeting? Does intergroup contact also generalise to improve pro-social behaviour towards novel group members? This research question is central to the second strand of the thesis.

In the first research strand of the thesis, I examined how fluency in recalling past contact experiences with outgroup members can influence people's self-perceptions and attitudes towards the group. While changing attitudes towards outgroups is an important outcome of contact, the ultimate goal of contact interventions is to improve intergroup relations, which requires changes in behaviour towards group members as well as general attitudes. Improved outgroup attitudes should also lead to changes in behaviour towards the outgroup, but very few intergroup contact studies have examined this question. Therefore, the second research strand of the thesis moves focus from the past to the future to examine how contact generalises to trust behaviour towards novel group members. The next two chapters describe four studies that utilised an experimental methodology to explore how people use their previous experiences with outgroup members to inform their trust towards novel group members. The central process in this research is *member-to-member generalisation,* which refers to generalisation processes from one individual of a group to other individual group members.

For member-to-member generalisation, two different processes describing the relation between the outgroup individual and the group need to be established. Firstly, the effect of interpersonal interactions on group representations (individual-to-group). The existing literatures on intergroup contact and stereotypes have established that information about or interactions with individual group members can generalise and change representations of the group as a whole. Secondly, the effect of group representations on responses to individuals (group-to-individual), which is

shown in group-based biases in impression formation processes. These two literatures are reviewed below.

Individual-to-group generalisation

Two different approaches have examined how experiences with individual group members influence perceptions of the group: intergroup contact studies and individual-to-group generalisation studies. While intergroup contact studies focus on prejudice reduction, individual-to-group generalisation studies mostly examine changes in stereotypes and group judgments. A number of prominent theories on the generalisation of intergroup contact to prejudice are the *decategorisation model* by Brewer and Miller (1988), the *common ingroup identity model* (Dovidio et al., 2000; Gaertner, Mann, Murrell, & Dovidio, 1989), and the *intergroup contact model* (Brown & Hewstone, 2005; Hewstone & Brown, 1986). Each of these theories is reviewed in detail in Chapter 1. These contact theories emphasise a different process through which contact reduces prejudice, such as a focus on the individual instead of the group (decategorisation), identifying a superordinate shared ingroup (common ingroup identity), or emphasising the salience of the outgroup during contact (intergroup contact).

The process in which information about individual group members changes group judgments has also been studied outside the intergroup contact literature, referred to as individual-to-group generalisation (Paolini, Hewstone, Rubin, & Pay, 2004). It has been shown that individual-to-group generalisation can lead to both stereotype formation (Sherman, 1996) and stereotype change or reduction when exposed to counter-stereotypical, atypical, or "deviant" group members (Paolini, Crisp, & McIntyre, 2009). The study of individual-to-group generalisation takes a social-cognitive approach in examining how information about exemplars changes the representation of a group (E. R. Smith & Zárate, 1992). This line of research, while related to intergroup contact theory, relies on different methodologies. Most studies of intergroup contact depend on a form of self-report to measure quantity and quality of contact with the outgroup and prejudice (see Pettigrew & Tropp, 2006). Individual-to-group generalisation research, on the other hand, most commonly uses impression formation paradigms (Garcia-Marques & Mackie, 2001), in which participants are presented with information about an individual outgroup member, after which they are asked to form an impression of the individual and report their

judgment of the group.

A recent meta-analysis including 58 studies with 107 independent tests showed the robustness of the individual-to-group generalisation effect (McIntyre, Paolini, & Hewstone, 2016). A positive, medium sized effect was observed over all studies, and moderating influences were observed of the quantity and quality of the exemplar information provided. The positive meta-analytic effect indicates that information about atypical (stereotype-disconfirming) outgroup members is generalised and influences judgments of the group. As with contact quantity and prejudice, it was found that having information about more exemplars led to stronger generalisation and more stereotype change. Moreover, receiving information about multiple moderately atypical group members produced stronger generalisation effects than being exposed to a few extremely atypical group members. The interaction between quantity and quality has also been suggested within the intergroup contact literature in that a combination of both frequent and positive contact is required to reduce prejudice (Allport, 1954; Brown, Maras, Masser, Vivian, & Hewstone, 2001; Voci & Hewstone, 2003).

Attitude transfer

While generalisation of behavioural experiences from one group member to another has not been examined, a few studies have explored how trait and behaviour information is transferred between group members and relates to group impressions (Crawford, Sherman, & Hamilton, 2002; Ranganath & Nosek, 2008; Ratliff & Nosek, 2011). Crawford and colleagues (2002) examined how perceived group *entitativity,* the degree to which a group or category is perceived to be a unified entity (D. T. Campbell, 1958), relates to transference of behavioural information of one group member to impressions of the group as a whole and other group members. The authors argued that in highly entitative groups (i.e. small groups where people are perceived to be very similar, such as groups based on interests or skills), the individual members are perceived as interchangeable parts. Therefore, the behaviour of one group member becomes associated with the group as a whole, and with other members of the group. Low entitative groups (i.e. large groups where people are perceived to have different traits, such as nationality or gender), in contrast, are treated as a collection of individuals instead of a united group. The results from three experiments showed that, for the high entitative group, people remembered inference

traits of the individual equally well as transference traits from the group. However, for low entitative groups, people only remembered inference traits, and no transference of traits between group members occurred (Crawford et al., 2002).

Moreover, Ranganath and Nosek (2008) showed that the transfer of associations between group members occurs directly on an implicit level, but not explicitly. In their experiment, Ranganath and Nosek (2008) showed that, if people are presented with a group member who performs mostly positive or negative behaviours, they have an automatic tendency to generalise this information to new individuals from the same group. This was shown in implicit attitudes of the new group members, which were influenced by the valence of information about the previous group members. However, when given the chance to deliberate about this process in explicit self-report measures, people resisted generalisation of evaluations. (Ranganath & Nosek, 2008).

Lastly, Ratliff and Nosek (2011) continued with this paradigm of implicit attitude transfer and examined the effect of group membership (ingroup or outgroup) and valence of information about group members (positive or negative) on attitude transfer. Ratliff and Nosek (2011) showed that implicit attitudes formed about the outgroup members transferred to implicit attitudes about new outgroup members, particularly when the information was negative. However, this implicit attitude transfer did not occur for ingroup members. It was argued that the stronger generalisation of implicit attitudes occurred because the outgroup is perceived as more homogenous, allowing more generalisation between group members. Moreover, negative information has been shown to generalise more readily than positive information (Fazio, Eiser, & Shook, 2004; Shook, Fazio, & Richard Eiser, 2007). Thus, implicit attitudes formed about group members can transfer by means of association through shared group membership, and influence implicit attitudes formed about novel group members (Ratliff & Nosek, 2011).

The role of homogeneity and entitativity perceptions

As indicated in the above section, group perceptions can influence generalisation processes, at least in attitude transfer studies. Information about groups that are perceived to be more entitative (Crawford et al., 2002) or more homogeneous (Ratliff & Nosek, 2011) is more likely to be generalised between group members. When a group is perceived to be a highly connected entity, or when

group members are perceived to be very similar to each other, information from one group member is more informative about other group members. This effect has been observed particularly in relation to the outgroup, where it can lead to stronger prejudice (Agadullina & Lovakov, 2018). The outgroup homogeneity effect (Ostrom & Sedikides, 1992; B. Park & Rothbart, 1982) indicates that outgroups are perceived to be more homogenous and group members to be more similar to each other than ingroups. This theory is derived from Social Identity Theory (Tajfel & Turner, 1979), and argues that individual members are seen as more representative of the group because of this homogeneity perception. One outgroup member is viewed as more predictive of how other outgroup members might behave, which can lead to stronger generalisation or transfer effects. Thus, while generalisation of information about individual group members to the group as a whole and other group members has been established, the strength of generalisation can be moderated by group perceptions of entitativity and homogeneity.

Influence of group membership on impression formation

The aim of this research is to examine member-to-member generalisation in behaviour towards individual group members, expanding the contact literature in both generalisation processes and outcome variables. For this type of generalisation process, it is also important to establish the effect of group representations and attitudes on responses to individuals. This process of group-to-individual has been studied in multiple theoretical accounts (Fiske & Neuberg, 1990; Linville, 1982), empirical research (e.g. Balliet, Wu, & De Dreu, 2014; Dasgupta, 2004; Dijksterhuis, Spears, & Lépinasse, 2001), and computational models (Kunda & Thagard, 1996). Generally, people tend to show preferences towards individuals from their ingroup than from their outgroup (ingroup favouritism). Below, I will briefly review two theoretical accounts of the influence of social categories and group membership on responses to individual group members, namely the Continuum Model of Impression Formation (Fiske & Neuberg, 1990) and Complexity-Extremity Theory (Linville, 1982).

Fiske and Neuberg's Continuum Model of Impression Formation (Fiske & Neuberg, 1990) suggests that people rely on various processes to form impressions of others, which lie on a continuum from solely category-based processing (i.e. relying on social categories and stereotypes) to solely attribute-based processing (i.e.

relying on individuating information)[9]. Sometimes people form impressions based solely on stereotype information about the group, sometimes people only use individuating information about the target's attributes to form their impressions, and often these two processes are combined. The continuum model combines social stereotyping literature with person impression research to provide predictions as to when which type of processing is more salient in forming impression of others.

The main premise of the continuum model is that category-based processing (i.e. relying on stereotypes) has a priority over attribute-based processing (i.e. relying on individual information). This priority of stereotypes is only challenged when the perceiver increases attention to the individuating attributes, is motivated to individuate, or the attributes do not easily fit a category. Fiske and Neuberg (1990) argue that people first rely on stereotype information of the group, and if this is unsuccessful, rely on recategorisation or integration of attributes. Thus, this model shows that impression of others, and corresponding cognitions and behaviours towards the target, are initially driven by group-level stereotype information. Only when the person is motivated to process individuating information, and when the social category cannot be fitted to individual characteristics, do people form impressions based only on individual attributes (Fiske & Neuberg, 1990).

A second theory on the influence of group membership on person impression focuses on evaluations of members of ingroups and outgroups. In the complexity-extremity theory, Linville (1982) argues against the unidimensional bias towards favouring ingroups over outgroups, but instead suggests a bidirectional hypothesis in which evaluations of outgroup members are more extreme than evaluations of ingroup members in both positive and negative directions, leading to either ingroup or outgroup favouritism. When presented with similar individuating information, people evaluate outgroup members differently from ingroup members, leading to extremity in evaluations. In earlier studies, Linville observed the polarised effects of group membership on job application evaluations, where strong applications led to more positive evaluations for outgroup members than ingroup members, and weak applications led to more negative evaluations for outgroup members than ingroup members (Linville & Jones, 1980).

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[9] For reference, Fiske and Neuberg (1990) use the term "perceiver" to indicate the person forming an impression, and the term "target" to indicate the person the perceiver is forming an impression on.

Complexity-extremity theory argues that these polarised evaluations of outgroup members are due to the complexity of cognitive representations of the groups. People generally hold more complex representations of their own ingroup than of outgroups (Linville, 1982; Linville & Jones, 1980). This difference in cognitive complexity is due to the amount of exposure and familiarity with ingroups and outgroups. When people are very familiar with the outgroup, such as in the case of gender, complexity is similar for the ingroup and outgroup (Linville, Fischer, & Salovey, 1989; Linville, Fischer, & Yoon, 1996). Following from this, Linville (1982) argued that cognitive complexity leads to extremity in judgments due to the number of attributes used for evaluation. People use their schemas of social categories to guide the processing of individual information, as already outlined in the continuum model from Fiske and Neuberg (1990). Linville (1982) argues that, when someone holds a complex representation of a group, they will evaluate an individual group member on many attributes that are incorporated in the group representation. When many attributes are considered in the individual evaluation, the overall evaluation is more likely to be moderate in valence. However, when there are limited attributes connected to the social category in the cognitive representation, the evaluation is more likely to be skewed towards completely good or bad, and thus more extreme in nature (Linville, 1982).

Together, the above reviewed theories show how information about individual group members influences group representations (individual-to-group), and how group representations can influence responses towards individual group members (group-to-individual). Both these processes are vital for member-to-member generalisation. The next section will focus on the behavioural outcome of the member-to-member generalisation process that is studied in this thesis, namely trust.

Studying trust and cooperation

The aim of the current research is to examine member-to-member generalisation of intergroup behaviour, which is measured in the form of decisions to trust outgroup and ingroup members. When studying intergroup pro-sociality and harmonious intergroup interaction, trust and cooperation are two vital factors to promote peaceful integration. Trust is essential in interactions and social relationships (Balliet & Van Lange, 2013), as it indicates that people have positive

expectations about the behaviour and intentions of the other person (Lewicki, Tomlinson, & Gillespie, 2006; Rousseau, Sitkin, Burt, & Camerer, 1998). Previous research has established that general trust predicts cooperation (Balliet & Van Lange, 2013; Ferrin, Bligh, & Kohles, 2008). Trust has been found to help establish cooperative relations between organizational parties (McKnight, Cummings, & Chervany, 1998), lead to stronger relationship commitment (L. Campbell, Simpson, Boldry, & Rubin, 2010), and helps improve team performance (De Jong & Elfring, 2010).

Defining and measuring trust. Trust can be defined as "a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behaviour of another" (Rousseau et al., 1998, p 395). Thus, when an individual trusts another person, or group, the person makes the decision to take a risk because he/she believes or expects that the other person or group will behave desirably. This belief about the behaviour of another person can be based on predictability and expectations, or on beliefs about the prosocial motives of the other person (Balliet & Van Lange, 2013). For example, you can trust another person to pay back the money you loaned them because they have been reliable in paying back money in the past, or because you believe them to be an honest person who keeps his word.

Trust is often measured either through self-report questions of generalised trust attitudes, or through trust behaviour towards individuals, such as in the Trust Game (Berg et al., 1995). In studying generalised trust, much of the existing research has used questions about whether most people can be trusted or not, whether people are generally helpful, and whether others would take advantage of you (Brehm & Rahn, 1997; Glaeser, Laibson, Scheinkman, & Soutter, 2000; Rahn & Transue, 1998). However, these generalised trust attitudes are not always good predictors of trusting behaviour (Glaeser et al., 2000).

A common way to study trust between individuals is to examine investment behaviour in the Trust Game (Berg et al., 1995). In this game, a trustor is given an endowment that he/she can invest in a trustee. If the trustor invests his/her endowment, the amount is multiplied and given to the trustee. The trustee then has the choice to reciprocate trust by returning some of the received amount to the trustor, but he/she does not have to. Both players can end the game with more money than they started out with, but only if they both show cooperation (see Figure 8).

Contrary to the predictions from Game Theory, people generally display both trust and trustworthiness (i.e. investing and reciprocating money) in this game (Camerer, 2003). Trust occurs in single game interactions with strangers, but is particularly prevalent in repeated interactions when the interaction partner reciprocates trust (King-Casas et al., 2005). However, trust is most commonly withdrawn after non-reciprocation, or violations of trust, a strategy called the "tit-for-tat strategy" (Axelrod & Hamilton, 1981).
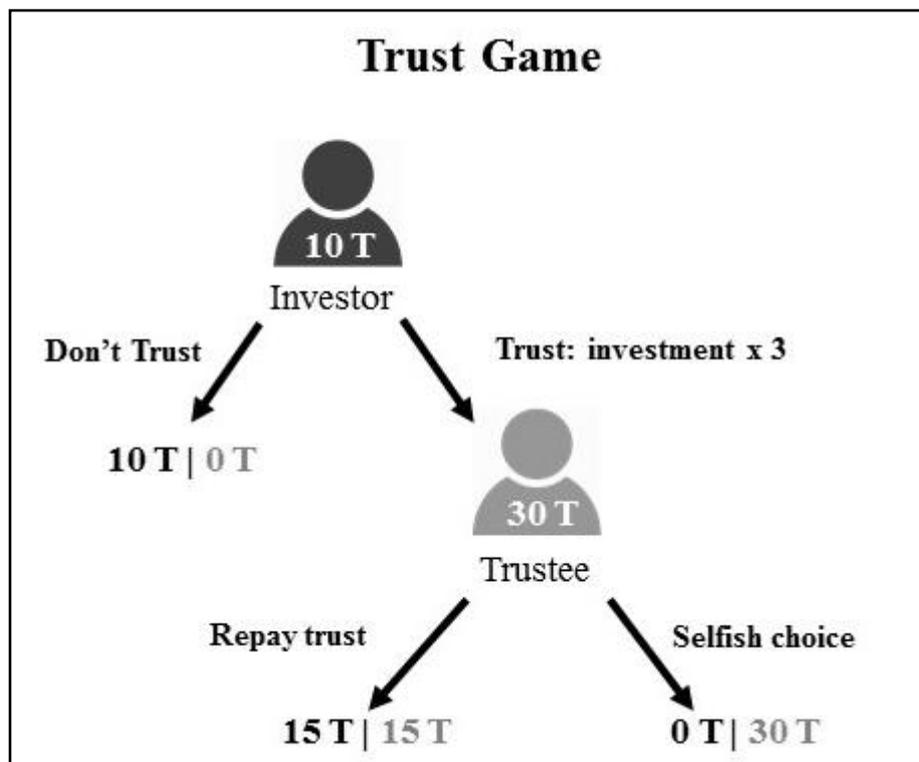
Figure 8. Schematic representation of the Trust Game.

        The Trust Game has been used in a wide range of research examining how trust and trustworthiness relate to both trustor and trustee characteristics. For example, facial cues of trustworthiness or resemblance of the trustee has been indicated as a strong driver of trust (Chang, Doll, van 't Wout, Frank, & Sanfey, 2010; DeBruine, 2002; van 't Wout & Sanfey, 2008). Moreover, trust attitudes and behaviour in the Trust Game and other cooperative games has been related to social-value orientation, an individual difference measure of preferences for distribution of resources between the self and others (McClintock, 1978; Van Lange, Otten, De Bruin, & Joireman, 1997). Studies found that people that are more cooperative in

their distribution preferences are more trusting and reciprocate trust more strongly, compared to people with individualistic or competitive preferences (Kanagaretnam, Mestelman, Nainar, & Shehata, 2009; Romano, Balliet, Yamagishi, & Liu, 2017). Thus, trust behaviour varies by stable personal preferences of the trustor as well as characteristics of the receiver of trust, the trustee.

Intergroup trust. Trust behaviour has been examined in the intergroup domain as well as interpersonally, where one of the main findings is that people generally trust ingroup members more than outgroup members (Balliet et al., 2014; Foddy & Dawes, 2008; Romano et al., 2017). Ingroup favouritism in trust and cooperation has been shown to be strongly related to opportunities for indirect reciprocity (Yamagishi, Jin, & Kiyonari, 1999), and reputational concerns (Romano et al., 2017; Yamagishi & Mifune, 2008). People are more willing to trust and cooperate with ingroup members to keep a positive reputation within the group of being a co-operator. This positive reputation will benefit them at later points through indirect reciprocity of their cooperative efforts, when interacting with other ingroup members. The importance of reputational concerns was confirmed in a recent study by Romano and colleagues, showing stronger trust when there was common knowledge of group membership over 17 different countries (Romano et al., 2017).

In a large-scale meta-analysis, Balliet and colleagues found a robust effect of group membership on cooperative decisions in different types of social dilemma games, showing higher trust and cooperation towards ingroup members than outgroup members (Balliet et al., 2014). Moreover, ingroup favouritism was stronger when there was common knowledge of group membership between all game partners, supporting the indirect reciprocity account of ingroup favouritism in cooperation (Yamagishi et al., 1999). People have to be aware of your shared group membership if you are hoping to build a reputation and have other group members reciprocate your cooperative efforts. In addition, the meta-analysis also showed that the bias towards the ingroup is not driven by outgroup derogation, as the difference between ingroup cooperation and behaviour towards unclassified strangers was similar to the difference between ingroup and outgroup (Balliet et al., 2014). Thus, the effect of group membership on trust decisions and cooperative behaviour is a robust effect in the literature.

However, outgroup favouritism in trust behaviour has been observed as well (Vermue, Seger, & Sanfey, 2018). In their paper, Vermue and colleagues found an

influence of group-based biases on learning processes about individual group members in iterated Trust Games. The student sample showed higher initial trust towards foreign outgroup members over ingroup members from their own country and persisted this outgroup bias when individual partners reciprocated trust. However, when repeatedly interacting with untrustworthy partners, group membership became less influential and ingroup and outgroup members were distrusted equally over time (Vermue et al., 2018). This research indicates that group membership does not only influence one-shot trust decisions, but also affects how people learn about individuals in repeated interactions.

In relation to intergroup contact, outgroup trust has been established as a mediator of the effect of contact on outgroup attitudes and prosocial behavioural intentions (Pagotto et al., 2013; Tam, Hewstone, Kenworthy, & Cairns, 2009; Turner et al., 2013; Vezzali et al., 2012). These studies show that intergroup contact makes people more likely to have positive intentions for behaving pro-socially towards the outgroup due to an increase in trust in outgroup members. However, trust has not been examined as a behavioural outcome of intergroup contact in these studies. In the above mentioned studies, trust was measured through self-report items, which has been shown to not always correspond to behavioural trust (Glaeser et al., 2000). Moreover, generalisation of trust towards other group members based on contact experiences has also not been explored in the contact literature.

Research aims

From the literature reviewed above and in Chapter 1, it has been established that experiences with individual group members influences group representations (individual-to-group; Brown & Hewstone, 2005; González & Brown, 2006; McIntyre et al., 2016). Moreover, group representations also influence responses to individual group members (Balliet et al., 2014; Fiske & Neuberg, 1990; Linville, 1982). The aim of the second strand of research of the thesis is to study how these processes combine in a process termed *member-to-member generalisation*, when experiences with individual group members are generalised to inform behaviour towards other group members. A novel paradigm was designed that measures how people generalise trust experiences with individual group members in their decisions to trust novel group members.

The process of member-to-member generalisation of intergroup experiences

has not received much attention in the literature, with particularly intergroup contact studies focussing on generalisation of contact to outgroup attitudes in general (Pettigrew & Tropp, 2006; Pettigrew et al., 2011). It has not been investigated how the changed attitudes about the outgroup through intergroup contact might directly influence behaviour towards other group members. Literature on the influence of group membership on impression formation (Fiske & Neuberg, 1990; Linville, 1982), suggesting that contact experiences, which change attitudes about the group, would also affect evaluations of novel group members. The studies on attitude transfer (Crawford et al., 2002; Ranganath & Nosek, 2008; Ratliff & Nosek, 2011) also give an indication that information about individual group members can transfer to other group members. The current research project is novel in that it combines the intergroup contact and impression formation literature by directly examining generalisation of intergroup contact experiences to behaviour towards novel group members.

In both literatures of contact generalisation and impression formation, studies incorporating learning through interaction and behaviour have been limited. In most research on impression formation, information about the target is presented in text form, and the participant is asked to verbalise an evaluation or impression (e.g. Crawford et al., 2002). In the contact literature, many studies utilise self-report measures of contact and attitudes (e.g. Binder et al., 2009; Voci & Hewstone, 2003). Therefore, the research in this thesis utilised an experimental methodology where interactions between group members are created in the laboratory. In the adapted Trust Game paradigm, people learn about individual group members through interacting with them in an iterated Trust Game with feedback after each round, and responses are examined by measuring trust behaviour in each round. However, in the adapted paradigm there is only one interaction with a specific individual in the game. Each round is with a different group member. Therefore, trust behaviour in consecutive rounds indicates generalisation of experiences to other group members.

The benefits of using a Trust Game paradigm is that both perceptions of the group and of individual group members can be measured by analysing decisions to invest in ingroup or outgroup partners. Moreover, in this paradigm the type of information the participant receives about the group members can be manipulated by varying the reciprocity amounts of the interaction partners. The Trust Game paradigm creates interactions between individuals where concepts such as trust and

trustworthiness can be quantified, and changes in trust based on distinct types of information about the partner can be examined experimentally.

In this chapter, member-to-member generalisation experiences are examined within a positive contact framework, where people interact with trustworthy group members and have positive experiences throughout the game. This was chosen for the first studies to establish behavioural patterns of generalisation that are most closely related to the intergroup contact generalisation literature. The main variables of interest for this chapter are the change in trust behaviour over time, and the interaction of trust generalisation with group membership. I examine differences in member-to-member generalisation between ingroup and outgroup. In the next chapter, the influence of valence of interactions is examined, where people experience both positive and negative interactions with ingroup and outgroup members.

Research questions and hypotheses

Two central research questions were formulated for the research in this chapter. The first research question focuses on whether people generalise their game experiences with group members in their trust behaviour towards other novel group members. This core research question examines whether contact experiences generalise beyond just attitudes towards the outgroup and influence behaviour towards novel outgroup members. In terms of the Trust Game paradigm, this question is analysed by looking at how much people change their trust behaviour towards different group members throughout the game. Do people increase their trust and expectations in novel group members after having a positive interaction with a different outgroup member?

Secondly, after establishing whether people generalise their experiences with previous group members to novel partners, the aim is to explore how the process of generalisation is moderated by group membership, and thus different for ingroup and outgroup members. Responses to ingroup and outgroup members have not often been compared directly in past research. Additionally, I examine how both outgroup and ingroup generalisation behaviours compare to a neutral or control condition where no group membership information is available. Do people generalise their experiences because of a shared group membership between the interaction partners? Alternatively, do they simply learn a rule about how people in general behave in this

game?

A number of hypotheses were formulated in relation to the two main research questions. Firstly, it was predicted that people would favour ingroup members over outgroup members in their investments, as has been demonstrated in cooperative settings many times (Balliet et al., 2014; Foddy & Dawes, 2008; Romano et al., 2017). Although it should be noted that outgroup favouritism has been observed in this experimental economic game as well (Vermue et al., 2018). In relation to the core research question of this project, member-to-member generalisation was predicted to occur over time, with investments increasing after having positive interactions with other group members. People are hypothesised to generalise their experiences with group members, not just to their attitudes towards the group, but also to their behaviour towards novel group members.

However, it was predicted group membership moderates the generalisation effect in trust behaviour. Based on the outgroup homogeneity effect (Ostrom & Sedikides, 1992; B. Park & Rothbart, 1982), it was hypothesised that people would generalise experiences to a greater extent with individual outgroup members to other group members, compared to the ingroup, as the outgroup is perceived to be more homogenous than the ingroup. Stronger generalisation for outgroup members than ingroup members has also been observed in implicit attitude transfer (Ratliff & Nosek, 2011). Moreover, it was predicted that generalisation of both ingroup and outgroup experiences would be stronger than generalisation of experiences with the control group, where no group membership is provided. I explicitly do not predict a null-effect of change for the control group, as people might still use their previous experiences with control group partners to make inferences about the general level of trustworthiness in this game. However, as the ingroup and outgroup both provide a connection between the individuals through shared group membership (i.e. they are perceived as entitative groups), generalisation of experiences should be much stronger (Crawford et al., 2002).

Lastly, it was predicted that ingroup identification could play an important moderating role in member-to-member generalisation of trust behaviour. Ingroup identification, as based on Social Identity theory (Tajfel & Turner, 1979, 1986) is often defined as the extent to which the ingroup is important and central to one's self-concept, how much the ingroup is included in the self, and how similar the ingroup is perceived to the self (Cinnirella, 1997; Tropp & Wright, 2001). Higher

ingroup identification has been shown to be related to higher levels of ingroup bias, perceived ingroup entitativity, and responses to ingroup deviants (Castano, Paladino, Coull, & Yzerbyt, 2002; Castano, Yzerbyt, & Bourguignon, 2003; Hogg, Sherman, Dierselhuis, Maitner, & Moffitt, 2007). It was predicted that higher levels of identification with the ingroup would lead to more generalisation of ingroup experiences. People who highly identify with the ingroup should generalise experiences and change their trust behaviour towards novel ingroup members more quickly than people who do not identify strongly with the ingroup.

Experiment 5: Examining the new paradigm in a student sample

The first study examining member-to-member generalisation in the Trust Game paradigm was a laboratory experiment with a student sample. Students came to the lab to play Trust Games with different partners that were either British (the ingroup), Chinese (the outgroup), or of unknown nationality (the control group). The Trust Game rounds were pre-programmed such that all partners, either ingroup, outgroup, or control, reciprocated participants' trust, and in this way creating positive experiences. This first study utilised national groups, as group membership for this pre-existing group is easily measured and manipulated by recruiting British participants. Chinese people were selected as target outgroup as this group is distinct from the British ingroup in geographical distance, cultural values (Buchan & Croson, 2004; Yau, 1988), and physical characteristics. Moreover, the University where data was collected has a large population of Chinese students, which makes the cover story of Chinese partners in the game more realistic.

Method

Participants and design

The participant pool consisted of 52 undergraduate students[10]. Only the data of native British participants was used for data analysis, therefore the data of four participants needed to be removed from analysis due to foreign or double nationalities. The remaining 48 participants (83% female, $M_{age} = 21.54$ years, $SD_{age} = 6.88$) were all of British nationality. Participants received either course credit or a payment of 3 pounds for their time. In addition, participants had a chance to win a monetary bonus based on their average earnings in the game (one token = 50 pence), determined by a dice roll.

This study implemented a within-subject design. Participants interacted with partners from separate groups (British ingroup, Chinese outgroup, unknown

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[10] The sample size was determined based on a power analysis performed in GPower. Based on a repeated measures within-subject factors F-test with a small to medium effect size ($f = 0.15$), a power of 0.80, and with 3 groups and 10 measurements (the number of rounds), a sample size of 36 participants is required. A somewhat larger sample was collected due to potential exclusion of participants.

nationality control group), over a number of different trials. The main dependent variable of this study was the investment over the game rounds. Expectations of trustworthiness were measured alongside investments in the game. The moderating effect of identification with the British ingroup was examined. Lastly, attitudes towards the outgroup were measured after the game and examined as an additional outcome variable.

Materials and procedure

The study was conducted in the laboratory, where participants completed the task behind a computer in individual cubicles. All tasks and questionnaires were run on the Python-based software program PsychoPy (Peirce, 2007). First, participants were asked whether they were of British nationality (yes, no). Self-identified British participants were presented with a 4-item ingroup identification questionnaire (Doosje, Ellemers, & Spears, 1995), presented on a seven-point Likert scale ($\alpha =$ 0.92), see Appendix F. If the participant was not of British nationality, this questionnaire was not displayed, as data from non-British participants was not used for data analysis.

Next, participants received paper instructions about the Trust Game and a short quiz form to confirm participant understanding of the instructions, after which they commenced with the Trust Game. Participants always played in the role of the trustor (see Appendix G for full instructions, comprehension questions, and display of a game round). The experiment consisted of 30 rounds of the Trust Game in total, 10 rounds with British ingroup partners, 10 rounds with Chinese outgroup partners and 10 rounds with control-group partners of which the nationality was unknown. Participants were specifically instructed that they would play only one round with each partner. However, they were not aware of the exact number of rounds that they were going to play, to avoid any strategic changes in investments during the last rounds (Engle-Warnick & Slonim, 2004). Before participants started with the game, they played four practice rounds with practice partners. The behaviour of these practice partners was pre-programmed to show a range of different behaviours, from high to low reciprocity levels.

Figure 9. Examples of the figures used to indicate the group membership of the different partners for Experiment 5.

Each round of the Trust Game consisted of the following stages: introduction of the partner, expectation rating, investment decision, overview of transaction, and feedback. If the participant decided not to invest in the partner, the overview of transaction stage was skipped. Participants were first introduced to the partner of that round. A figure was displayed with either the colours of the British flag, the colours of the Chinese flag, or a blank figure with the word *unknown* written beneath (see Figure 9). This figure was presented on each screen of the game round. Participants next indicated their expectations regarding the reciprocity behaviour of the partner, by selecting how much they thought this partner would return to them, in percentage of the investment, on a scale from zero to 100% of the investment. After the expectation question, participants could decide how much of their endowment of 10 tokens they wanted to invest in the current partner. Any number of tokens between zero and 10 tokens could be invested in the partner. After the participant made their choice, an overview screen was displayed for three seconds indicating the selected investment and the amount the partner received (the investment multiplied by three). Last, participants were given feedback about how many tokens the current partner returned to them, and how many tokens they had earned in that round.

The behaviour of the partners was pre-programmed so that all partners reciprocated high amounts, between 45 and 70% of the received amount (i.e. investment multiplied by three). The exact amount that partners reciprocated varied between partners and increased with higher investments. Thus, each interaction was positive, and indicated that the partner was trustworthy. After participants completed all 30 rounds of the Trust Game, their average earnings, consisting of the average amount left at the end of each game round, were shown on the screen. Participants had a chance to win their average earnings, converted to pounds, at the end of the experiment.

As last part of the experiment, participants completed two measures of outgroup attitudes[11], namely a feeling thermometer (Haddock et al., 1993) and a semantic-differential scale (Wright et al., 1997), which have both been described in previous chapters (also see Appendix B). Lastly, participants provided their demographic information and reported any suspicions and beliefs about the aim of the study.

Data analysis

The data was analysed using the statistics program R version 3.4.2 (R Core Team, 2017) in RStudio (RStudio Team, 2015). To analyse how group membership of the partners influenced expectations and investments in the Trust Game over time, as well as their relation to the individual difference measures, a number of different multilevel models were created (also known as mixed-effects models; Baayen, Davidson, & Bates, 2008). First, the effect of group (ingroup, outgroup, control) and group trial number (1 to 10) on investments in the Trust Game were analysed. A random intercept per participant and random slopes for group and trial number, as well as the interaction between these variables to obtain a maximal random structure (Barr, Levy, Scheepers, & Tily, 2013), were added to control for the repeated measures design of the study. Unstandardized regression coefficients are reported alongside inferential statistics as simple effect sizes (Baguley, 2009). The relation between expectations and investments throughout the game was also examined. Second, the moderating influence of ingroup identification on investments in the game was examined by adding the identification score to the main model predicting investments. Lastly, the effect of game behaviour on outgroup attitudes was examined. A linear regression model was created with the individual coefficient of change in investment behaviour towards outgroup members predicting outgroup attitudes.

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[11] In addition to the measurement of outgroup attitudes, a measure of Social Dominance Orientation (SDO) was included in the experiment. This was added as an exploratory analysis of possible moderating influence of SDO. As no effect of SDO on investments in the game was observed, this variable is not reported any further in this chapter.

Results

Investments in the Trust Game

The first model examined the effect of group and trial number on investments in the game. The main effects and the interaction between these two variables were added as both fixed effects and random slopes in the model. The following planned contrasts were implemented to compare the separate groups: the first contrast compared the control group with the ingroup and outgroup combined (contrast 1), and the second contrast compared the ingroup with the outgroup (contrast 2). The coefficients of these two contrasts are reported alongside the F and p statistics with type III errors for each fixed effect including group[12]. The fixed effects of this model explained 11.3% of the variance within the data ($R^2_{fixed} = 0.11$). Adding the random effects to the model increased the amount of variance explained to 79% ($R^2_{total} = 0.79$).

In this first model of investments in the game, the main effects of both group, $F(2, 47) = 8.26$, $p < .001$, $b_1 = 0.18$, $t(47) = 3.13$, $p = .003$, $b_2 = -0.24$, $t(47) = -2.06$, $p = .045$, and trial number, $F(1, 47) = 57.77$, $p < .001$, $b = 0.26$, were significant. The Trial x Group interaction was also significant, $F(2, 47) = 3.30$, $p = .046$, $b_1 = 0.03$, $t(47) = 2.36$, $p = .022$, $b_2 = 0.01$, $t(47) = 0.26$, $p = .797$ (see Figure 10). Post-hoc multiple comparisons based on the model show that the control group overall received significantly lower investments than both the ingroup, $t(47) = -4.74$, $p = .001$, $d = 1.38$, and the outgroup, $t(47) = -6.87$, $p < .001$, $d = 2.00$. Overall investments in the ingroup and outgroup differed significantly as well, $t(47) = -2.75$, $p = .022$, $d = 0.80$, although the difference was much smaller. The least-square means as predicted from the model for each group are 5.35 ($SE = 0.32$, 95% CI [4.70, 6.00]) for the control group, 6.14 ($SE = 0.30$, 95% CI [5.54, 6.74]) for the

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[12] The first contrast is comprised of a value of -2 for the control, and a value of 1 for both ingroup and outgroup. Therefore, a positive coefficient for this fist contrast indicates higher investments for ingroup and outgroup together, compared to the control group. A negative coefficient indicates a higher value for the control group.

The second contrast is comprised of a value of 0 for the control group, a value of 1 for the control group, and a value of -1 for the outgroup. Therefore, a positive coefficient for this second contrast indicates higher investments for the ingroup than the outgroup. A negative coefficient indicates higher investments for the outgroup.

ingroup, and 6.56 ($SE = 0.29$, 95% CI [5.97, 7.15]) for the outgroup, respectively. Thus, the outgroup received the highest investments, the ingroup received slightly lower investments, and the control group received the lowest investments overall. The main effect of trial number indicates an overall positive trend for investments over trials (*intercept* = 4.61, $b = 0.26$, *SE* = 0.03, see Figure 10).

Post-hoc comparisons of the slopes of investments over time for the different groups show that the slope for ingroup partners, *intercept* = 4.55, $b = 0.29$, *SE* = 0.04, $t(47) = 7.61$, $p < .001$, differs significantly from the slope for control-group partners, *intercept* = 4.25, $b = 0.20$, *SE* = 0.04, $t(47) = 4.97$, $p < .001$, comparison control - ingroup, $\chi^2 (1) = 6.47$, $p = .033$. However, the slope for the outgroup partners, *intercept* = 5.02, $b = 0.28$, *SE* = 0.04, $t(47) = 6.45$, $p < .001$, did not differ from either the ingroup, $\chi^2 (1) = 3.09$, $p = .157$, or the control group, $\chi^2 (1) = 0.07$, $p = .796$ (see Figure 10).
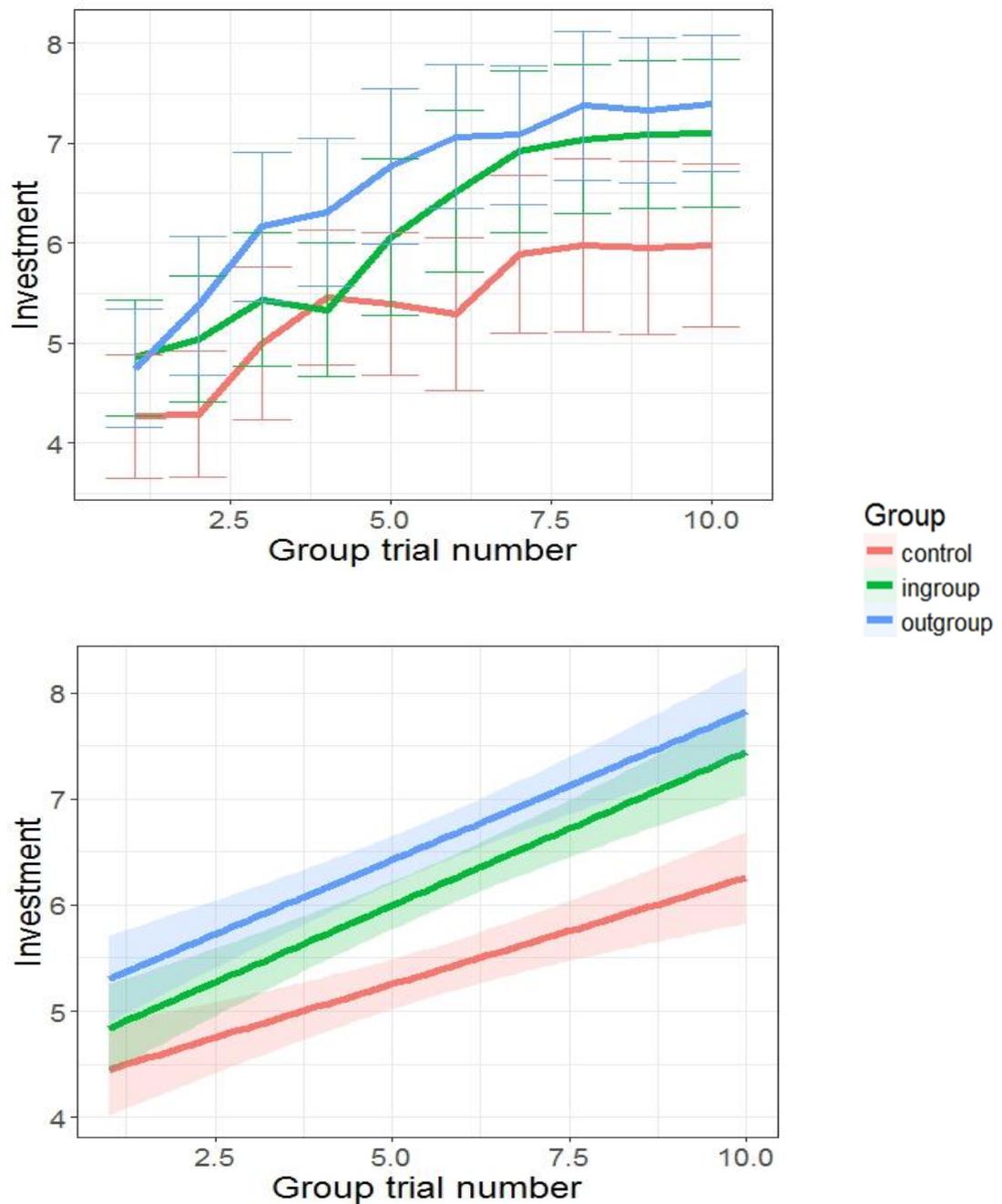
Figure 10. Investments over trials for partners from the separate groups, for Experiment 5. The above panel shows the average investments for each group over time, with error bars representing 95% confidence intervals. The below panel shows regression lines for each group of investments over trials.

Expectations and Investments

   Expectations of return were measured alongside investments in the game, and the relation between these two variables was examined. First, the correlation between expectations and investments was significant and positive, $r = 0.48$, $p <$ .001. Next, a model was created with expectations, group, and trial number predicting investments. A per subject random intercept and random slopes for group, trial number, and expectations were added to control for the repeated measures design, using a maximal random structure. Due to convergence warnings, the random slopes for interactions with expectations were dropped. In this model, expectation was a significant predictor of investments, $F(1, 80) = 45.13$, $p < .001$, $b = 0.05$. This main effect indicated a positive relationship between expectations and investments. The Group x Trial interaction on investments, as described in the above section, also remained significant, $F(2, 59) = 3.42$, $p = .039$. No interactions were observed between expectations, group, and trial number. Figure 11 below shows how investments and expectations change over trials for each group, with expectation ratings divided by 10 to be on the same scale as investments. Both investments and expectations increase over trials, but expectations increase less strongly than investments. The reduced increase in expectations could be due to the framing of the expectation question, which asked what percentage they expected the partner to return. It is unlikely that participants would expect partners to return more than 70%, as this was what they actually received.
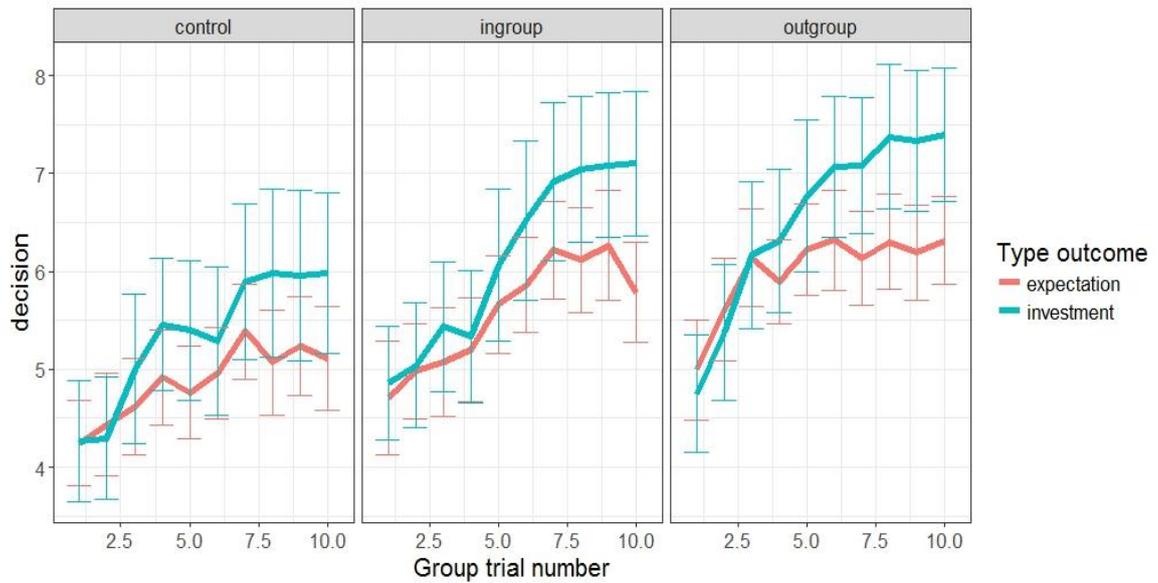
Figure 11. Average investments and expectations (scaled down to zero - 10) over trials for Experiment 5, with separate graphs per group. Error bars represent 95% confidence intervals.

Ingroup identification

The influence of ingroup identification on investments in the game was examined in the next model. The mean-centred average identification score was added to the first multilevel model, thus including the main effects and interactions for group, trial number, and level of ingroup identification as predictors of investments. A random intercept and random slopes for group, trial number, and identification were added, including the random slope for the interaction between group and trial number. In this model, the Group x Trial interaction remained significant, $F(2, 1244) = 5.93$, $p = .002$. In addition, the Trial x Identification interaction was marginally significant, $F(1, 39) = 3.42$, $p = .072$, $b = 0.05$, and the Group x Trial x Identification 3-way interaction was also significant, $F(2, 46) = 3.93$, $p = .026$, $b_1 = -0.02$, $t(49) = -2.49$, $p = .016$, $b_2 = 0.03$, $t(45) = 1.78$, $p = .081$.

To examine these interactions further, a median-split factor ($Mdn = 6.00$, $N_{low} = 21$, $N_{high} = 27$) of ingroup identification was created and added to the model instead of the continuous variable. Due to non-convergence issues, the random slope for the identification factor was dropped in this model. Results showed that the 3-way interaction was no longer significant, $F(2, 46) = 0.108$, $p = .898$, $b_1 = -0.01$, $b_2 = 0.02$. However, the interaction between trial number and identification remained significant $F(1, 46) = 7.33$, $p = .009$, $b = 0.17$. This interaction indicated that

participants who highly identify with the ingroup increased their investments more over trials than participants with low levels of ingroup identification did. The slope of investments over trials was steeper for highly identified participants, *intercept =* 4.53, *b* = 0.33, *SE* = 0.04, *t(26)* = 8.09, *p* < .001, than low identified participants, *intercept* = 4.71, *b* = 0.15, *SE* = 0.05, *t(20)* = 3.21, *p* = .004.

Outgroup attitudes

To explore whether the game experiences influenced outgroup attitudes, a regression model was created where changes in investments in outgroup members predicted outgroup attitudes. For this model, the individual coefficient of change in investments over trials for outgroup partners was determined per participant. This coefficient of change was entered as a predictor of outgroup attitudes, while controlling for the individual intercept for the outgroup. In this model, the effect of the amount of change in investments for outgroup partners on outgroup attitudes was not significant, $F(1, 34) = 1.13$, $p = .294$, $b = -0.64$. This indicates that the amount of change in investments in outgroup partners throughout the game did not predict attitudes towards the outgroup after the game.

<div align="center">

Discussion

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The aim of Experiment 5 was to examine member-to-member generalisation, the process of generalising contact experiences with group members to inform decisions to trust other, novel group members. The moderating influence of group membership on member-to-member generalisation in the Trust Game was explored and compared to a control group where no information about group membership was available. It was hypothesised that people would show initial ingroup favouritism, but that they would generalise their experiences with outgroup members more than experiences with ingroup members. Moreover, it was predicted that people would not change their investments in the control group as much as for the ingroup and outgroup, as there is no associative link between individuals when no group membership is provided in the control condition. Lastly, it was hypothesised that people who highly identify with the ingroup would show stronger generalisation for the ingroup.

The results from Experiment 5 show a somewhat different pattern than predicted. Firstly, outgroup partners received higher investments overall than the ingroup. Even though identification with the British ingroup was quite high (median score of six out of seven), participants overall trusted Chinese outgroup partners more than British ingroup partners. However, trust in group members (either ingroup or outgroup) was much higher than trust in control partners. All throughout the game, control group partners received lower investments than both ingroup and outgroup partners received.

The similar treatment of ingroup and outgroup partners in the Trust Game could be due to the high amount of exposure to Chinese outgroup members in the University setting. Having more interactions with outgroup members has been shown to increase perceptions of outgroup variability (Islam & Hewstone, 1993; Linville et al., 1989; Paolini, Hewstone, Cairns, et al., 2004), which could reduce generalisation. Other possible explanations are that students have been found to be more liberal in their responses (Peterson, 2001). They generally do not feel comfortable expressing negative attitudes towards most outgroups, as a survey among undergraduate psychology students at the UEA has shown (see Appendix H). In addition, the national ingroup and outgroup selected in this research did not seem to evoke strong intergroup feelings (no ingroup favouritism was observed). This is perhaps because the Chinese outgroup is not interdependent with the British ingroup and there is no competition between the two groups (Brewer, 1999), or because there is a shared superordinate group between the British and Chinese game partners of belonging to the same university (Gaertner & Dovidio, 2000).

The main research question was about the member-to-member generalisation of trust behaviour. As trust behaviour increased over trials, this indicates that people generalised their experiences with previous group members to inform their trust behaviour towards novel group members. Moreover, group membership influenced the generalisation process. It was found that participants learned equally well about the trustworthiness of the ingroup and outgroup but generalised their experiences much less for the control group. This shows that people used their previous experiences with group members to inform current decisions to trust other group members. There is a general learning effect present for the control group (i.e. people did increase their investments over time for control group partners), but this effect is much weaker than for group members. When there is no association provided

between different individuals, people generalise their experiences much less and do not change their trust behaviour as much from previous experiences.

The hypothesis about differences in generalisation between ingroup and outgroup partners was not confirmed. At this point, it is unclear why there was no difference between the ingroup and the outgroup with regard to learning about the group. Perhaps participants have similarly rich representations of the British ingroup and Chinese outgroup due to the amount of exposure in the University environment. Another potential explanation is that perceptions of the Chinese culture as a collectivist culture that favours generosity (Hui, Triandis, & Yee, 1991) made people expect high reciprocity. This needs to be examined further in replications with broader samples and naturally conflicting groups.

In addition to these main findings, other interesting results were obtained. First, it was found that expectations predicted investments well and changed with investments throughout the game, but the relation between expectations and investments did not differ between the groups. Secondly, it was found that people who highly identified with the British ingroup increased their investments in the game more than people who did not identify with the ingroup strongly. However, no interaction was observed between the level of identification and the group membership of the partners. Moreover, no effect of game behaviour on outgroup attitudes was observed in this experiment. People who showed stronger outgroup member-to-member generalisation did not report more positive attitudes towards the outgroup than people who showed less generalisation in their trust behaviour.

To summarise, Experiment 5 found evidence for member-to-member generalisation. Participants used their previous experiences with group members to inform their current decisions to trust other group members. This generalisation of experiences was observed to a much lesser extent for the control, where no association through shared group membership was present. These findings indicate the validity of the adapted Trust Game paradigm in measuring generalisation of personal experiences to behaviour towards other group members. However, the generalisation of Trust Game experiences was similar for ingroup and outgroup partners. In Experiment 6, a different sample and target outgroup is studied to investigate whether stronger feelings towards the ingroup and outgroup lead to different patterns of generalisation of experiences.

Experiment 6: Replication with a different sample and target group

The aim of Experiment 6 was to provide a replication of Experiment 5 within a larger and more representative sample that would contain more variation in ingroup and outgroup views. This change in sample and target group provides a better test of member-to-member generalisation of trust behaviour, as stronger group effects are predicted. In Experiment 5, levels of ingroup identification and outgroup attitudes were somewhat skewed and showed minor variation, and no ingroup favouritism was observed. In Experiment 6, the sample and the target outgroup were changed to examine how the level of ingroup favouritism or outgroup derogation might influence the generalisation of experiences. For this second study, the data was collected through the online platform Mechanical Turk (MTurk), and the participants were of US nationality. Instead of using national ingroups and outgroups, political affiliation was chosen as the target group.

It was hypothesised that people would feel more strongly towards their own political group, at least when they are highly identified with this group, and that it would be more acceptable to explicitly express dislike of the political outgroup than it is of national or ethnic outgroups (Iyengar & Westwood, 2015). Political affiliation has been frequently used in research on social identity and intergroup relations (e.g. Brewer, 1999; Deegan, Hehman, Gaertner, & Dovidio, 2015; Hackel, Looser, & Van Bavel, 2014; Riek, Mania, Gaertner, McDonald, & Lamoreaux, 2010). Through using a wider sample from MTurk, and using political groups, it was hypothesised that people would express ingroup favouritism in their initial levels of trust towards partners from the separate groups.

If this is the case, the original hypotheses of Experiment 5 still hold, namely that people will generalise experiences with outgroup members more than experiences with ingroup members, but higher ingroup identification will lead to stronger generalisation of ingroup experiences. Generalisation of experiences with control partners should be lower than for both ingroup and outgroup. Moreover, as people identifying as either Democrat or Republican were included in the sample, and matched in size, differences between these two groups were examined as well.

Method

Participants and design

The participant pool consisted of 94 Mechanical Turk workers[13]. The data of seven participants was removed due to inconsistent responses related to the political affiliation and orientation[14]. The remaining 87 participants (43 Democrats, 44 Republicans, 51.7% females, $M_{age} = 34.89$ years, $SD_{age} = 10.19$ years) were all United States citizens. Participants received a payment of one US Dollar for their time and had a chance to win a monetary bonus based on their average earnings in the game, converted to dollars (one token = 10 cents). Ten participants were selected at random to receive the bonus. The average bonus amount paid out was $1.30. The data for this study was collected in August 2016, two months before the US presidential election.

This study employed the same within-subject design as Experiment 5. However, group membership of the partners in the game was based on the self-identified political affiliation of the participant. For Democrat participants, the ingroup consisted of Democratic partners and the outgroup of Republican partners, and the reverse was true for Republican participants. The control group always consisted of partners with an unknown political affiliation.

Materials and procedure

The materials and procedure used for this study were similar to Experiment 5, but this experiment was programmed on the online software program Qualtrics and distributed via Amazon's Mechanical Turk. Therefore, only the changes from Experiment 5 to Experiment 6 are described below.

Group membership. Political affiliation was used to manipulate group

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[13] The sample size for this study was doubled compared to Experiment 5, as differences between Democrats and Republicans were examined within the design. Thus, for each of the political groups, a sample of at least 40 participants was collected.

[14] All participants indicated their political affiliation at the beginning of the experiment, upon which ingroup and outgroup was determined. However, for these seven participants, their voting intentions and ratings of political orientation (liberal to conservative) did not match with their selected affiliation (e.g. self-identified Democrats intending to vote for Donald Trump and being very conservative).

membership of the game partners. Separate versions of the experiment were created for Democratic and Republican voters and were launched on the MTurk website. To ensure that participants received the correct version of the experiment, participants first indicated whether they identified more as a Democrat or Republican. If participants selected the 'incorrect' party, the program was redirected to the end of the experiment and the participant received a message indicating that another version for their political party was available as well.

During the 30 rounds of the Trust Game, party affiliation was always displayed on the screen using the logo for the Democratic Party and the Republican Party, as well as an "unknown affiliation" image for the control group (see Figure 12). The affiliation of the participant (Democrat or Republican) was coded for each participant, as well as the affiliation of each partner in the game (Democrat, Republican, control). Group membership of the partners (ingroup, outgroup) was coded at a later point.
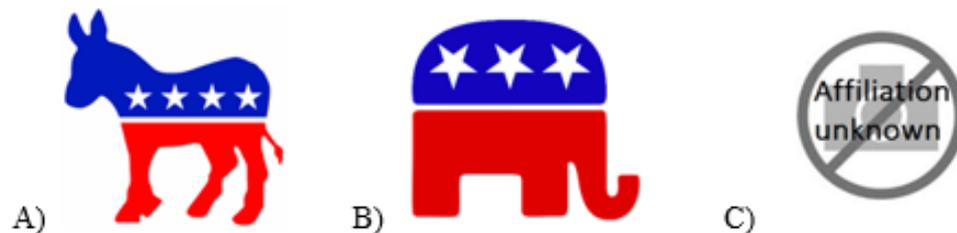
Figure 12. Symbols used to indicate the political affiliation of the partner for Experiment 6. Panel A depicts a partner from the Democratic Party, panel B depicts a partner from the Republican Party, and panel C depicts a partner of which the political affiliation is unknown.

Measures. Firstly, a more extensive questionnaire was selected to measure ingroup identification adapted from Cinnirella (1997). The questionnaire consisted of seven items presented on a seven-point scale from *extremely* (1) to *not at all* (7) (see Appendix F), which was combined into an average identification score ($\alpha = 0.92$). Secondly, as the target groups were of political nature, a measure of political orientation was included at the end of the experiment, with a seven-point scale from *very liberal* (1) to *very conservative* (7). Moreover, a measure of voting intentions in the 2016 election was included. Thirdly, outgroup attitudes were measured before the game using the same measure as in previous studies and were therefore not included as an additional outcome variable, but only used to describe the sample.

Lastly, expectations of return were measured during each game round, but due to a coding error, these responses were not recorded correctly and could not be used for analysis.

Analysis

The data of Experiment 6 was analysed using the same set of analyses as Experiment 5. However, as expectations were not recorded correctly, the analyses including expectations were not performed. Additionally, the effect of political orientation (Republican or Democrat) was examined in the multilevel models predicting investments in the game.

Results

Comparison Experiment 5 and 6 samples

Firstly, one of the aims of Experiment 6 was to collect data from a sample with more variation in views about the ingroup and the outgroup, to obtain a better understanding of the role of ingroup identification on trust behaviour. Therefore, the scores on ingroup identification and the two outgroup attitude measures were compared between the samples of Experiment 5 and 6. The descriptive statistics (see Table 16) show that the variation in scores on all four variables is larger in the sample from experiment 6 than Experiment 5, as seen in standard deviations and range of scores. Moreover, identification with the ingroup is lower and attitudes towards the outgroup are more negative in Experiment 6.

Table 16

Descriptive statistics of individual difference measures for Experiment 5 and 6

samples

	Experiment 5 (*N* = 48)	Experiment 6 (*N* = 87)
Ingroup identification	*M* = 5.79 *SD* = 1.06 *Mdn* = 6 *Range* = 1.75 – 7.00	*M* = 4.57 *SD* = 1.28 *Mdn* = 4.57 *Range* = 1.57 – 7.00
Outgroup feeling thermometer	*M* = 67.19 *SD* = 17.31 *Mdn* = 70 *Range* = 25 – 99	*M* = 28.20 *SD* = 23.25 *Mdn* = 25 *Range* = 0 – 92
Outgroup attitude	*M* = 4.04 *SD* = 0.87 *Mdn* = 4.20 *Range* = 2.00 – 5.80	*M* = 3.03 *SD* = 1.25 *Mdn* = 3.00 *Range* = 1.20 – 6.40

Investments in the Trust Game

The first model examined the effect of group and trial number on investments in the game. Main effects and the interaction between these two variables were added as both fixed effects and random slopes in the model using a maximal random structure. The same contrasts were implemented and reported as in Experiment 5, to compare the control group with both ingroup and outgroup together (contrast 1), and to compare the ingroup and outgroup with each other (contrast 2). The fixed effects of this model explained 2.5% of the variance within the data ($R^2_{fixed} = 0.025$). Adding the random effects to the model increased the amount of variance explained to 85% ($R^2_{total} = 0.85$).

In this model, significant main effects were observed of both group, $F(2, 86) = 7.36$, $p = .001$, $b_1 = 0.11$, $t(86) = 1.92$, $p = .059$, $b_2 = 0.53$, $t(86) = 3.35$, $p = .001$, and trial number, $F(1, 86) = 32.44$, $p < .001$, $b = 0.13$. Post-hoc multiple comparisons based on the model show that ingroup received higher investments than the control group, $t(86) = -5.41$, $p < .001$, $d = 1.17$, and the outgroup, $t(86) = 4.72$, $p < .001$, $d = 1.02$. Investments in the outgroup and control group did not differ, $t(86) = -0.44$, $p = .898$, $d = 0.09$. The least-square means as predicted from the model for

each group are 6.03 (SE = 0.33, 95% CI [5.38, 6.68]) for the control group, 6.82 (SE = 0.31, 95% CI [6.19, 7.44]) for the ingroup, and 6.08 (SE = 0.33, 95% CI [5.42, 6.74]) for the outgroup, respectively. Thus, the ingroup received the highest investments, and the outgroup and control group received similar lower investments. The Group x Trial interaction was not significant, $F(1, 86)$ = 0.99, p = .375, b_1 = 0.01, $t(86)$ = 0.61, p = .541, b_2 = -0.03, $t(86)$ = -1.31, p = .193 (see Figure 13).
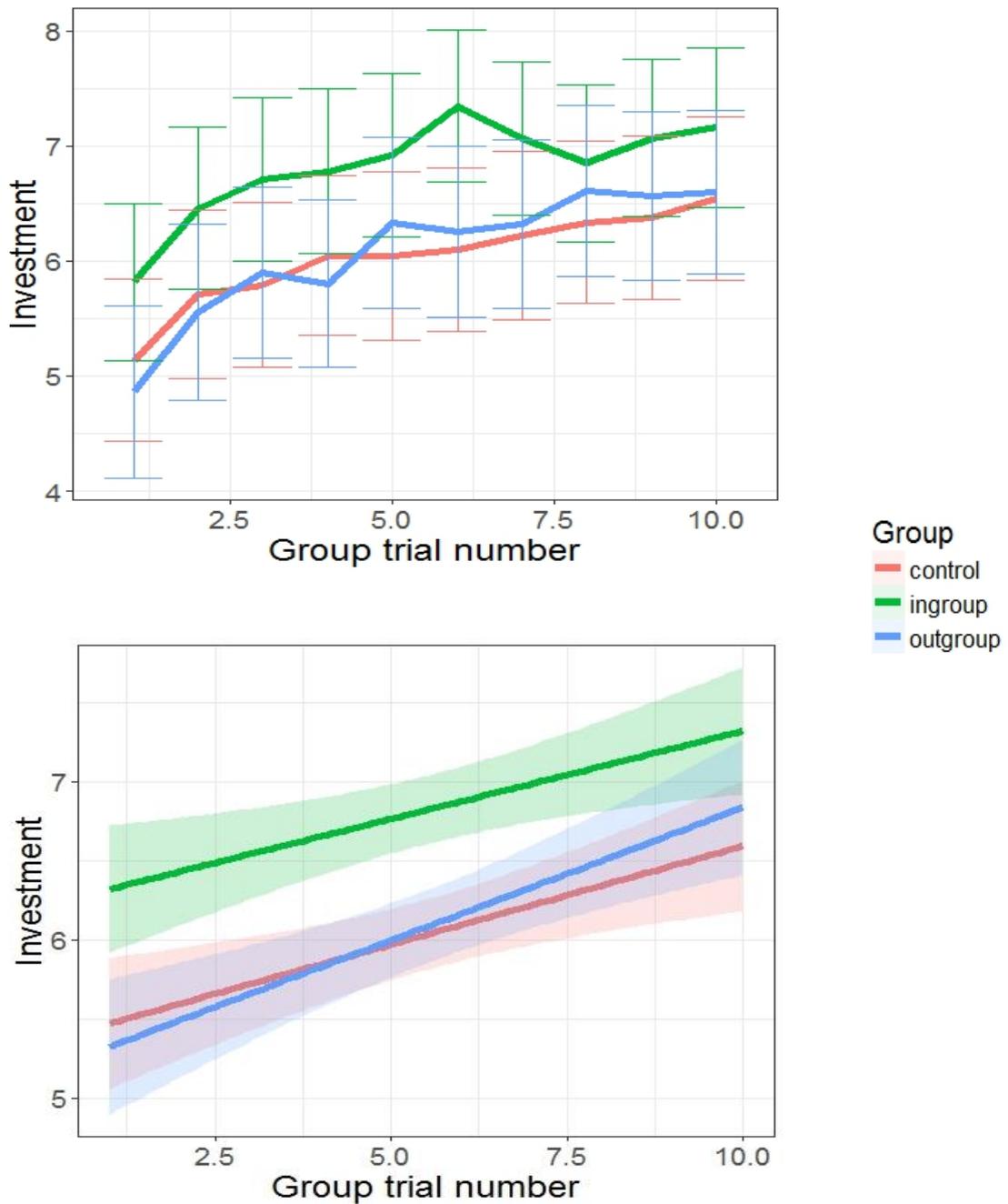
Figure 13. Investments over trials for partners from the separate groups, for Experiment 6. The above panel shows the average investments for each group over time, with error bars representing 95% confidence intervals. The below panel shows regression lines for each group of investments over trials.

Political orientation

Next, the political orientation (Democrat or Republican) of the participants was added to the model described above. The main effects and all interactions with

group and trial number were added into the model. Moreover, a random intercept and random slopes for the main effects and interaction between group and trial number were entered as well. Due to convergence issues, the random slope for political orientation was dropped. In this model, the fixed effects explained 2.9% of the variance within the data ($R^2_{fixed} = 0.029$). Adding the random effects to the model increased the amount of variance explained to 85% ($R^2_{total} = 0.85$).

The results show that both the main effects of group, $F(2, 85) = 8.20$, $p <$ .001, and trial number, $F(1, 85) = 32.60$, $p < .001$, remained significant. In addition, a significant Group x Political affiliation interaction was found, $F(2, 85) = 4.74$, $p =$ .011, $b_1 = -0.12$, $t(85) = -1.00$, $p = .320$, $b_2 = -0.87$, $t(85) = -2.89$, $p = .005$ (see Table 17). The Group x Trial x Political orientation 3-way interaction was also significant, $F(2, 85) = 4.01$, $p = .022$, $b_1 = 0.02$, $t(85) = 0.97$, $p = .335$, $b_2 = 0.11$, $t(85) = 2.53$, p = .013 (see Figure 14). Therefore, the model investigating the effect of group and trial number of investments was run separately on subsets of only Democrats and Republicans.

Table 17

Descriptive and t-test statistics of outgroup attitudes, ingroup identification, and

investments for the Democrat and Republican sample of Experiment 6

		Democrats (N = 43)	Republicans (N = 44)	Difference
Outgroup feeling		$M = 25.88$ $SD = 20.71$ $Mdn = 21$	$M = 31.66$ $SD = 25.65$ $Mdn = 30$	$t(82) = -1.16$, $p = .251$, $d = 0.25$
Outgroup attitude		$M = 2.76$ $SD = 1.08$ $Mdn = 2.60$	$M = 3.29$ $SD = 1.37$ $Mdn = 3.20$	$t(81) = -2.00$, $p = .049$, $d = 0.43$
Ingroup identification		$M = 4.56$ $SD = 1.27$ $Mdn = 4.43$	$M = 4.59$ $SD = 1.32$ $Mdn = 4.57$	$t(83) = -0.10$, $p = .925$, $d = 0.02$
Average investment	*Ingroup*	$M = 6.85$ $SD = 2.98$ $Mdn = 7$	$M = 6.79$ $SD = 3.51$ $Mdn = 8.00$	$t(83) = 0.10$, $p = .919$, $d = 0.02$
	Outgroup	$M = 5.82$ $SD = 3.35$ $Mdn = 5.00$	$M = 6.33$ $SD = 3.61$ $Mdn = 7.00$	$t(84) = -0.76$, $p = .450$, $d = 0.16$
	Control	$M = 5.87$ $SD = 3.22$ $Mdn = 6.00$	$M = 6.18$ $SD = 3.49$ $Mdn = 6.00$	$t(84) = -0.47$, $p = .637$, $d = 0.10$
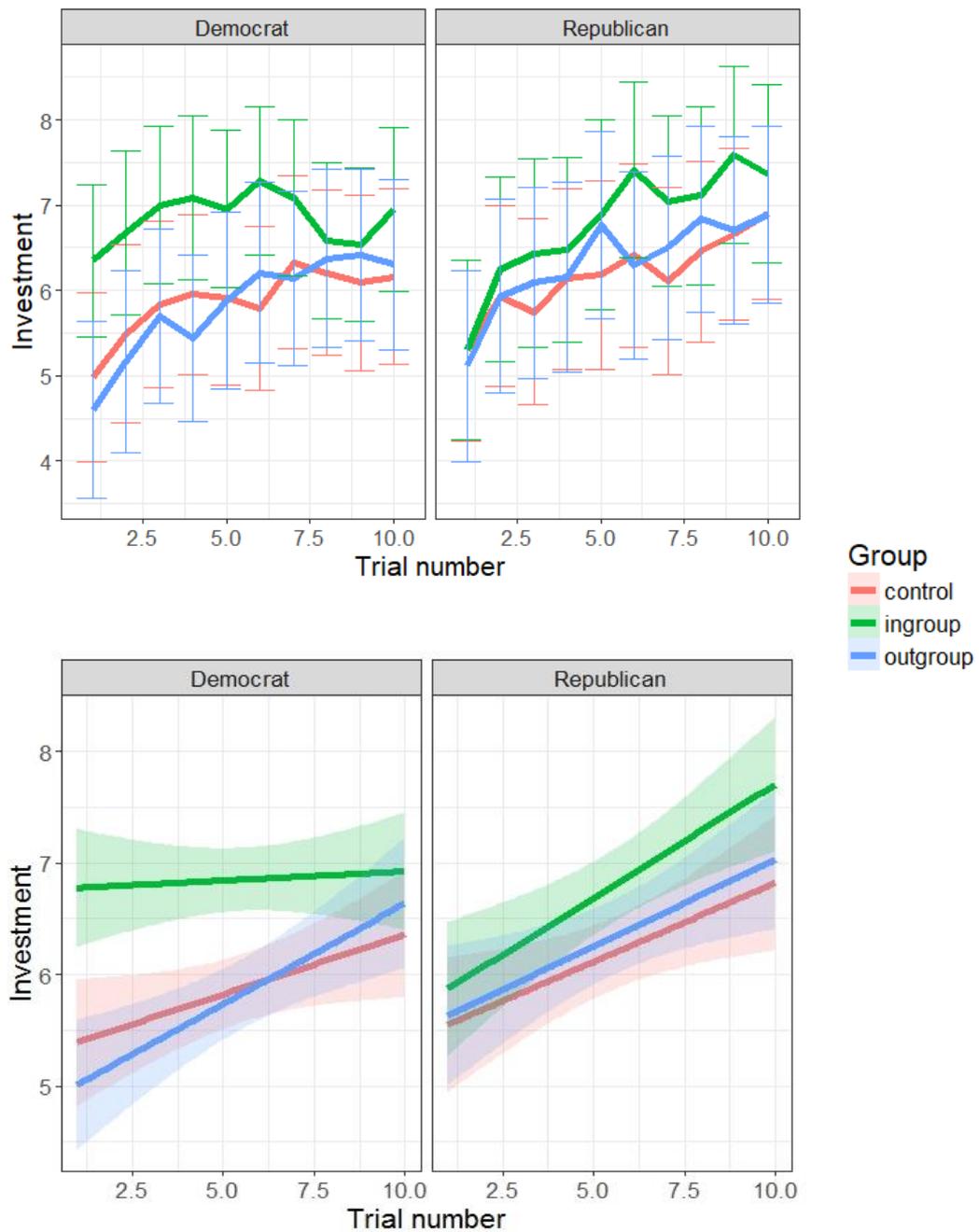
Figure 13. Investments over trials for Democrat and Republican participants of Experiment 6. The above panel shows mean investments over trials per group, with separate lines with error bars for groups, the below panel shows regression lines for each group of investments over trials. Separate plots are presented for political orientation (Democrats left, Republicans right).

Democrats only model. This model ($N = 43$) indicated significant main effects of group, $F(2, 41) = 12.29$, $p < .001$, $b_1 = 0.17$, $t(42) = 1.92$, $p = .062$, $b_2 = 0.97$, $t(42) = 4.37$, $p < .001$, and trial number, $F(1, 42) = 10.05$, $p = .003$, $b = 0.10$. The Group x Trial interaction was also significant, $F(2, 41) = 3.43$, $p = .041$, $b_1 = -0.00$, $t(42) = -0.25$, $p = .803$, $b_2 = -0.08$, $t(42) = -2.56$, $p = .014$. Post-hoc multiple comparisons indicated that, within this Democrats only sample, the ingroup received significantly higher investments than outgroup, $t(42) = 5.06$, $p < .001$, $d = 1.56$, and control group, $t(42) = -4.83$, $p < .001$, $d = 1.49$, which did not differ from each other, $t(42) = 0.31$, $p = 0.95$, $d = 0.10$. The least-square means as predicted from the model for each group are 5.87 ($SE = 0.45$, 95% CI [4.97, 6.77]) for the control group, 6.85 ($SE = 0.42$, 95% CI [6.01, 7.69]) for the ingroup, and 5.82 ($SE = 0.44$, 95% CI [4.93, 6.72]) for the outgroup, respectively.

Post-hoc analyses of the interaction between group and trial number indicated that the slope of the ingroup and outgroup differed significantly from each other, $\chi^2(1) = 6.55$, $p = .032$. The difference between the ingroup and control group was marginally significant, $\chi^2(1) = 4.32$, $p = .075$, and the outgroup and control group did not differ from each other, $\chi^2(1) = 1.97$, $p = .160$. The outgroup had the lowest intercept and steepest slope, *intercept* = 4.83, $b = 0.18$, $SE = 0.06$, $t(42) = 3.28$, $p = .002$, the ingroup had the highest intercept and flattest slope, *intercept* = 6.76, $b = 0.02$, $SE = 0.03$, $t(42) = 0.49$, $p = .625$. The control group intercept and slope fell in between ingroup and outgroup, *intercept* = 5.28, $b = 0.11$, $SE = 0.04$, $t(42) = 2.49$, $p = .017$.

Republicans only. This model ($N = 44$) indicated only a significant main effect of trial number, $F(1, 43) = 23.60$, $p < .001$, $b = 0.17$. A main-effects-only model shows a significant main effect of group, $F(2, 42) = 4.24$, $p = .021$, $b_1 = 0.12$, $t(43) = 2.74$, $p = .009$, $b_2 = 0.23$, $t(43) = 1.97$, $p = .056$. This main effect disappears when the interaction is added. The Group x Trial interaction was not significant for the Republicans only model, $F(2, 42) = 1.09$, $p = .347$, $b_1 = 0.01$, $t(43) = 1.15$, $p = .255$, $b_2 = 0.02$, $t(43) = 0.89$, $p = .379$.

Post-hoc multiple comparisons based on the main effects only model with the self-identified Republican sample shows that the ingroup received significantly higher investments than the control group, $t(43) = -2.90$, $p = .016$, $d = 0.88$. However, the ingroup does not differ significantly from the outgroup, $t(43) = 1.96$, $p = .133$, $d = 0.60$, and the outgroup and control group do not differ significantly from

each other either, $t(43) = -1.00$, $p = .578$, $d = 0.31$. The least-square means as predicted from the model for each group are 6.18 ($SE = 0.48$, 95% CI [5.22, 7.15]) for the control group, 6.79 ($SE = 0.47$, 95% CI [5.83, 7.74]) for the ingroup, and 6.33 ($SE = 0.50$, 95% CI [5.32, 7.33]) for the outgroup, respectively.

Comparison of samples. As the results on trust behaviour in the game was so different between the Democrat and Republican sample, the two samples were next compared on several variables of interest (see Table 17). Firstly, it was found that Republican participants reported somewhat more positive views towards the political outgroup than Democrat participants. However, the difference in outgroup attitudes cannot fully account for the differences between Democrats and Republicans, as the interaction between group and political affiliations remains when controlling for outgroup attitudes.[15] Identification with the ingroup was similar for Democrat and Republican participants.

Ingroup identification

The influence of ingroup identification on investments in the game was examined in the next model. The mean-centred average identification score was added to a model including the main effects and interactions for group, trial number, and level of ingroup identification as predictors of investments. A random intercept and random slopes for group, trial number, and the interaction between group and trial number were added. The data of one participant was removed due to missing values. In this model, the main effects of group, $F(2, 110) = 10.04$, $p < .001$, and trial number, $F(1, 83) = 25.80$, $p < .001$, remained significant. In addition, only a marginally significant main effect of ingroup identification on investments was observed, $F(1, 83) = 3.25$, $p = .075$, $b = -0.47$. There was a negative relation between level of identification with the ingroup and investments during the game. Participants who identified more strongly with their political ingroup invested lower amounts overall.

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[15] For this analysis, the model that examined the effect of political affiliation was extended by adding in the main effect of outgroup attitudes. In this model, the same interactions were still significant, Political Affiliation X Group, $F(2, 85) = 4.95$, $p = .009$, $b_1 = -0.12$, $t(85) = -1.04$, $p = .301$, $b_2 = -0.89$, $t(85) = -2.95$, $p = .004$, Group x Trial Number x Political Affiliation, $F(2, 85) = 4.34$, $p = .016$, $b_1 = 0.02$, $t(85) = 0.99$, $p = .321$, $b_2 = 0.11$, $t(85) = 2.64$, $p = .010$.

No interaction between identification and group was observed, $F(2, 110) = 0.32$, $p = .730$, $b_1 = 0.01$, $t(83) = 0.32$, $p = .747$, $b_2 = 0.09$, $t(82) = 0.77$, $p = .444$.

Discussion

The aim of the second study was to replicate Experiment 5 with a larger and more representative sample, in which more variation in views about the ingroup and outgroup was present. The target outgroup was changed from a national group to a political group, with the aim to examine how levels of ingroup identification influence generalisation of game experiences. As the comparison between Experiment 5 and 6 indicates, the American MTurk sample indeed expressed a wider variety in scores of identification with the ingroup and attitudes towards the outgroup. Moreover, with this political group, people expressed much more negative views towards the outgroup. These views of the ingroup and outgroup were also visible in investments. Overall, people trusted political ingroup members more than outgroup members. Interestingly, the outgroup and control group were treated very similar in this study.

Regarding the changes in investments over time, in the overall sample no differences between groups were observed. Participants increased their investments at a similar rate for ingroup partners, outgroup partners, and even partners from the control group. This is in contrast with the results from Experiment 5, where no ingroup favouritism was observed, but people trusted control partners less and did not generalise their experiences with the control group as much as with partners from both ingroup and outgroup.

However, in this study, an effect of the political affiliation was found. People who self-identified as Democrat showed a different pattern of trust behaviour over time than people who self-identified as Republican. Democrats showed ingroup favouritism throughout the game. While trust in Democrat ingroup partners initially was higher than trust in the other groups, it did not change over the course of the game[16]. In contrast, people initially distrusted the outgroup but increased their trust in Republican outgroup partners over the game. Thus, the Democrat sample

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[16] This was not a ceiling effect of investments, as the maximum investments in ingroup partners for Democrat participants was about seven to eight out of ten tokens.

confirmed the hypotheses about ingroup favouritism and stronger generalisation of experiences for the outgroup. However, participants who self-identified as Republican showed only a weak ingroup favouritism effect, which disappeared when the effect of trial number was taken into consideration. Over time, Republican participants treated partners from the ingroup, outgroup, and even the control group in a very similar manner. There were no differences in the changes in investments over time.

After observing these differences, the two samples were examined in more detail. Democratic participants were found to have more negative views of the outgroup than Republican participants, although initial attitudes towards the outgroup did not fully account for differences between the two samples. However, it might be the case that, due to the scatter of the political spectrum in the run-up to 2016 presidential election, people who identified as Democrat were more strongly unified as a group than people who identified as Republican. Notably, the level of identification with the ingroup did not moderate decisions to trust group members. It could be the case that the dislike of the outgroup, particularly of the Republican Party candidate, Donald Trump, particularly guided the behaviour towards ingroup and outgroup for Democrat participants. The findings from the Democrat sample indicate that when initial trust was low, more generalisation of experiences occurred.

A last observation about the data from Experiment 6 is that the control group was treated very similar to the outgroup in the Trust Game, both in overall levels of trust and in changes in investments with experience. A potential explanation for this interesting finding is the perception of what the control group entails. In this study, the political affiliation of the control participants was unknown. Perhaps participants interpreted this unknown affiliation as not supporting any political party, although this was not the explicit instruction of the game. It is possible that people perceive others that do not support any political party as similar to people who support the opposing political party ("you are either with us or against us"). Moreover, the interpretation of the control as not supporting any political party could be perceived as an entitative group in itself. In Experiment 5, the control group did not have a known nationality, which is different from having a foreign nationality.

In summary, the results from Experiment 6 again show that people use their previous experiences with other group members to inform their decisions to trust other group members. Within the Democratic sub-sample of the data, strong ingroup

favouritism was observed. People initially trusted ingroup members and distrusted outgroup and control group members. However, over the course of the game, Democrat participants generalised their experiences with outgroup and control group members to other interactions, but no changes in trust were made towards ingroup members. For the Republican sample, only weak ingroup favouritism was observed and no differences between the groups in the level of generalisation of experiences were found. It appears that, for the group that is initially disliked and distrusted, experiences with individual group members are mostly informative for future decisions to trust.

General discussion

The aim of this chapter was to examine how people use their previous experience with group members to inform their decisions to trust new, unknown individuals, a process termed member-to-member generalisation. Contact theory shows that interactions with individual outgroup members are generalised to change attitudes towards the group, but is unknown whether behaviour towards novel group members is also influenced by contact experiences. In order to investigate this member-to-member generalisation process, a paradigm was designed where people interacted through a series of Trust Games with different members from the ingroup and outgroup, and with individuals for whom no group information was present (the control). In Experiment 5, a sample of British university students played Trust Games with British ingroup partners, Chinese outgroup partners, and partners with unknown nationality. In Experiment 6, an American sample of MTurk workers played the Trust Game with partners from their political ingroup and outgroup (Democrat and Republican), and control partners where no political affiliation was provided.

It was hypothesised that people would initially show ingroup favouritism in trust, investing higher amounts in ingroup partners than outgroup partners. Moreover, the core hypothesis of this research was that people would show member-to-member generalisation in their trust behaviour towards novel group members. However, as the outgroup is often perceived as more homogenous (Ostrom & Sedikides, 1992; B. Park & Rothbart, 1982) and therefore group members are perceived to be more interchangeable, it was predicted that people would generalise their experiences with outgroup members more than with ingroup members, and increase investments in outgroup members more quickly over trials. Lastly, the moderating influence of identification with the ingroup was examined. It was predicted that people who identify stronger with the ingroup also perceive the ingroup as more entitative (Castano et al., 2003; Castano, Yzerbyt, et al., 2002), which should lead to stronger generalisation of ingroup experiences.

Summary of the findings

Firstly, an effect of group membership on trust was observed in both Experiment 5 and 6, though in opposite directions. The student sample in

Experiment 5 showed higher trust in Chinese outgroup members than British ingroup members, while the MTurk sample in Experiment 6 showed higher trust in political ingroup members than political outgroup members. Explanations of the outgroup favouritism effect in Experiment 5 are provided in the discussion of that study.

Secondly, both Experiments 5 and 6 clearly demonstrated that people show member-to-member generalisation and use their previous experiences with group members to inform current decisions to trust other group members. Even though each round of the Trust Game was with a different individual, participants increased their investments over time, which indicates the validity of this paradigm to examine member-to-member generalisation. People showed more trust in novel partners after interacting with other group members that were reciprocating trust. In Experiment 5, investments increased more strongly for ingroup and outgroup partners, compared to the control group. This suggests that generalisation of experiences towards novel individuals particularly occurs when there is shared group membership to provide an association between individuals. In other words, social categorisation is a crucial factor for generalisation, not just from individual to group (Brown & Hewstone, 2005; Voci & Hewstone, 2003), but also from individual to individual, or member-to-member. Moreover, the data from Experiment 5 also showed that expectations of return are a strong predictor of decisions to trust.

As outgroup favouritism in trust decisions was observed, and little variation in ingroup identification and outgroup attitudes were found in Experiment 5, Experiment 6 aimed to provide a stronger test of member-to-member generalisation in trust behaviour by replicating the first study in a wider, more representative sample. Additionally, in order to examine how initial ingroup favouritism and outgroup derogation drives trust behaviour, the target outgroup was changed to political groups. It was hypothesised that people would have stronger feelings towards these political groups, particularly in the running up to the 2016 US political election. Indeed, the data confirmed that this sample showed more variation in levels of identification with the ingroup and feelings towards the outgroup, and reported more negative views towards the outgroup compared to the sample from Experiment 5. This was also visible in the levels of trust in partners from separate groups. Overall, participants in Experiment 6 invested higher amounts in ingroup partners than outgroup partners.

However, the finding that people generalised experiences with ingroup and

outgroup partners equally but more than for control partners, did not replicate in Experiment 6. Instead, it was found that Democrat participants increased their investments in outgroup and control group partners much quicker than in ingroup partners. This pattern confirms the original hypotheses derived from the outgroup homogeneity effect (Ostrom & Sedikides, 1992; B. Park & Rothbart, 1982), and observed in attitude transfer processes (Ratliff & Nosek, 2011). However, Republican participants showed only weak ingroup favouritism and over trials treated all partners very similarly. While there were some minor differences in outgroup attitudes between these two samples, this could not fully account for the differences between the two groups. As suggested in the discussion of Experiment 6, the difference in behaviour between Democrats and Republicans could be due to the scattered political landscape and the perceptions of the presidential candidates for the Democrat and Republican Party at that time.

Together, the findings from Experiment 6 suggest that negative attitudes towards a group drive generalisation of trust experiences in the game. When the ingroup was strongly favoured initially, people did not change their levels of trust for other ingroup members much. However, when the outgroup was initially distrusted, people increased their investments much more over time. Democrat participants seemed open and willing to learn that Republicans were trustworthy. This finding is in contrast with the results from Experiment 5, where the most distrusted partners were from the control group (unknown nationality). In Experiment 5, initial distrust towards certain partners did not lead to generalisation, as participants did not change their levels of trust towards novel control partners of unknown nationality.

Integrating findings from Experiment 5 and Experiment 6

The findings from the two studies conducted in this chapter seem quite contrasting at first sight. While in both studies people clearly used their previous experiences in the game as information to make their next decision about investing in others, the degree to which people changed their behaviour over time for the different groups varied. Experiment 5 suggests that a shared group membership is important for generalisation of experiences, compared to the control. However, whether the people belong to the ingroup or outgroup makes no difference, as people generalised their experiences to the same extent for ingroup and outgroup. Experiment 6, on the other hand, suggests that initial levels of trust and general

attitudes towards the group influence how much experiences are generalised. When people initially distrust a group, each positive interaction with a group member is informative and influence behaviour towards other group members.

However, these findings can be explained together, when taking into account both the views of the ingroup and outgroup, and perceptions of the control partners. The student sample from the first study indicated high identification with the British ingroup, but also very positive attitudes towards the Chinese outgroup. The Chinese outgroup was even trusted more than the British ingroup, and investments increased at similar rate. Thus, when both ingroup and outgroup are viewed positively, there is a moderate amount of generalisation that is similar between the groups. The control partners seemed to be perceived as an actual control, and not as an entitative group. The people were unknown, and there was no connecting element between the different partners. The complete lack of information might have led to distrust and to the reduced amount of generalisation between partners.

The behaviour of the Republican sample in the second study is comparable to this pattern of trust behaviour from the first study, with a difference of the perception of and behaviour towards the control group. Perhaps in the second study, the control group was perceived as an entitative group, namely a collection of people who all shared the same choice of not indicating a political affiliation. For Republican participants, who appeared not to prefer either ingroup or outgroup, generalisation of experiences was similar for all three groups. The Democrat sample however, who trusted ingroup members more than outgroup and control group members, showed differences in generalisation. When a group is strongly favoured over another group, there is no need to use previous experiences to inform decisions to trust. Every group member is simply trusted. When a group is initially distrusted, then each positive experience with a group member is an important piece of information, and experiences are generalised and used to inform decisions about new group members.

Together, the findings from the two studies in this chapter give some insights into how people use previous experiences with group members to inform their decisions to trust new group members. Previous positive interactions are informative for future interactions, and lead to increased trust. However, the extent to which people change their behaviour through experiences varies depending on the entitativity of the group, and the perceptions of both the ingroup and the outgroup. This finding is supported by studies showing that levels of group entitativity

influence how much traits are transferred from one individual to other group members (Crawford et al., 2002; Ranganath & Nosek, 2008). The data from the two studies suggests that the group needs to be perceived as sharing certain features in order for previous experiences to influence decisions towards novel individuals. Moreover, when a group is particularly liked and trusted, positive experiences do not strongly affect decisions to trust. In contrast, when a group is initially distrusted, a positive interaction with a group member is a valuable piece of information that strongly influences decisions to trust other group members.

Conclusion

The aim of this chapter was to examine how people use their previous experience with outgroup and ingroup members to inform their decisions to trust new, unknown group members. Experiment 5 and 6, examining both a student population in a laboratory setting and a sample from the US general public online, showed diverse results regarding differences between generalisation of experiences with the ingroup and the outgroup. People generally increased their trust in new group members after having positive, trustworthy interactions with other group members. However, the amount of change in trust behaviour seemed to vary based on the entitativity of the group, as well as initial biases towards either the ingroup or the outgroup.

This chapter examined how positive interactions might increase trust and showed that high initial trust leads to a lack of change in behaviour. The next chapter aims to explore this issue further by considering both positive and negative interactions with both ingroup and outgroup members. Does the generalisation of contact experiences rely on initial expectations towards the group? Do negative interactions influence behaviour towards novel group members more than positive interactions? These research questions are explored in Chapter 5, where the Trust Game paradigm is extended to include untrustworthy as well as trustworthy game partner.

CHAPTER 5

Influence of contact valence on member-to-member generalisation in trust behaviour

The research described in the second strand of the thesis examines generalisation of contact experiences in behaviour towards novel group members, a process termed member-to-member generalisation. The previous chapter introduced a novel paradigm where participants interacted with outgroup and ingroup member through iterated Trust games and provided support for the validity of this adapted Trust Game paradigm. It was examined how positive interactions are generalised and how people change their trust behaviour when interacting with multiple group members. However, interactions in daily life are not always positive. In this chapter, the paradigm is extended to include positive and negative interactions with either ingroup, outgroup, or control group members. Do people generalise positive experiences in a different way than negative experiences? Are negative interactions with outgroup members treated differently than negative interactions with ingroup members? These questions are investigated in the two studies presented in this chapter. In Experiment 7, an American MTurk sample is used, and Experiment 8 moves back into the laboratory to replicate the study with a student population. Both studies targeted political groups to manipulate ingroup and outgroup membership.

Negative outgroup contact and generalisation

Most studies on intergroup contact have focussed only on positive intergroup interactions. However, in daily life people experience intra- and intergroup interactions that vary in valence, from very positive, to neutral or ambivalent, to even unpleasant or negative. Recent studies have started to explore how negative intergroup contact influences attitudes. One of the main observations is that negative contact with outgroups has a stronger effect on prejudice than positive contact, increasing prejudice more than positive interactions can reduce prejudice. This effect has been called the *positive-negative contact asymmetry* (Barlow et al., 2012; Graf et al., 2014; Hayward et al., 2018), and has been particularly observed for stigmatised outgroups (Paolini & McIntyre, 2018).

The stronger effect of negative contact on prejudice could be due to the general negativity bias in person perception, attention, memory, and generalisation processes (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Fazio et al., 2004; Rozin & Royzman, 2001; Shook et al., 2007; Skowronski & Carlston, 1989), which shows that negative information generally tends to dominate over positive

information. However, another explanation more specific to intergroup contact has been proposed. The *valence-salience hypothesis* suggests that the strength of negative contact in affecting attitudes is caused by stronger salience of group membership during negative than positive contact (Paolini, Harwood, & Rubin, 2010). This stronger salience of group membership during negative contact leads to stronger generalisation of attitudes to the outgroup as a whole, as higher group salience has been shown to enhance generalisation (Brown & Hewstone, 2005; Voci & Hewstone, 2003). The proposed underlying process of heightened group salience during negative intergroup interactions is that negative experiences often present a congruency effect with negative past experiences, a fit between existing knowledge and the current contact experience. When a negative contact experience confirms expectations of the group based on negative past experiences, group salience is increased. Another study observed that frequent and positive intergroup contact in the past acted as a buffer against the effects of negative contact on prejudice, confirming the hypothesis that a match between past experiences with the outgroup and current contact enhances group salience (Paolini et al., 2014).

To summarise, recent research examining contact valence has found that negative contact is more strongly generalised to the outgroup as a whole than positive contact, which can be explained through heightened salience of group membership during negative interactions with outgroup members.

Research questions and hypotheses

In addition to research questions from the previous chapter, three novel research questions were developed that examine how contact valence influences member-to-member generalisation. The first research question examines the main effect of contact valence (positive vs negative) on member-to-member generalisation. Are generalisation processes different for negative interactions compared to positive interactions? The second research question focusses on the interaction between contact valence (positive vs negative) and group membership (ingroup vs outgroup) on generalisation processes. Do people generalise negative experiences with outgroup members differently than negative experiences with ingroup members? The third and last research question targets trust recovery after negative experiences of trust violation. Are people able to recover their trust in novel ingroup or outgroup members after experiencing trust violations?

Based on the general negativity bias (Baumeister et al., 2001; Rozin & Royzman, 2001; Skowronski & Carlston, 1989), and particularly the finding that negative information is generalised more readily than positive information (Fazio et al., 2004; Shook et al., 2007), it was predicted that negative interactions in the game should lead to stronger member-to-member generalisation in trust behaviour. However, group membership was predicted to moderate the general negativity effect, with particularly strong generalisation of negative outgroup experiences. The valence-salience hypothesis (Paolini et al., 2010) indicates stronger generalisation of negative intergroup contact experiences than positive contact experiences with outgroup members, through heightened group salience.

The effect of valence on attitude generalisation has been examined before in an implicit attitude transfer paradigm (as reviewed in Chapter 4), showing stronger generalisation of negative experiences for outgroup members particularly (Ratliff & Nosek, 2011). Therefore, it was predicted that negative game experiences are generalised more strongly for outgroup members than for ingroup members in behaviour towards novel group members. Thus, an overall negativity bias in member-to-member generalisation is predicted, indicated by stronger decreases in trust in novel group members after trust violations than increases in trust after trust reciprocations. However, this main effect is moderated by group membership; stronger generalisation was predicted after negative experiences for outgroup members than ingroup members.

Regarding the third research question about trust recovery after violation, it was predicted that participants would recover their trust in ingroup partners more quickly than in outgroup partners. From Social Identity Theory (Tajfel & Turner, 1979), it has been established that people are motivated to create a positive image of the ingroup to maintain high self-esteem based on the social identity. Therefore, people treat ingroup members positively and remove deviants from their group (Marques et al., 1988). This indicates that the untrustworthy ingroup members should be sub-typed and removed from the ingroup, and novel ingroup members are trusted again to maintain the positive image of the group. However, untrustworthy outgroup members might change the perception of the whole group more permanently, as these negative experiences are generalised to the group more quickly and change attitudes (Fazio et al., 2004; Paolini et al., 2010; Ratliff & Nosek, 2011; Shook et al., 2007). After experiencing negative interactions with outgroup partners,

participants are predicted to distrust other outgroup members more readily, compared to trust behaviour towards novel ingroup members after experiencing ingroup violations.

Overview of studies

This chapter investigated how people generalise experiences of trust reciprocations and violations from ingroup or outgroup members in their behaviour towards new group members. The valence of interactions was manipulated within subjects, by creating three phases in a ten-round iterated Trust Game. The different phases of the game vary in valence of experiences. Group membership was manipulated between subjects in these experiments, in contrast to the previous chapter where participants interacted with ingroup, outgroup, and control partners. The aim of the change in paradigm was to create a first positive impression where trust towards group members can be build, then introduce negative experiences with untrustworthy partners, and lastly allow for trust to recover in the final rounds of the game. In the trust-building phase of Round 1 to Round 3, participants interacted with trustworthy partners. Then, in the trust-violation phase of Round 4 and Round 5, participants experienced trust violations by other group members. Lastly, in the trust-recovery phase of Round 6 to Round 10, partners behaved trustworthy again.

Group membership was varied between subjects due to the design of the three-phase Trust Game. The order of positive and negative rounds with group members was kept the same for all participants, and therefore a randomised order of trials for the three types of partners, as was used in Experiment 5 and 6, was not possible. A blocked design would most likely cause suspicion by participants about the order of trials (i.e. always experience trust violation in round 4 and 5). Because of these practical reasons, a between-subject design was chosen for these studies. Experiment 7 examined the influence of valence and group membership on member-to-member generalisation in a large sample from diverse backgrounds, through Mechanical Turk. Experiment 8 replicated the three-stage Trust Game paradigm with a student sample in a laboratory setting. Both studies utilised political groups to manipulate group membership, as these political groups were found before to elicit strong intergroup responses in both online samples (see Experiment 6) and in student samples (see Appendix H).

Experiment 7: Examining a valenced Trust Game paradigm

In the first experiment to examine the effect of contact valence on member-to-member generalisation, the sample consisted of American MTurk workers as a continuation from Experiment 6. Participants interacted with ten different partners from their political ingroup, outgroup, or a control where no political affiliation was presented. Some partners reciprocated participants' trust, but others violated trust by not returning any tokens. Building on the previous chapter on generalisation of positive interactions with group members, the main research question in this chapter was focussed on the interaction between valence and group membership on member-to-member generalisation. In addition to behaviour in the game, identification with the political ingroup and attitudes towards the political outgroup were measured at different time points. As differences between Democrat and Republican participants were observed in Experiment 6, this effect was additionally explored.

Method

Participants and design

The participant pool consisted of 254 MTurk workers[17]. The data of 22 participants was removed due to inconsistent responses related to political affiliation and political orientation, as in Experiment 6. The remaining 226 participants (43% female, $M_{age} = 37.12$, $SD_{age} = 11.72$) were all US citizens, and consisted of equal numbers of self-identified Democrats and Republicans. Participants received a payment of 0.75 US Dollars for their time and had a chance to win a monetary bonus based on average earnings in the Trust Game, converted to dollars (one token = 10 cents). Ten participants were selected at random to receive the bonus, with an average bonus amount of 1.20 dollars. Data collection for this study was conducted in October 2016, before the 2016 Presidential Election.

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[17] This sample size was based on the aim to achieve an $N = 40$ in each cell. There are three between-group conditions and two political affiliations, thus leading to a total sample size of 6 * 40 = 240. Moreover, a power analysis using GPower for a repeated measures ANOVA with a between-subject factor, 3 groups, 10 measurements, an effect size of $f = 0.15$ and a power of 0.80, indicated a required sample size of 240.

        This study employed a mixed design with the between-subject factor group
(ingroup, outgroup, control) and within-subject variable trial number (1 to 10) as
main predictors of investments in the separate phases of the Trust Game. The in- and
outgroup were determined based on the self-identified political affiliation of the
participant, as in Experiment 6. Identification with the ingroup and attitudes towards
the outgroup were measured in addition to the Trust Game data. The standardised
mean score of identification was treated as continuous predictor of investments, in
interaction with group. Outgroup attitudes were examined as an outcome variable
after the game experiences.

Materials and Procedure

        The experiment was programmed using the online software program
Qualtrics and was distributed via Amazon's Mechanical Turk. Separate versions of
the experiment were created for Democratic and Republican voters and were
launched separately on the MTurk website. After informed consent was obtained and
the party screening was successful[18], participants filled out the ingroup identification
scale adapted from Cinnirella (1997), as used in the previous chapter ($\alpha = 0.92$, see
Appendix F for the items). Next, participants' feelings towards the outgroup (either
Democrats or Republicans, depending on own affiliation) were measured using the
same feeling thermometer as used in previous chapters (see Appendix B).

        Iterated Trust Game. After completing the questionnaires, participants
received instructions about the Trust Game and a number of control questions to
ensure full understanding of the game. After completing four practice rounds of the
game, participants played 10 rounds of the Trust Game, always in the role of the
trustor/first mover (see Appendix G for instructions and visualisation of a game
round). Each round was played with a different individual, but all rounds were
played with either ingroup members, outgroup members, or people of which the
political affiliation was unknown (control group).

        The Trust Game was programmed in the same way as used in the previous
chapter (see the method section of Experiment 5 for the full details). The difference
with the previous studies was that the ten rounds of the Trust Game were divided

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[18] Screening for the correct political party was performed in the same way as the previous Mechanical
Turk study, see method of Experiment 6 for full details.

into three separate phases. In the first three rounds of the game, (the trust-building phase) all partners reciprocated high amounts, between 45% and 60% of the received amount. In these rounds, participants always ended the round with more tokens that they started with, if they invested. In round four and five (the trust-violation phase) the partners did not reciprocate any invested tokens, irrespective of the investment of the participant. Finally, in round six to ten of the Trust Game (the trust-recovery phase), all partners reciprocated similar high amounts as in the first rounds. This behaviour was kept constant for all participants, only the information about the partner (ingroup, outgroup, or control) varied between participants.

After participants finished all 10 rounds of the Trust Game, they were informed about their average earnings in the game and the bonus payment system. Next, participants were presented with the 5-item semantic-differential outgroup attitude scale (Wright et al., 1997), as used in previous chapters. Lastly, participants received a number of demographic questions and they were directed to a debriefing sheet.

Data analysis

The data was again analysed using the statistics program R version 3.4.2 (R Core Team, 2017) in RStudio (RStudio Team, 2015). The analysis was divided into four main strands. Firstly, initial investments were compared between the three groups using an ANOVA. Secondly, the changes in investments over trials were analysed for each phase separately using linear multilevel models with group, trial number, and level of ingroup identification predicting investments. Thirdly, the amount of change in investments was compared between the different phases by creating individual coefficients of change for each phase and running linear multilevel models on this data. Fourth, the effect of political affiliation (Democrat or Republican) and the effect of expectations were examined in each phase of the game separately by adding these predictors into the original models for each phase. Lastly, the effect of game experiences on outgroup attitudes, while controlling for initial outgroup feelings, was examined using an ANCOVA. For all models examining the effect of group (ingroup, outgroup, control), the same planned contrasts were implemented as in the previous chapter to compare the different groups (see method Experiment 5 for full details).

Results

Initial trust bias

An ANOVA on investments in the first round of the Trust Game showed a significant effect of group, $F(2, 223) = 4.00$, $p = .020$, $\eta_p^2 = 0.04$. Post-hoc independent t-tests confirmed that initial investments in the ingroup ($M = 6.32$, $SD = 3.35$) were significantly higher than initial investments in the outgroup ($M = 4.92$, $SD = 3.69$), $t(142) = 2.40$, $p = .018$, $d = 0.40$, and the control group ($M = 4.97$, $SD = 3.17$), $t(147) = 2.54$, $p = .012$, $d = 0.41$. The outgroup and the control group did not differ significantly in their initial investments, $t(142) = 0.10$, $p = .919$, $d = 0.02$.
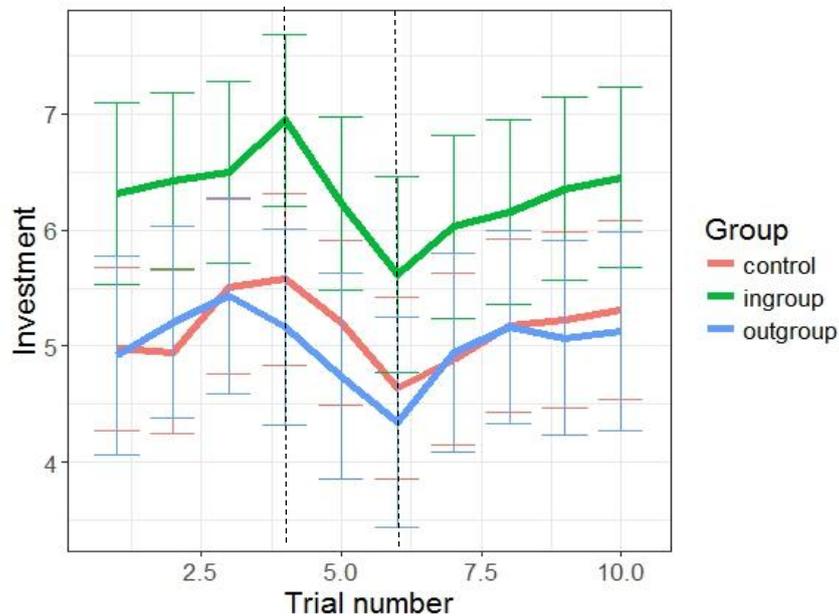
Figure 14. Mean investments in different group partners for each round of the Trust Game, for Experiment 7. Error bars indicate 95% confidence intervals. The dotted lines indicate the phases of the game (building, violation, recovery).

Trust-building phase

The first model examined the effect of group, trial number, and average mean-centred ingroup identification score on investments in the trust-building phase of the game (Round 1 to Round 4, see Figure 15). All main effects and interactions between these three variables were included as fixed effects in the model. In addition, a random per subject intercept was added, and a random slope for trial

number. Due to the between-subject design, no random slope for group was included. The fixed effects of this model explained 6.9% of the variance within the data (R^2_{fixed} = 0.07). Adding the random effects to the model increased the amount of variance explained to 89% (R^2_{total} = 0.89).

In this model, significant main effects of group, $F(2, 220)$ = 3.09, p = .047, b_1 = 0.27, $t(220)$ = 1.61, p = .109, b_2 = 0.56, $t(220)$ = 1.90, p = .059, and trial number, $F(1,220)$ = 17.29, $p < .001$, b = 0.18, were observed. The positive coefficient for the main effect of trial indicates that people increased their investments during the trust-building phase. Post-hoc multiple comparisons based on the model show that the ingroup received higher investments than the outgroup, $t(220)$ = 2.61, p = .027, d = 0.35, and higher investments than the control group, $t(220)$ = -2.48, p = .037, d = 0.33. The outgroup and the control group did not differ in the received investments during the trust building phase, $t(220)$ = 0.19, p = .981, d = 0.03. The least-square means as predicted from the model for each group are 5.25 (SE = 0.35, 95% CI [4.55, 5.95]) for the control group, 6.52 (SE = 0.37, 95% CI [5.79, 7.25]) for the ingroup, and 5.16 (SE = 0.37, 95% CI [4.42, 5.88]) for the outgroup, respectively. No differences were found in how the investments changed over trials, as the non-significant Group x Trial interaction indicates, $F(2, 220)$ = 0.88, p = .414, b_1 = -0.03, $t(220)$ = -0.98, p = .328, b_2 = 0.05, $t(220)$ = 0.90, p = .369.

Moreover, a significant Group x Identification interaction was observed, $F(2, 220)$ = 4.37, p = .014, b_1 = 0.02, $t(220)$ = 0.15, p = .878, b_2 = 0.66, $t(220)$ = 2.96, p = .003 (see Figure 16). This interaction indicates that the relation between ingroup identification scores and investments in the trust building phase is positive for the ingroup, *intercept* = 6.03, b = 0.74, SE = 0.32, $t(71)$ = 2.32, p = .023. However, the slope of identification is negative for the outgroup, *intercept* = 4.90, b = -0.58, SE = 0.35, $t(71)$ = -1.67, p = .099. The slope for the control group is not significantly different from zero, *intercept* = 4.66, b = 0.02, SE = 0.29, $t(81)$ = 0.07, p = .944. With increased identification with the ingroup, investments in the ingroup increase and investments in the outgroup decrease, leading to an ingroup favouritism effect.
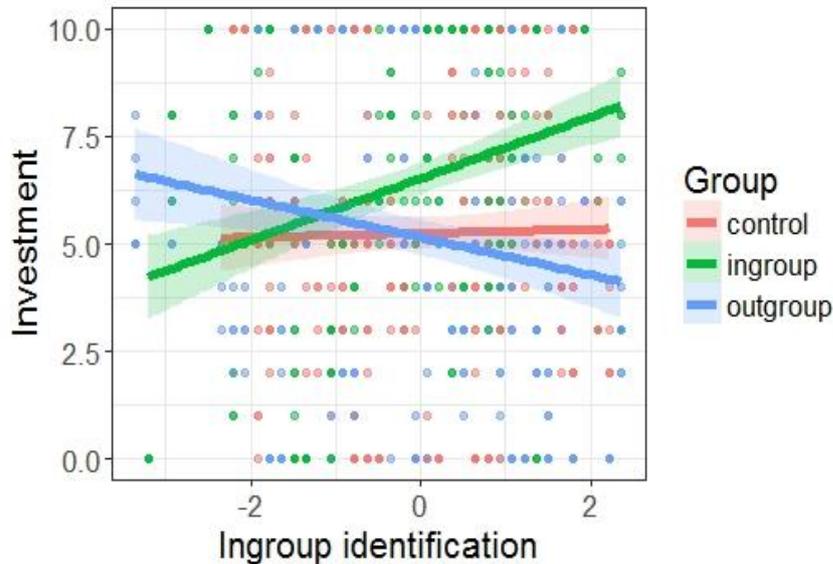
Figure 15. Relation between investments in the trust-building phase of the Trust Game and identification with the ingroup for Experiment 7. A scatterplot is presented with separate regression lines for each group.

Trust-violation phase

For the trust-violation phase, a second linear multilevel model was created with group, trial number, and ingroup identification predicting investments in Round 4 to Round 6 of the Trust Game (see Figure 15). The same random effects were included as in the trust-building phase. The fixed effects of this model explained 6.6% of the variance within the data ($R^2_{fixed} = 0.07$). Adding the random effects to the model increased the amount of variance explained to 80.6% ($R^2_{total} = 0.81$).

In this model, a significant main effect of trial number was observed, $F(1, 220) = 8.66$, $p = .004$, $b = -0.51$, which shows that investments generally decreased during the violation phase. The main effect of group was marginally significant, $F(2, 220) = 2.58$, $p = .078$, $b_1 = 0.23$, $t(220) = 0.65$, $p = .519$, $b_2 = 1.36$, $t(220) = 2.18$, $p = .031$. Post-hoc multiple comparisons based on the model show that the ingroup received higher investments than the outgroup, $t(220) = 2.94$, $p = .010$, $d = 0.40$, and higher investments than the control group, $t(220) = -2.20$, $p = .074$, $d = 0.30$. The outgroup and the control group did not differ in the received investments during the trust-violation phase, $t(220) = 0.81$, $p = .696$, $d = 0.11$. The least-square means as predicted from the model for each group are 5.14 ($SE = 0.35$, 95% CI [4.45, 5.83]) for the control group, 6.25 ($SE = 0.37$, 95% CI [5.53, 6.98]) for the ingroup, and 4.72

($SE = 0.37$, 95% CI [4.00, 5.45]) for the outgroup, respectively. No differences were found in how the investments changed over trials, as the non-significant Group x Trial interaction indicates, $F(2, 220) = 0.55$, $p = .576$, $b_1 = -0.02$, $t(220) = -0.33$, $p = .744$, $b_2 = -0.12$, $t(220) = -1.00$, $p = .318$.

In addition, the Group x Identification interaction was again significant, $F(2, 220) = 3.72$, $p = .026$, $b_1 = 0.49$, $t(220) = 1.77$, $p = .077$, $b_2 = 0.99$, $t(220) = 2.12$, $p = .035$. This interaction indicated the same results as in the trust-building phase, with a positive relation between identification and investments for the ingroup, a negative relation for the outgroup, and no relation for the control group. The 3-way Group x Trial x Identification interaction was marginally significant, $F(2, 220) = 2.50$, $p = .084$, $b_1 = -0.10$, $t(220) = -1.88$, $p = .062$, $b_2 = -0.11$, $t(220) = -1.26$, $p = .208$.

To explore the three-way interaction in more depth, a median-split factor of ingroup identification was created ($Mdn = 4.71$, $N_{low} = 105$, $N_{high} = 121$). Adding this factor to the model instead of the continuous scores produced a significant three-way interaction, $F(2, 220) = 3.54$, $p = .031$, $b_1 = -0.33$, $t(220) = -2.50$, $p = .013$, $b_2 = -0.22$, $t(220) = -0.93$, $p = .352$, see Figure 17 and Table 18. Separate models were created for participants that indicated high and low identification with the ingroup. For highly identified participants, investments in the ingroup decreased more strongly than investments in the control group, $\chi^2 (1) = 5.80$, $p = .048$. For low identifiers, no differences were observed between the slopes of investments in the violation phase.
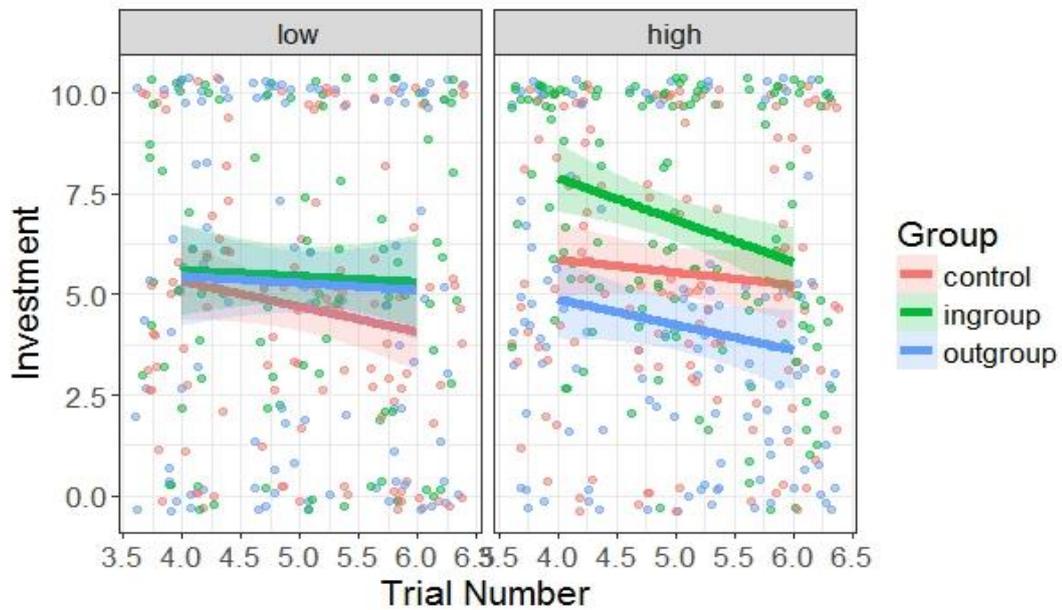
Figure 16. Mean investments over trials of the violation phase for condition for Experiment 7, with separate plots for high and low identifiers.

Table 18

Group size, intercepts, unstandardized coefficients, and standard errors of the slopes of investments in partners from different groups for Experiment 7, presented separately for high and low identified participants

	Low identification				High identification			
	N	*Intercept*	*b*	*SE*	*N*	*Intercept*	*b*	*SE*
Ingroup	39	6.19	-0.14	0.22	41	12.10	-1.05***	0.24
Outgroup	31	6.14	-0.17	0.29	42	7.41	-0.63**	0.19
Control	35	7.84	-0.63**	0.23	38	7.14	-0.32	0.21

Note. The notations on the coefficient indicate whether the effect of trial number on investments is significantly different from zero: *** $p < .001$, ** $p < .01$.

Trust recovery phase

A third linear multilevel model was created with group, trial number, and ingroup identification predicting investments in the trust recovery phase (round 6 to 10, see Figure 15). The same random effects were again included. The fixed effects of this model explained 3.8% of the variance within the data ($R^2_{fixed} = 0.04$). Adding

the random effects to the model increased the amount of variance explained to 85.8% ($R^2_{total} = 0.86$). In this model, only a significant main effect of trial number was observed, $F(1, 220) = 19.81$, $p < .001$, $b = 0.18$. This main effect indicates that investments generally increased during the trust-recovery phase. No significant main effect of group, $F(2, 220) = 0.59$, $p = .556$, $b_1 = 0.11$, $t(220) = 0.42$, $p = .678$, $b_2 = 0.49$, $t(220) = 1.00$, $p = .318$, or Group x Identification interaction, $F(2, 220) = 1.14$, $p = .320$, $b_1 = -0.26$, $t(220) = -1.19$, $p = .236$, $b_2 = 0.33$, $t(220) = 0.905$, $p = .366$, was observed during the trust-recovery phase.

Comparisons of slopes over phases

Figure 18 below shows the slopes for each of the conditions during the trust building, trust violation, and trust recovery phase, as retrieved from the linear multilevel models described in the previous sections (with the sign of the coefficients reversed for the violation phase). A visual inspection of these slopes shows that investment behaviour changed more during the violation phase than during the building and recovery phase. The slopes did not differ between conditions for each phase, as previous analyses have shown.
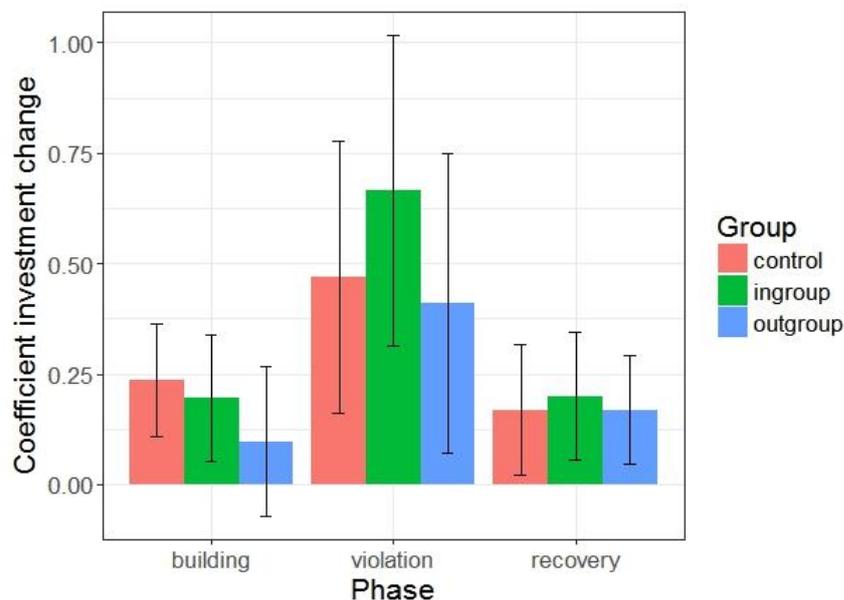
Figure 17. Mean coefficients of investment change over trials for the different phases of the Trust Game for Experiment 7, and for the different groups. Error bars represent 95% confidence intervals.

To analyse these differences between the phases, trial number was regressed on investments separately for each participant and for each phase. This analysis created an intercept and coefficient for trial number for each participant. To compare the magnitude of the average slopes between the phases without the problem of the sign of the slope, the coefficients for the trust violation phase were multiplied by -1 to make the numbers positive.

A linear multilevel model was performed with the slope coefficient as dependent variable and the phase (building, violation, recovery) and group as predictors. A per-subject random intercept was added to account for the repeated measures design. For the variable phase (building, violation, recovery), the following contrasts were implemented: the first contrast compared the building phase with the violation phase, the second contrast compared the violation phase with the recovery phase. The fixed effects of this model explained 3% of the variance within the data ($R^2_{fixed} = 0.03$). Adding the random effects to the model increased the amount of variance explained to 42.4% ($R^2_{total} = 0.42$).

In this model, only a significant main effect of phase, $F(2, 446) = 15.03$, $p < .001$, $b_1 = 0.11$, $t(446) = 2.77$, $p = .006$, $b_2 = -0.11$, $t(446) = -2.71$, $p = .007$, was observed. The significance of both contrasts indicates that the slope of the violation phase was significantly steeper than both the building and recovery phase. No main effect of group was observed on the investment coefficients over trials, $F(2, 223) = 0.52$, $p = .597$, $b_1 = -0.00$, $t(223) = -0.02$, $p = .987$, $b_2 = 0.06$, $t(223) = 1.02$, $p = .310$. Moreover, the Group x Phase interaction was also non-significant, $F(2, 446) = 0.71$, $p = .584$, $b_{11} = 0.03$, $t(446) = 1.03$, $p = .305$, $b_{21} = 0.01$, $t(446) = 0.20$, $p = .840$, $b_{12} = 0.01$, $t(446) = 0.287$, $p = .774$, $b_{22} = -0.05$, $t(446) = -0.95$, $p = .345$.

Differences between Democrats and Republicans

For the three phases of the Trust Game, it was explored whether Democrat and Republican participants differed in their behaviour. For each phase, a linear multilevel model was created with group, trial number, and political affiliation (Democrat, Republican) predicting investments. The same random structure and contrasts were used as in the previous models. A marginally significant Trial x Political affiliation interaction was observed in the trust-building phase, $F(1, 220) = 3.21$, $p = .074$, $b = -0.15$, and in the trust-violation phase, $F(1, 220) = 5.60$, $p = .019$,

$b = 0.45$. For both these phases, the slope of investments over trials was somewhat steeper for Democrat participants, $b_{Building} = 0.26$, $SE = 0.06$, $t(110) = 4.04$, $p < .001$, $b_{Violation} = -0.74$, $SE = 0.13$, $t(110) = -5.86$, $p < .001$, than Republican participants, $b_{Building} = 0.10$, $SE = 0.06$, $t(110) = 1.85$, $p = .068$, $b_{Violation} = -0.29$, $SE = 0.14$, $t(110) = -2.00$, $p = .048$. No effects of political affiliation were observed in the trust recovery phase, Trial x Political affiliation, $F(1, 220) = 0.44$, $p = .509$, $b = -0.05$.

Relation between expectations and investments

During each round of the game, expectations of return were measured before participants made their investment decision. The relation between expectations and investments was examined. Firstly, the correlation between expectations and investments over the whole game indicated a positive relation, $r = 0.65$, $p < .001$. Next, for each phase of the game, a model was created with expectations, group, and trial number predicting investments. The same random structure and contrasts were used as in the previous models. In all phases, only a significant main effect of expectations on investments was found: trust-building, $F(1, 442) = 60.56$, $p < .001$, $b = 0.04$, trust-violation, $F(1, 281) = 26.44$, $p < .001$, $b = 0.09$, trust-recovery, $F(1, 463) = 48.00$, $p < .001$, $b = 0.08$. Expectations strongly predicted investments in each phase of the game, but there were no effects of group.

Effect on outgroup attitudes

To examine the effect on the interactions in the Trust Game on outgroup attitudes, an ANOVA was performed with type III sums of squares, with the average score for the semantic differentials as dependent variable, and group as predictor. The mean-centred score for the outgroup feeling thermometer (measured before the game) was included as covariate to control for initial feelings towards the outgroup[19]. The effect of group on the post-game outgroup attitudes was not significant, $F(2, 222) = 1.59$, $p = .206$, $\eta_p^2 = 0.01$. The main effect of pre-game feelings towards the outgroup on post-game outgroup attitudes was significant, $F(1, 222) = 156.18$, $p < .001$, $\eta_p^2 = 0.41$. Feelings towards the outgroup as expressed before the Trust Game were strongly positively related to attitudes towards the

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[19] Assumptions of independence predictor and covariate, $F(2, 223) = 1.01$, $p = .367$, and homogeneity of regression lines were checked and approved before conducting this analysis.

outgroup after the game. However, the experiences in the game did not influence attitudes towards the group.

Discussion

Experiment 7 investigated how the effects of group membership and interaction valence on member-to-member generalisation of trust behaviour. While playing ten rounds of the Trust Game with different partners from the ingroup, outgroup, or a control group, participants experienced that some partners behaved highly trustworthy (in the trust-building and trust-recovery phase), while other partners behaved untrustworthy (in the trust-violation phase). It was predicted that participants would show stronger member-to-member generalisation for negative experiences than positive experiences, and particularly that people would generalise negative experiences with outgroup members more strongly than negative experiences with ingroup members. Moreover, it was hypothesised that trust recovery towards novel group members after experiencing a violation would be stronger for ingroup members than outgroup members, and people would be more reluctant to trust novel outgroup members than novel ingroup members.

These predictions were only partially confirmed in this study. Consistent with the previous chapter, strong and persistent ingroup favouritism was observed throughout the game, as was predicted from the well-established ingroup favouritism effect in cooperative games (Balliet et al., 2014). Moreover, participants used their previous experiences with other group members to inform their current decisions, as was shown through the increase and decrease of investments throughout the game. When comparing investments between the different groups, differences were only found at initial investment levels (i.e. an initial ingroup bias) and during the violation phase of the Trust Game. Participants increased their investments at similar rates for all groups during the trust-building phase and the trust-recovery phase. However, when participants encountered negative behaviour from other partners in the violation phase, group information became more important.

The results showed that participants who highly identified with their political ingroup showed a stronger decrease in investments for the ingroup than for the control group, and in the same direction for the outgroup but not significantly

different from the ingroup. For low identifying participants, no differences were found between investments for partners from the different conditions. This indicates that no evidence was found for the valence-salience hypothesis (Paolini et al., 2010), or the attitude transfer effect (Ratliff & Nosek, 2011), which predicted stronger member-to-member generalisation of negative experiences with outgroup members. Perhaps people who strongly identified with their ingroup felt more betrayed or disappointed when certain ingroup members violated their trust. As there was no opportunity to punish the particular deviating ingroup member, participants might have wanted to take their experiences out on other ingroup members in the next rounds. Another potential explanation is that people who highly identified with the ingroup were more attentive to group membership, and therefore generalised their experiences with the ingroup more than with the control.

When comparing the level of generalisation between positive and negative experiences, it was found that changes in investments were strongest for the trust violation phase for all partners. This finding indicates that the negativity bias hypothesis was confirmed (Baumeister et al., 2001; Rozin & Royzman, 2001; Skowronski & Carlston, 1989). However, no differences between groups were observed in the trust-recovery phase of the game, indicating that the third hypothesis was disconfirmed. It was predicted that people would be more willing to recover trust and generalise positive experiences with new ingroup members, but not outgroup members, after a trust violation. However, participants increased their investments in similar ways for ingroup and outgroup members in the last rounds of the game.

Lastly, it is worth noting that there were large individual differences in investment behaviour in the game, which explained most of the variance in investment behaviour. Thus, while group membership and previous experiences influenced how much participants decided to invest in the game, individual strategies played a much larger role. Some participants invested all 10 tokens in all rounds, while some invested no tokens in all rounds. Both these options are valid strategies in the game as each game round is with a new individual, and do not necessarily indicate disengagement from the task.

To summarise, Experiment 7 replicated findings from the previous chapter that 1) people favour their ingroup in trust decisions, and 2) use previous experiences with other group members to inform their current decisions to trust. Moreover, it was

found that member-to-member generalisation in trust behaviour is stronger for negative experiences of trust violations than positive experiences of trust reciprocity. Lastly, people that highly identify with the ingroup show stronger generalisation of ingroup violations of trust than outgroup and violations from people with no known group membership.

Experiment 8: Replication with a student sample

In this second experiment with the valenced Trust Game paradigm, the aim was to replicate the findings in a laboratory setting with a student sample. In the previous chapter, the results from the student sample and the online MTurk sample were very different, but this could be due to differences in views about the ingroup and outgroup as this was changed between studies. Here, the same manipulation of groups was used with the student sample as with the MTurk sample. A previous survey (see appendix H) shows that students have very positive feelings towards most outgroups except for political outgroups. Dislike of political outgroup was strongest for supports of the UK Independence Party (UKIP), a right-wing nationalist party that campaigned for the UK to leave the European Union (Brexit). Therefore, it was hypothesised that using UKIP as a target outgroup and a self-identified political party as ingroup would lead to stronger responses to group membership in the game. Participants who selected UKIP as their political affiliation, or showed no differentiation in liking between their selected party and UKIP, were removed from data analysis to ensure UKIP was perceived as a clear outgroup.

In Experiment 7, strong ingroup favouritism was observed, and interactions between investments over rounds and identification with the ingroup. It was predicted that these same effects would be found in this second study with a student population in a laboratory setting. In this study, it was examined whether the findings online with the American MTurk sample would replicate with a student sample in the UK, using political parties for group membership.

Method

Participants and design

The participant pool consisted of 152 University students[20]. As the outgroup in this study was set to consist of UKIP supporters, any participant that supported

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[20] This sample size was again based on the aim of obtaining a minimum of 40 participants in each cell. As the ingroup political affiliation was more diverse in this study than in Experiment 7, it was

UKIP, or showed no preference of their own selected party over UKIP, was removed from analysis. To measure the amount of preference, a difference score was calculated between the feeling thermometer score for the selected party and the feeling thermometer score for UKIP. A cut-off score of 25 (a quarter of the full scale) was used to determine party preference; 17 participants were removed from analysis. The remaining 135 participants (75% female, $M_{age} = 20.96$, $SD_{age} = 5.05$) were all university students. Participants received course credit or a payment of 3 pounds for their time. In addition, participants had a chance to win their earnings in the game, converted to pounds (one token = 50 pence), based on a dice roll at the end of the experiment. Twenty-six participants received the bonus; the average bonus amount was 5.75 pounds.

This study employed the same between-subject design as Experiment 7, with group (ingroup, outgroup, control) and trial number as main predictors of investments in the different phases of the Trust Game. The ingroup consisted of supporters of the self-identified political affiliation of the participant, while the outgroup was set to consist of UKIP supporters. The control group always consisted of partners with an unknown political affiliation.

Materials and Procedure

The experiment was programmed using the Python-based program PsychoPy (Peirce, 2007), and data was collected in a laboratory setting, with participants seated in separate cubicles. The first part of the experiment consisted of feeling thermometer scales for each of the five major political parties in the UK (see Figure 19), the selection of a political party, and the ingroup identification scale, as used in the previous experiment. For the feeling thermometer ratings, the parties were presented by name and with a logo to help with recognition (see Figure 19). After participants had rated all the political parties on the feeling thermometer scale, they were asked to select the political party that they identified most with. This selection determined the presented ingroup for the rest of the experiment.
For the identification questionnaire, the name of the group was set based on the selected party.

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not taken into account as a factor. Therefore, a sample size of 3 * 40 = 120 participants was aimed for, with some over-recruiting to account for exclusions.

Figure 18. Logos of the British political parties that were used in the experiment. For each party, the top image with the name of the party was used in the first part of the experiment, while the bottom image with just the logo of the party was used during the Trust Game. For UKIP, the same image was used during the entire experiment.

The iterated Trust Game was programmed in the same manner as described in Experiment 7. Participants received instructions about the Trust Game and a number of control questions to ensure full understanding of the game. After completing four practice rounds of the game, participants played 10 rounds of the Trust Game with either 10 different partners that shared their political affiliation, 10 UKIP supporters, or 10 partners with unknown political affiliation. After completing all rounds of the Trust Game, participants completed the outgroup attitudes scale and a number of demographic questions. All participants received a written debriefing before exiting the room.

Data analysis

The same set of analyses was performed on this data as in Experiment 7, with the exception of the comparison of political groups, as the outgroup was fixed in this study.

Results

Initial trust bias

An ANOVA on investments in the first round of the Trust Game showed a significant effect of group, $F(2, 132) = 25.58$, $p < .001$, $\eta_p^2 = 0.28$. Post-hoc independent t-tests confirmed that initial investments differed significantly between all groups (see Table 19 for descriptive statistics and t-test results). Participants invested the highest amount in ingroup partners and the lowest amount in outgroup partners.

Table 19

Mean and standard deviations for initial investments in partners from the different groups of Experiment 8, and t-test comparisons of initial investments between groups

	Mean (SD)	1	2	3
1. Ingroup (*N* = 46)	5.89 (2.77)	-		
2. Outgroup (*N* = 45)	2.56 (1.44)	$t(68) = 7.22$, $p < .001$, $d = 1.50$	-	
3. Control (*N* = 44)	4.45 (2.26)	$t(85) = 2.70$, $p = .008$, $d = 0.57$	$t(72) = -4.72$, $p < .001$, $d = 1.01$	-
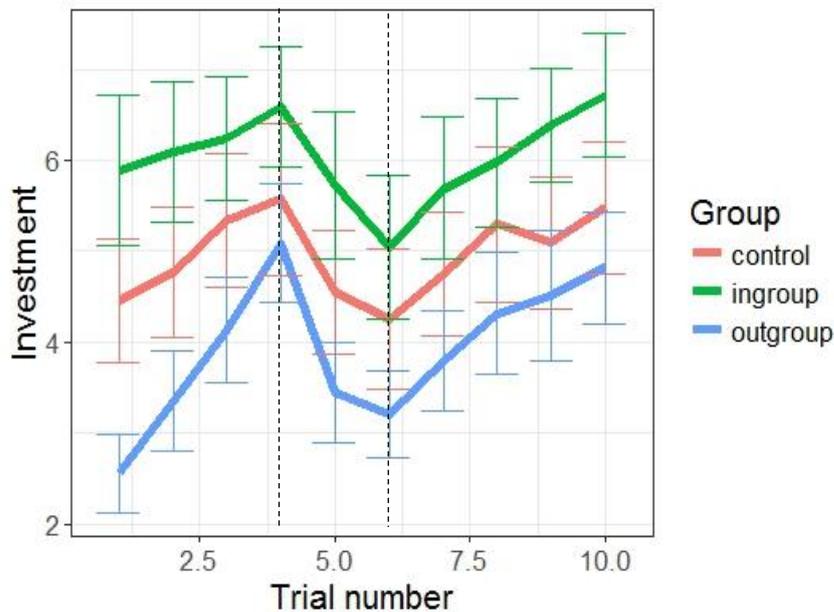
Figure 19. Mean investments in different group partners for each round of the Trust Game for Experiment 8. Error bars indicate 95% confidence intervals. The dotted lines indicate the phases of the game (building, violation, recovery).

Trust-building phase

The first model examined the effect of group, trial number, and average mean-centred ingroup identification score on investments in the trust-building phase of the game (Round 1 to Round 4, see Figure 20). The same fixed and random effects were included as used in Experiment 7. The fixed effects of this model explained 22% of the variance within the data ($R^2_{fixed} = 0.22$). Adding the random effects to the model increased the amount of variance explained to 84% ($R^2_{total} = 0.84$).

Significant main effects of group, $F(2, 129) = 28.00$, $p < .001$, $b_1 = -0.13$, $t(129) = -0.82$, $p = .412$, $b_2 = 1.94$, $t(129) = 7.45$, $p < .001$, and trial number, $F(2,129) = 86.76$, $p < .001$, $b = 0.49$, were observed. The positive coefficient for the main effect of trial indicates that people increased their investments during the trust-building phase. Post-hoc multiple comparisons based on the model show that investments differed significantly between all groups: ingroup – outgroup, $t(129) = 5.29$, $p < .001$, $d = 0.93$, ingroup – control, $t(129) = -2.62$, $p = .027$, $d = 0.46$, outgroup – control, $t(129) = 2.61$, $p = .028$, $d = 0.46$. The least-square means as predicted from the model for each group are 5.05 ($SE = 0.31$, 95% CI [4.42, 5.68])

for the control group, 6.20 ($SE = 0.30$, 95% CI [5.60, 6.79]) for the ingroup, and 3.90 ($SE = 0.31$, 95% CI [3.28, 4.51]) for the outgroup, respectively.

The Group x Trial interaction was significant as well, $F(2, 129) = 12.86$, $p < .001$, $b_1 = 0.05$, $t(129) = 1.31$, $p = .192$, $b_2 = -0.32$, $t(129) = -4.92$, $p < .001$. Post-hoc comparisons of the slopes of investments over time for the different groups show that the slope for ingroup partners, *intercept* = 5.63, $b = 0.22$, $SE = 0.08$, $t(95) = 2.81$, $p = .006$, differs significantly from the slope for outgroup partners, *intercept* = 1.75, $b = 0.86$, $SE = 0.09$, $t(43) = 9.08$, $p < .001$, comparison ingroup - outgroup, $\chi^2(1) = 24.24$, $p < .001$. Moreover, the slope for the outgroup partners differed significantly from the control group, *intercept* = 4.07, $b = 0.39$, $SE = 0.04$, $t(42) = 3.74$, $p < .001$, comparison control – outgroup, $\chi^2(1) = 12.55$, $p < .001$. The slopes of the ingroup and the control group were not significantly different from each other, $\chi^2(1) = 1.70$, $p = .192$. Thus, ingroup partners received the highest investments, but investments increased the least, while outgroup partners received very low investments initially, but investments increased most over the trust-building phase (see Figure 20). Lastly, no significant main effect or interactions with ingroup identification were observed on the investments in the trust-building phase.

Trust-violation phase

A second linear multilevel model was created with group, trial number, and ingroup identification predicting investments in Round 4 to Round 6 of the Trust Game (see Figure 20). The same random structure and planned contrasts for group were used. The fixed effects of this model explained 18% of the variance within the data ($R^2_{fixed} = 0.18$). Adding the random effects to the model increased the amount of variance explained to 71% ($R^2_{total} = 0.71$)**.** In this model, only a significant main effect of trial number was observed, $F(1, 129) = 76.07$, $p < .001$, $b = -0.81$, which showed that investments significantly decreased during the trust violation phase. The non-significant Group x Trial interaction, $F(2, 129) = 1.01$, $p = .368$, $b_1 = -0.07$, $t(129) = -1.09$, $p = .277$, $b_2 = 0.10$, $t(129) = 0.93$, $p = .355$, indicates that the slope of change in investments during this phase did not differ between the conditions. No significant main effect or interactions with ingroup identification were observed on the investments in the trust-violation phase.

Trust-recovery phase

The third linear multilevel model was performed with group, trial number, and ingroup identification predicting investments in round six to round ten of the game (see Figure 20). The same random structure and planned contrasts for group were used. The fixed effects of this model explained 12% of the variance within the data ($R^2_{fixed} = 0.12$). Adding the random effects to the model increased the amount of variance explained to 80.8% ($R^2_{total} = 0.81$). As in the trust-violation phase, only a significant main effect of trial number was observed, $F(1, 128) = 28.71$, $p < .001$, $b = 0.29$. This main effect indicates that investments generally increased during the trust recovery phase. The non-significant Group x Trial interaction, $F(2, 128) = 0.96$, $p = .386$, $b_1 = 0.05$, $t(128) = 1.38$, $p = .169$, $b_2 = 0.00$, $t(129) = 0.04$, $p = .971$, indicates that the slope of change in investments during this phase did not differ between the groups (see Figure 20). No significant main effect or interactions with ingroup identification were observed on the investments in the trust-recovery phase.

Comparisons of slopes over phases

Figure 21 below shows the slopes for each of the groups during the trust building, trust violation, and trust recovery phase, as retrieved from the regression models described in the previous analyses (with the sign of the coefficients reversed for the violation phase). A visual inspection of these slopes shows that investment behaviour changed more during the violation phase than during the building and recovery phase, and the outgroup showed a steeper slope than the ingroup and control in the trust-building phase.
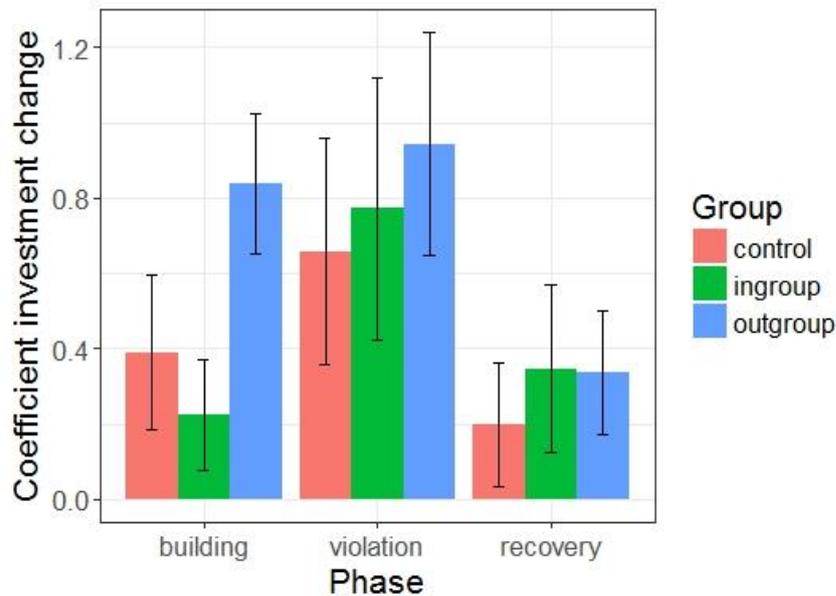
Figure 20. Mean coefficients of investment change over trials for the different phases of the Trust Game for Experiment 8, and for the different groups. Error bars represent 95% confidence intervals.

To analyse these differences, the same analysis was performed as in Experiment 7, where individual regression coefficients and intercepts were obtained for each participant, for each phase of the game. A linear multilevel model was performed with the slope coefficient as dependent variable and phase (building, violation, recovery) and group as predictors. A per-subject random intercept was added to account for the repeated measures design. For the variable phase, the same contrasts were implemented as in Experiment 7. The fixed effects of this model explained 10% of the variance within the data ($R^2_{fixed} = 0.10$). Adding the random effects to the model increased the amount of variance explained to 27.4% ($R^2_{total} = 0.27.4$).

Significant main effects of both phase, $F(2, 264) = 16.99$, $p < .001$, $b_1 = 0.04$, $t(264) = 0.79$, $p = .430$, $b_2 = -0.23$, $t(264) = -4.61$, $p < .001$, and group, $F(2, 132) = 4.00$, $p = .021$, $b_1 = 0.05$, $t(132) = 1.65$, $p = .102$, $b_2 = -0.13$, $t(132) = -2.31$, $p = .022$, were observed. Post-hoc tests revealed that the slopes were significantly larger in the violation phase than in the building and recovery phase (see Table 20), indicating a stronger change in behaviour during the violation phase, and the lowest change in investments during the recovery phase. In addition, the average slope for the

outgroup was significantly larger than the slope for the ingroup and control group (see Table 21).

Table 20

T-test comparisons of the average slopes of investment change during each of the phases of the Trust Game for Experiment 8

	Trust building	Trust violation	Trust recovery
Building	-		
Violation	$t(134) = -3.66, p < .001,$ $d = 0.31$	-	
Recovery	$t(134) = 2.39, p = .018,$ $d = 0.44$	$t(134) = 5.13, p < .001$ $d = 0.21$	-

Note. Comparisons were made between the column header, minus the row header (i.e. building - violation, building - recovery, violation - recovery).

Table 21

T-test comparisons of the average slopes of investment change for each of the groups for Experiment 8

	Ingroup	Outgroup	Control
Ingroup	-		
Outgroup	$t(86) = -2.23, p = .028,$ $d = 0.47$	-	
Control	$t(88) = 0.30, p = .765,$ $d = 0.06$	$t(85) = 2.53, p = .013$ $d = 0.53$	-

Note. Comparisons were made between the column header, minus the row header (i.e. ingroup - outgroup, ingroup - control, outgroup - control).

Relation between expectations and investments

During each round of the game, expectations of return were measured before participants made their investment decision. The relation between expectations and investments was examined. Firstly, the correlation between expectations and investments over the whole game indicated a positive relation, $r = 0.47$, $p < .001$. Next, for each phase of the game, a model was created with expectations, group, and trial number predicting investments. The same random structure and contrasts were used as in the previous models. In all phases, only a significant main effect of expectations on investments was found: trust-building, $F(1, 291) = 25.38$, $p < .001$, $b = 0.04$, trust-violation, $F(1, 213) = 6.00$, $p = .015$, $b = 0.06$, trust-recovery, $F(1, 196) = 4.31$, $p = .039$, $b = 0.06$. Expectations strongly predicted investments in each phase of the game.

Effect on outgroup attitudes

To examine the effect on the interactions in the Trust Game on outgroup attitudes, an ANOVA with type III sums of squares was performed, with the average score for the semantic differentials as dependent variable, and group as predictor. The mean-centred score for the outgroup feeling thermometer (measured before the game) was included as covariate to control for initial feelings towards the outgroup[21]. The effect of condition on the post-game outgroup attitudes was not significant, $F(2, 131) = 2.02$, $p = .137$. Participants who had interacted with partners from the different conditions did not differ in their attitudes towards the outgroup.

Discussion

Experiment 8 examined how people use previous positive and negative experiences with group members in their trust behaviour towards novel group members, and it was a replication of Experiment 7 in a laboratory setting with a student population. Several findings from Experiment 7 were replicated. Again, consistent ingroup favouritism was observed throughout the game, and a dislike of the outgroup was visible in this study. Participants invested much higher amounts in

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[21] Assumptions of independence predictor and covariate, $F(2, 132) = 0.66$, $p = .521$, and homogeneity of regression lines were checked and approved before conducting this analysis.

ingroup partners than in control partners, and participants invested even lower amounts in partners from the political outgroup UKIP. Moreover, previous interactions strongly influenced behaviour towards novel partners in all phases of the game, and violations of trust particularly led to strong generalisation in trust behaviour. Moreover, the relation between expectations and investments was replicated in this study. Lastly, game experiences did not influence attitudes towards the outgroup in both Experiment 7 and Experiment 8.

However, the interaction between valence and group membership showed different effects in the two experiments. In Experiment 7, differences between the groups were only observed in the trust-violation phase, and only for highly identified participants. In Experiment 8, the differences between groups were in the trust-building phase. After an initial trust bias towards the ingroup, participants changed their investment behaviour quicker for outgroup members than for ingroup members during the trust-building phase of the study. Participants initially distrusted outgroup members, but learned that the outgroup partners behaved trustworthy, and changed their investment behaviour efficiently. Over the whole game, participants changed their investments in outgroup partners more than investments in ingroup or control partners.

The stronger change in outgroup trust, as observed in the trust-building phase, was predicted from the outgroup homogeneity effect (Ostrom & Sedikides, 1992), and attitude-transfer effects for outgroup members (Ratliff & Nosek, 2011). As the outgroup is perceived as more homogenous, individual members are seen as more representative of the group, which can explain the faster outgroup learning in this study. One trustworthy outgroup member is viewed as more predictive of how other outgroup members might behave, than one trustworthy ingroup member is predictive of other ingroup members. Moreover, this effect is also observed in traditional intergroup contact studies, which show that contact is more effective in reducing prejudice for people with higher levels of prejudice initially (Dhont & Van Hiel, 2009; Hodson, 2011). However, this enhanced outgroup learning was only observed in the trust-building phase, but not in the violation- and recovery-phase of the Trust Game.

Another possible explanation for the stronger change in outgroup trust is expectancy violation. Initial trust and expectations in outgroup partners were very low. However, the first interactions with outgroup partners in the trust-building

phase showed that actually, the UKIP supporters were behaving trustworthy. This violation of expectations appeared to lead to a stronger change in behaviour, compared to the expectation-congruent trustworthy behaviour from ingroup partners. Previous research has related expectancy-violation effects to ingroup and outgroup evaluations, stronger attention, and better memory and learning (Bettencourt et al., 1997; Brannon & Gawronski, 2018; Harris & Fiske, 2010; Stangor & McMillan, 1992). This effect will be discussed in more detail in the general discussion.

It was originally hypothesised that trust recovery would be stronger for ingroup members than outgroup members, as positive ingroup members reconfirm the positive image of the ingroup that people are motivated to maintain. Based on Social Identity Theory (Tajfel & Turner, 1979), it was predicted that people would be more willing to reinforce trust towards positive ingroup members than equally positive outgroup members after experiencing trust violations. However, the results showed a different pattern. Even though investments increased less steeply in the recovery phase compared to the trust-building phase, no differences between the groups was observed. It seems that, after establishing general levels of trust for each group at the end of the trust-building phase, people only focussed on previous experiences in their investment decisions and were no longer influenced by the group membership of the partners.

In summary, Experiment 8 found that group membership influenced initial trust levels, and people showed stronger generalisation of their initial positive experiences with outgroup members. This could be explained by an outgroup homogeneity effect or an expectancy-violation effect. However, after establishing the general level of trust for the group, people only focussed on the behaviour of the previous group member and changed their trust behaviour accordingly.

General discussion

In every-day life, people experience social interactions that vary in valence, from positive, to neutral or ambivalent, to even negative. In order to capture this effect of valence, the main aim of this chapter was to explore how member-to-member generalisation of experiences in the Trust Game are influenced by the valence of the interaction and group membership of the interaction partners. Four main predictions were made. Firstly, general ingroup favouritism was predicted throughout the game, as has been found consistently in cooperative games (Balliet et al., 2014). Second, people were expected to generalise their experiences in their trust behaviour towards novel group members, meaning that investments increase in the trust-building and trust-recovery phase, and investments decrease in the trust-violation phase. However, generalisation should be stronger for outgroup members than ingroup members, due to more homogenous representations of outgroup members (Ostrom & Sedikides, 1992; B. Park & Rothbart, 1982).

Thirdly, it was predicted that negative interactions would lead to stronger member-to-member generalisation than positive interactions, based on general negativity biases (Baumeister et al., 2001; Rozin & Royzman, 2001). This main effect of interaction valence was predicted to interact with group membership, as stronger generalisation of negative experiences was predicted to occur particularly for outgroup members. Changes in investments were expected to be stronger in the trust-violation phase than the other phases, as negative interactions have been found to make group membership more salient (Paolini et al., 2010). Lastly, recovery of trust in novel group members was predicted to be quicker for ingroup partners than outgroup partners, as people are motivated to maintain a positive image about the ingroup.

Some of these hypotheses were confirmed in both Experiment 7 and Experiment 8, while others were only confirmed in one of two experiments, or were not found at all. In the next section, the findings from Experiment 7 and 8 are summarised in relation to the hypotheses. Integration of these findings through the theoretical framework of expectancy-violation, limitations and future directions, and lastly an evaluation of the paradigm, are provided in following sections.

Summary of results

Both experiments observed strong ingroup favouritism in decisions to trust different partners. Investments were initially higher for political ingroup partners than outgroup and control partners and remained so throughout the game. In Experiment 8, participants also expressed outgroup derogation, as investments in outgroup partners were initially even lower than in control partners, where political affiliation was unknown. However, participants also recovered from this initial distrust, and increased their investments in other outgroup partners quicker than for the ingroup or control in the trust-building phase of Experiment 8. This effect was not observed in Experiment 7, where the outgroup and control received similar initial investments, and investments increased at similar rates for all groups. This could be due to higher initial trust in Experiment 7 than Experiment 8, leading to a reduced need to build trust.

Another main finding from both experiments was that participants clearly generalised their contact experiences in their trust behaviour towards novel group members, replicating the main findings from Chapter 4. In all phases of the game, investments increased and decreased as predicted. While there were differences between the phases and the groups in how strongly the change in behaviour was, the general pattern was as predicted. Investments increased during the trust-building and trust-recovery phase, while investments decreased during the trust-violation phase. Thus, the first two hypotheses were mainly confirmed in both Experiment 7 and Experiment 8.

However, for the hypotheses about member-to-member generalisation of negative experiences with ingroup and outgroup members, the findings from the two experiments were inconsistent. While participants in both experiments changed their investment behaviour more strongly during the violation phase compared to the two other phases, differences between groups were inconsistent. In Experiment 7, interactions with ingroup identification were observed. Participants who highly identified with the ingroup showed stronger decreases in trust in ingroup partners than outgroup and control partners during the trust-violation phase. This indicates that, instead of sub-typing the deviant ingroup partner from the group and still trusting others, participants generalised their negative experiences in their behaviour towards other ingroup partners. This effect was not observed in Experiment 8. No interactions with ingroup identification were observed in this study, and no

differences between groups were found in the trust-violation phase. This could be due to the oppositional nature of American political parties, where identification with one party almost automatically implies opposition to the other party (Iyengar & Westwood, 2015). However, in the multiple party system in the UK, most political parties are not explicitly constructed in opposition to UKIP. People might not strongly identify with one party, but particularly are in opposition to UKIP, and therefore identification with these other parties might be a weaker predictor of behaviour.

As changes in behaviour were stronger in the trust-violation phase than in the other phases in both experiments and for all groups, the hypothesis about stronger generalisation of negative experiences due to a general negativity bias (Baumeister et al., 2001) was confirmed. Negative information is given more attention than positive information, influences impressions more strongly, and is generalised more quickly than positive information (for review, see Brannon & Gawronski, 2018). In the context of the Trust Game, reducing investments in untrustworthy partners is more important to maintaining a profit than increasing investments in trustworthy partners, as the first option prevents losses, while the second option only increases gains. However, no evidence was found for the valence-salience hypothesis (Paolini et al., 2010), as member-to-member generalisation was not stronger for outgroup members than ingroup members during the trust-violation phase.

The last hypothesis concerned the recovery of trust in novel group members after having negative interactions, and this hypothesis predicted stronger recovery for ingroup partners than outgroup partners. Notably, this hypothesis was not confirmed in either study. After experiencing negative interactions with ingroup or outgroup partners, participants increased their trust again during the recovery phase. Participants thus seemed to be influenced more by their immediate previous experience (trustworthiness in the previous round), than by experiences that were further in the past (trust violation a few rounds back). However, it should be noted that the increase in trust was weaker in the trust-recovery phase than in the trust-building phase. This indicates that people had become more cautious in trusting novel group partners after experiencing violations of trust.

Lastly, in addition to the main hypotheses, two more measures were included in both experiments. Expectations were measured alongside investments in each round of the game, and both experiments showed that expectations strongly predict

investments. This pattern was similar for ingroup and outgroup partners, and even for the control. Furthermore, attitudes towards the outgroup were measured after the game. The data showed that game experiences did not influence people's attitudes towards the political outgroups. This is most likely due to the variety in experiences in the game. Participants experienced both positive and negative experiences with outgroup members, and therefore this might not lead to a general change in attitudes towards the outgroup.

Integrating findings from Experiment 7 and Experiment 8

The findings from Experiment 7 and 8 show that people respond differently to negative experiences with group members than positive experiences. Overall, people generalise negative experiences more than positive experiences, and adjust their trust behaviour more after trust violations. Recovery of trust after these violations was similar for ingroup and outgroup partners. However, differences between behaviour towards ingroup partners and outgroup partners were observed. While people trusted ingroup partners more than outgroup partners, those that highly identified with the ingroup also decreased their trust in novel ingroup partners more than in novel outgroup partners after experiencing a violation of trust. Moreover, when there was strong initial distrust of the outgroup, people changed their behaviour towards novel outgroup partners more after interacting with a trustworthy outgroup partner, compared to changes in investment behaviour in ingroup partners. Even though these results were only found in one of the two studies, they both support an interpretation based on positive or negative beliefs about a group, and responses to deviance from that belief.

Expectancy-violation effects. The expectancy-violation effect shows that people respond more strongly to unexpected information than expected information. It has been shown that exposure to group members behaving in a stereotype-incongruent manner leads to stronger affective arousal and more extreme evaluations of the group members, compared to stereotype-congruent behaving group members (Bartholow, Fabiani, Gratton, & Bettencourt, 2001; Bettencourt et al., 1997; Kernahan, Bartholow, & Bettencourt, 2000). Moreover, behaviour that is incongruent with expectations or person impressions receives higher levels of cognitive processing and leads to better memory than congruent behaviour (Hamilton & Sherman, 1996; Stangor & McMillan, 1992). This effect occurs

because a violation of expectations has a stronger information value and requires a change in response, whereas a confirmation of expectations conveys a signal to continue unchanged. Prediction errors are strong learning signals, and it has been shown that expectancy-violation information elicits similar brain regions to activate as prediction error signals (Harris & Fiske, 2010). Thus, people attend, learn, and change their behaviour more towards behaviour that violates expectations than behaviour that confirms expectations.

The stronger changes in trust behaviour towards untrustworthy ingroup partners and trustworthy outgroup partners could be explained through the expectancy-violation effect. The amount of member-to-member generalisation and change of trust behaviour in the game was not just driven by group membership or valence of the previous interaction, but also by how the previous experience related to expectations and general impressions of the group. When people were either highly identified with the ingroup (Experiment 7) or showed strong distrust of the outgroup (Experiment 8), they changed their behaviour towards novel partners more after experiencing incongruent interactions. This effect was also observed in Experiment 6, where Democrat participants initially distrusted outgroup and control partners, and therefore changed their trust behaviour towards novel outgroup or control partners much more than for ingroup partners. Together, the four experiments conducted with the adapted Trust Game paradigm offer some evidence that expectancy-violation is a potential driving force of generalisation of previous experiences in informing decisions to trust novel group members.

Trust recovery after violation. In both Experiment 7 and Experiment 8, people increased their trust in novel partners again in the recovery phase. After experiencing some violations of trust, interacting with trustworthy partners in the last rounds of the game led people to regain trust. It was hypothesised that this recovery of trust would only, or more strongly, occur for ingroup partners than outgroup partners. People are motivated to perceive the ingroup positively, but negative interactions with outgroup members have a stronger effect on outgroup attitudes than positive interactions (Graf et al., 2014; Paolini et al., 2010). Therefore, it was predicted that people would not trust novel outgroup partners again after experiencing violations of trust, but they would be willing to trust ingroup partners again. However, in both studies it was found that people increased their trust at similar rates for all groups.

This similar behaviour towards ingroup and outgroup partners could be compared to behaviour of participants in Experiment 5 and Republican participants in Experiment 6. After having had both negative and positive interactions with ingroup or outgroup partners, perhaps people became more moderate in their views towards the group. This moderation in views, as observed in the previous chapter, could have led to similar generalisation of experiences and thus changes in behaviour towards ingroup and outgroup partners. Even though people still invested higher amounts in ingroup than outgroup partners, they were willing to trust new ingroup and outgroup partners after experiencing positive interactions again.

Limitations and future directions

The findings from Experiment 7 and Experiment 8 show interesting patterns regarding member-to-member generalisation of ingroup and outgroup trust reciprocity and violations, and the findings seem to be best explained by a combination of ingroup favouritism, negativity bias, and expectancy-violation. However, there are a few limitations to these studies. In this section, limitations and future directions for these two studies are discussed, while the next section reviews the general paradigm, and gives suggestions for how to extend this line of research further. Both theoretical limitations about measuring underlying processes and the role of expectations, as well as practical issues around the design of the paradigm are described below.

The main limitation of this line of research is the lack of measurement of underlying processes. Based on the existing literature that shows that interactions with or information about individuals influence group representations (McIntyre et al., 2016; Pettigrew & Tropp, 2006), and that group representations influence responses to individuals (Balliet et al., 2014; Fiske & Neuberg, 1990; Linville, 1982), it was hypothesised that member-to-member generalisation should occur through changes in group representations. Figure 22 below shows a visualisation of the theorised underlying process of member-to-member generalisation. However, in the Trust Game paradigm that was designed for this research, only the experiences with individual group members were examined, and no measure of changing group representations was implemented in the paradigm. Therefore, at this point no direct conclusions can be drawn about the underlying process involved in the changes in trust behaviour throughout the game. In future studies, the generalisation process

should be examined with additional measures over and above the behavioural outcome, to establish whether attitudes towards groups are changing in addition to behaviour towards individual group members. A measure of explicit or implicit attitudes towards the group should be taken at different points in the game to examine whether people update their representation of the group, and to what extent this updated group representation is the driving force behind changes in behaviour towards different group members.
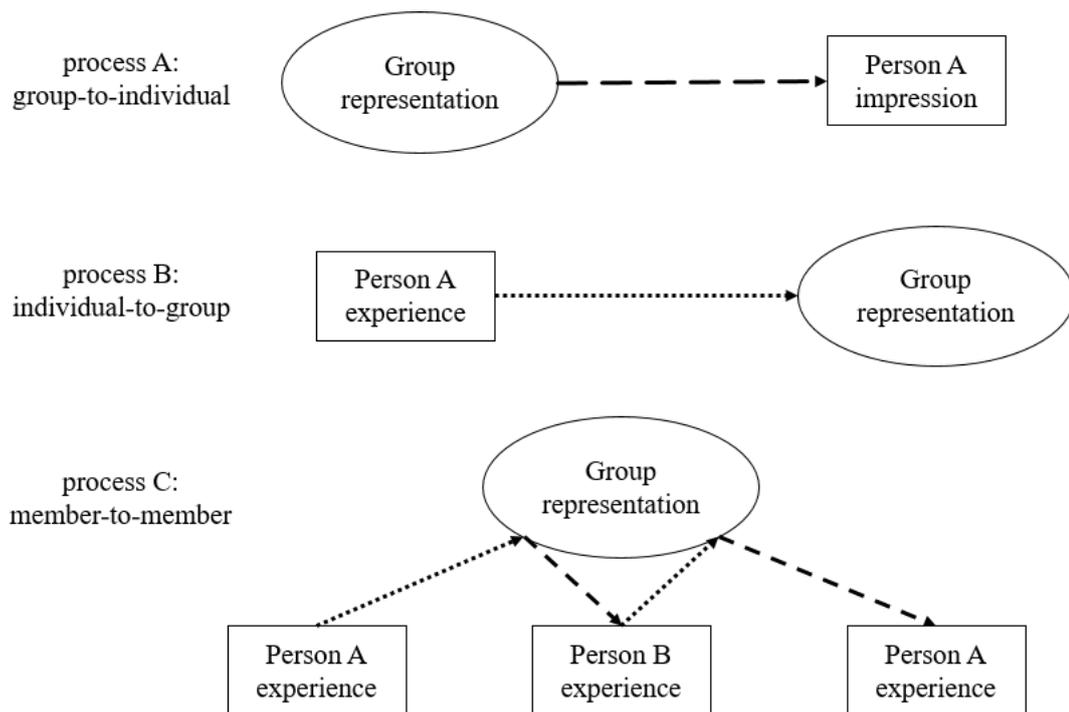
Figure 21. Visual representation of the processes of A) group-to-individual impression formation, B) individual-to-group generalisation, and C) member-to-member generalisation

Secondly, interesting new findings indicated the role of expectancy violations in member-to-member generalisation. The stronger generalisation pattern of ingroup violations for highly identified participants, and stronger generalisation of outgroup reciprocity when the outgroup was initially distrusted, indicate a potential expectancy-violation effect in the game. Expectations of trustworthiness of partners correlated strongly with investment behaviour in the game, making this explanation plausible. However, for a systematic test of the influence of expectancy-violation, expectations about the partners and the groups should be measured and manipulated

prior to the game for a direct comparison. Taken together, these two limitations suggest that measuring or manipulating expectations about the ingroup and outgroup prior to the game interactions and measuring changes in group representations from the game interactions will provide better insights to the processes involved in generalisation of previous interactions towards novel group members.

Two practical limitations of the adapted Trust Game paradigm also need to be addressed. Firstly, Experiment 7 and 8 adopted a between-subject design to manipulate group membership of the partners. The choice of this design was a practical consideration, as a fully random order within-subject design, as used in Experiment 5 and Experiment 6, would not allow for analysis of the effect of direct previous positive or negative experiences with a certain group on current decisions to trust. In a full random order design, a positive interaction with an ingroup member could follow a negative interaction with an outgroup member, and spill over effects could not be distinguished from generalisation processes. Moreover, a blocked within-subject design would most likely lead participants to notice the pattern of trustworthy and untrustworthy behaviour that the partners displayed. However, a between-subjects design is limited in that it cannot establish intergroup bias on an individual level, and there is large variability between participants in their general behaviour in the game. Future studies could consider a more suitable implementation of a within-subject design, possibly by varying the pattern of positive and negative interactions with each group.

Secondly, there was a great level of individual variation in behaviour in the game, with a majority of the explained variance in the models arising from individual differences, and not from the manipulated effects of interest. Moreover, there was a lack of consistency between the studies in the timing of the effects of interest in the game. Together, these two observations create a difficulty in drawing conclusions about differences in ingroup and outgroup generalisation of individual experiences. These effects could be a confound of the design of the investment decisions in the Trust Game and could potentially be minimised by using a different type of cooperative game with more limited behavioural options and strategies. Restricting the response options to a binary Trust Game (i.e. trust vs not-trust, reciprocate vs not-reciprocate) will reduce individual variance in behaviour, and might produce more stable effects of group membership. However, it should be

noted that a binary Trust Game cannot capture small incremental changes in trust over time, as this continuous Trust Game nicely demonstrated.

Evaluation of the paradigm

For Experiments 5 to 8 of this thesis, the Trust Game paradigm was adapted and utilised to examine whether inter- and intragroup interactions influence behaviour towards novel partners. The aim of this research was to extend the intergroup contact literature by measuring generalisation to behaviour towards other group members, instead of just attitudes towards the group as a whole. It was theorised that people would generalise their positive or negative experiences in the game to their group attitudes and use this updated attitude to inform behaviour towards novel group members. In the next section, the adapted paradigm is evaluated, and suggestions for future research are provided that will extend and complement the research conducted for this thesis.

The iterated Trust Game paradigm allowed for a clear comparison of the amount of trust towards each interaction partner and the changes in trust behaviour over time. The benefit of using a game is that it creates an almost real interaction between two people, while keeping control over many factors. The level of trust and cooperation can be quantified, and the valence of the interaction can be manipulated. As the behaviour (i.e. the investment decision) was the same in each interaction, changes in behaviour can be monitored and tracked through experience. This paradigm allowed for manipulation of positive and negative interactions with ingroup and outgroup partners, and to examine how people responded to novel partners based on their previous experiences.

However, there are two main potential issues with this paradigm. Firstly, as participants only saw the logo of the political party and the initials of the interaction partner, perceptions of the interaction partners might have varied between participants. Did participants believe they were interacting with real people? Did they understand that each game round was with a novel person who could respond very differently to the previous partners? On an explicit level, it was assured that participants understood that they only played one round with each partner through the comprehension questions, and the initials of the interaction partners were different for each game round. However, it is possible that people believed that the behaviour of the interaction partner was not coming from a real person, and/or was

controlled by a single programmer. Alternatively, perhaps participants implicitly believed that each round was with the same person as the same party logo was displayed.

If either of these two scenarios is true, this affects the conclusions that can be drawn regarding generalisation of behaviour. However, my own previous research using a similar format of presenting partners within an iterated Trust Game showed that people are able to distinguish between different partners based on initials provided with a logo indicating group membership, as this was necessary to learn about individual partners (Vermue et al., 2018). Even though this research gives a strong indication of the validity of the presentation of partners in the game, future studies could increase vividness of the different individuals in the game. This could potentially be achieved by using photographs or creating face-to-face interactions with real people. When participants see the other people that they will be interacting with, this could create a more realistic experience. Moreover, providing very similar information about the different partners, as used in this research, might strengthen perceptions of homogeneity of groups. Therefore, providing more individuating information about partners can examine the importance of homogeneity perceptions.

This issue of vividness and realism of the interactions connects to the second issue with this paradigm. While the Trust Game has many benefits in creating a controlled interaction, there is limited external validity and it can be difficult to draw conclusions about daily life experiences. Most research on intergroup contact asks about contact with different groups in everyday life. The first part of this thesis required people to recall or recognise contact situations or behaviours in their own life, which approaches a more realistic and externally valid contact situation. However, the research from the first two chapters of this thesis show that self-report of everyday contact might be problematic due to issues around memory. Moreover, it should be noted that virtual and online forms of contact have been receiving more attention recently, and have been shown to be effective in reducing prejudice (e.g. Amichai-Hamburger & McKenna, 2006; White, Turner, Verrelli, Harvey, & Hanna, 2018).

In the context of interest to this second part of the thesis, interactions that are more realistic could be created by using different types of tasks and interactions in varied settings, and using face-to-face paradigms. For example, participants could interact with an outgroup experimenter when commencing the experiment, and then

complete a cooperative task with other ingroup or outgroup participants or confederates. This set-up would allow for a more natural sequence of ingroup or outgroup interactions and would allow for the study of generalisation of experiences over different domains. Future studies should examine whether generalisation of contact in behaviour towards novel group members also occurs in novel and varied types of pro-social behaviour.

Conclusions Chapter 4 and Chapter 5

        In this second strand of the thesis, the aim was to examine member-to-member generalisation of intergroup contact in a novel paradigm that examines trust behaviour towards group members. The influence of group membership (ingroup vs outgroup vs control) and valence (positive vs negative) on member-to-member generalisation in trust behaviour was investigated. By manipulating different positive and negative interactions with group members, it was investigated how people use previous experiences with ingroup and outgroup members in their behaviour towards novel group members. For this purpose, the Trust Game paradigm was adapted; participants played multiple rounds of the Trust Game and each round was played with a different individual from the ingroup or the outgroup. Experiment 5 and 6 explored generalisation of positive experiences, and Experiment 7 and 8 extended the paradigm to include negative experiences as well.

        The findings from all four experiments clearly show that people are strongly influenced by their previous experiences with group members in forming decisions to trust novel group members. This effect is particularly strong for negative interactions, indicating a negativity bias. Moreover, violations of expectations and beliefs about the groups could be a driving force of the level of generalisation. People responded more strongly to negative interactions with trusted ingroup partners, or to positive interactions with distrusted outgroup partners. Even though there was variation in individual responses and some inconsistency between studies, these findings are promising in introducing a new area of research exploring a behavioural approach to intergroup contact.

CHAPTER 6

General Discussion

Intergroup contact research over the last 70 years has firmly established the robustness of the contact-attitude relation, and examined many affective processes involved in intergroup contact (Pettigrew & Tropp, 2006, 2008). However, cognitive and meta-cognitive processes such as categorisation, generalisation, and self-perception, have been largely understudied. Therefore, the aim of the thesis was to study intergroup contact from a social-cognitive perspective, in both looking back at recall of past contact, and looking forward at behaviour towards novel group members. The research conducted in this thesis started from the argument that most of the research on intergroup contact focusses on affective processes and mainly uses self-report survey methodologies. Therefore, this thesis utilised different experimental paradigms to examine cognitive processes involved in intergroup contact. The first strand of the thesis examined how experiences of fluency when recalling past intergroup contact could influence people's perceptions of their contact, and in turn their attitudes and behavioural intentions towards the outgroup. The second strand of the thesis studied intergroup contact through trust behaviour in intergroup interactions. From looking back to looking ahead, this research investigated how intergroup experiences generalise and guide trust behaviour in future encounters with novel group members.

In this concluding chapter of the thesis, I first give a brief summary of the aims and hypotheses of the two strands of research, and an overview of the results of each of the empirical chapters. Next, the two major implications from this research are described, namely the importance of studying the cognitive processes involved in intergroup contact, and the problem with using self-report scales. Thirdly, I discuss limitations of the research, and provide future directions for both strands of research looking back at past contact and looking ahead to future contact. Lastly, a summary of the thesis is provided.

Looking back: retrieval fluency in remembering past contact

The first strand of the thesis examined how meta-cognitive experiences of retrieval fluency in remembering past contact could influence self-perceptions of contact, and in turn influence outgroup attitudes and intentions for future contact. The vast amount of research on intergroup contact relies on self-report measures of

contact, and thus requires a judgment of frequency based on recall of past contact experiences. Research on attitude change and evaluative judgment has shown that such processes are heavily influenced by contextual cues guiding which information is salient at the time of judgment. Specifically, self-perception theory argues that people "come to know their own attitudes" (Bem, 1972, p. 5) by inferring them from their previous behaviour that is salient at a specific time. Moreover, related research shows that evaluative judgments are not just based on relevant content that comes to mind, but also by the accompanying meta-cognitions around the recall process (Schwarz, 2004). The ease-of-retrieval effect shows that meta-cognitive feelings of ease or difficulty while retrieving arguments or memories can influence evaluative judgments over and beyond the retrieved content (Schwarz et al., 1991; Tversky & Kahneman, 1973). Therefore, this research examined how meta-cognitive cues of fluency while recalling past intergroup contact could influence perceptions of one's contact, and in turn people's attitudes towards the outgroup. Chapter 2 manipulated retrieval fluency through recall of specific instances of intergroup contact, while Chapter 3 manipulated fluency experiences through the salience of past contact behaviours. It was hypothesised that contact-based retrieval fluency should increase people's perceptions of their intergroup contact. This increase in self-perceptions should positively influence outgroup attitudes and increase intentions for future contact. Thus, higher fluency while recalling past contact should make people think that they have a lot of contact (self-perceptions), which in turn should make them more positive towards the outgroup (attitudes) and more willing to seek out contact with the outgroup in the future (behavioural intentions). A schematic overview of all findings from Experiment 1 to Experiment 4 is provided in Table 22.

Experiments 1 and 2 manipulated retrieval fluency through the number of recalled interactions with the outgroup, based on the ease-of-retrieval paradigm (Schwarz et al., 1991). It was hypothesised that recalling one example of an intergroup interaction was experienced to be easier than recalling five different examples of intergroup interactions. This manipulation of fluency through the number of recalled instances was successful in all studies. The next step was to examine how the manipulation of number of recalled interactions influenced the main outcome variables: self-perceptions of contact, outgroup attitudes, and future contact intentions. The main effect of the number of recalled interactions was not significant on any of the outcome variables; people who recalled one interaction

reported equally positive self-perceptions, attitudes, and behavioural intentions as people who recalled five interactions. However, in both experiments, perceived difficulty in the recall task was negatively correlated with all three outcome variables. It should be noted that this correlation could be explained as a standard contact effect. People who have more contact might also find it easier to recall contact, and therefore show the effects on perceptions and attitudes. Lastly, exploratory analyses showed a significant effect of self-reported retrieval difficulty on self-perceptions of contact and future contact intentions in Experiment 2, showing that people who found it difficult to recall contact reported lower self-perceptions and intentions for future contact than people who found it easy to recall contact.

In addition to the main effects of number of interactions recalled, Experiment 1 explored mediation by self-perception, and Experiment 2 tested the moderating influence of attitude strength. Experiment 1 showed that the effect of self-reported difficulty in recalling contact on outgroup attitudes and future contact intentions was significantly mediated by self-perceptions of contact. Higher difficulty in recalling contact predicted more negative outgroup attitudes and lower intentions for future contact, through a reduction in self-perceptions of contact. Moreover, Experiment 2 showed that the effect of number of recalled interactions on self-perceptions of contact was marginally significantly moderated by pre-existing outgroup attitudes, importance of outgroup attitudes, and frequency of daily contact. People who scored low on these three measures (i.e. reported negative attitudes, low importance, or low contact frequency) reported more positive self-perceptions after recalling one, compared to five, past contact experiences, which is the predicted ease-of-retrieval effect. However, people who scored higher on the variables (i.e. reported positive attitudes, high importance, or high contact frequency) reported more positive self-perceptions after recalling five, compared to one, past contact experiences. For these people, recalling more contact experiences reinforced their already positive attitudes towards the outgroup.

As the ease-of-retrieval paradigm was not particularly successful in changing self-perceptions or attitudes, a second method of manipulating retrieval fluency was explored in Chapter 3. A behaviour salience paradigm was adapted from Salancik and Conway (1975), which relied on a linguistic device to make past behaviour salient. The paradigm requires participants to endorse statements describing past contact behaviours. It was hypothesised that participants would endorse more contact

behaviour statements when they were framed as occurring "occasionally" than when framed as occurring "frequently", as it is easier to agree to having performed a behaviour on occasion, than performing a behaviour frequently. The ease in endorsing many past contact behaviours was predicted to heighten self-perceptions of contact. Higher self-perceptions of contact were again predicted to lead to more positive attitudes and contact intentions.

In both Experiments 3 and 4, the manipulation was successful. Participants endorsed more contact behaviour statements when they were framed as occurring occasionally than when the statements described the behaviour being performed frequently. However, this manipulation of retrieval fluency did not influence self-perceptions of contact, outgroup attitudes, or future contact intentions in both studies. Correlations between the number of statements endorsed and the outcome variables were again in the predicted directions; higher endorsement of past contact behaviour was related to higher self-perceptions of contact, more positive outgroup attitudes, and higher intentions to engage in future contact with the group, even when controlling for daily contact frequency. Lastly, no moderation of the effect of endorsement of contact behaviours by attitude strength was observed in Experiment 4.

Together, these four experiments consistently show that retrieval fluency, as manipulated through the number of recalled interactions or the salience of past contact behaviours, did not influence self-perceptions of contact, outgroup attitudes, or future contact intentions (see Appendix E for a mini meta-analysis of these effects). Three main explanations for the null-effects were offered. Firstly, that people do not hold naïve theories about the relation between retrieval fluency and contact, or between contact and attitudes. It is possible that people do not draw inferences about their contact with the group based on the experiences of fluency, or that people do not draw inferences about their attitudes towards the group based on their perceptions of contact. A second explanation is that pre-existing attitudes towards the outgroup might bias the recall of past contact. Perhaps people who have positive attitudes towards the group might find it easier to recall positive intergroup interactions. This potential memory bias could have large implications for the use of self-report measures of intergroup contact and the effect on prejudice.

Table 22

Schematic overview of findings from Experiment 1 to Experiment 4

	Self-perception	Outgroup attitude	Future contact intentions	Correlations	Moderation	Additional tests
Pilot (*N* = 76)	*ns*	*ns*	*NA*	[-0.15, -0.19†]	*NA*	*NA*
Experiment 1 (*N* = 409)	*ns*	*ns*	*ns*	[-0.09*, -0.12**]	*NA*	Effect of difficulty: - on outgroup attitudes - mediated by self-perception
Experiment 2 (*N* = 139)	*ns*	*ns*	*ns*	[-0.10, -0.21**]	Outgroup feelings Importance of feelings Contact quantity	Effect of difficulty: - on self-perceptions - on future contact
Experiment 3 (*N* = 145)	*ns*	*ns*	*ns*	[0.20*, 0.51***]	*NA*	*NA*
Experiment 4 (*N* = 349)	*ns*	*ns*	*ns*	[0.23***, 0.54***]	*ns*	Controlling daily contact: - significant correlations - effect manipulation *ns*

Note. The correlations reported indicate the range of correlations between difficulty or number of behaviours endorsed, and the outcome variables. *ns* = not significant, *NA* = not applicable (not tested in this study)

† *p* < .10, * *p* < .05, ** *p* < .01, *** *p* < .001

A third explanation for the null-effect is that the affective and normative components of prejudice strongly guide the expression of outgroup attitudes. Therefore, the cognitive manipulation of retrieval fluency was not strong enough to change attitudes. Future research should examine how these three theoretical accounts relate to fluency experiences in contact recall.

Looking ahead: member-to-member generalisation in trust behaviour

The second research strand of the thesis examined how intergroup contact generalises to trust behaviour in future encounters with novel group members. This research was designed from two theoretical assumptions on the relation between individual-based and group-based attitudes and perceptions. Firstly, experiences with individual group members influence group representations, as shown by intergroup contact research (individual-to-group, Brown & Hewstone, 2005; Pettigrew & Tropp, 2006; Pettigrew, Tropp, Wagner, & Christ, 2011). Secondly, group representations also influence impression formation and behaviour towards individual group members (group-to-individual, Fiske & Neuberg, 1990; Kunda & Thagard, 1996; Linville, 1982). However, member-to-member generalisation, or the influence of experiences with individual group members on behaviour towards other group members, has not been studied within the field of intergroup contact. I argue that intergroup contact, by changing perceptions of and attitudes towards the outgroup, should also influence behaviour towards novel group members. This hypothesis was examined through a newly developed paradigm where multiple intra- and intergroup interactions were created in an iterated Trust Game.

In Chapter 4, the influence of group membership (outgroup vs ingroup) on member-to-member generalisation in trust behaviour was examined in two experiments. Chapter 5 additionally examined the influence of interaction valence on the generalisation process, and the interaction between group membership and valence. Four main predictions were made. Firstly, people were predicted to generalise their previous experiences with group members to inform their decisions to trust novel group members. This is shown in the Trust Game paradigm by a change in investments in new partners over time.

Secondly, it was hypothesised that member-to-member generalisation would be stronger for outgroup members than ingroup members, as this group is perceived as more homogeneous (Ostrom & Sedikides, 1992; B. Park & Rothbart, 1982). Thirdly, the effect of valence was expected to indicate stronger member-to-member generalisation of negative experiences than positive experiences, based on general negativity biases (Baumeister et al., 2001; Rozin & Royzman, 2001; Skowronski & Carlston, 1989). Lastly, group membership and valence were predicted to interact to show particularly strong generalisation of negative outgroup experiences, based on the valence-salience effect (Paolini et al., 2010). This effect shows that negative interactions with outgroup members increase salience of group membership, which enhances generalisation of contact experiences (Brown & Hewstone, 2005; Voci & Hewstone, 2003). A schematic overview of all findings from Experiment 5 to Experiment 8 is provided in Table 23.

All four experiments with the Trust Game paradigm showed initial group-based biases. Experiment 5, using a student sample and national groups, found overall favouritism towards the Chinese outgroup in investments. The other three experiments, using political groups, consistently observed ingroup favouritism in decisions to trust others. The second consistent finding across all experiments is that people used previous experiences in the game to guide their current decisions to trust. When interacting with trustworthy partners in Experiment 5 and Experiment 6, participants consistently increased their investments in new game partners over trials. In Experiment 7 and Experiment 8, participants increased investments after interactions with trustworthy partners, and decreased investments in new partners after experiencing violations of trust.

Concerning the influence of group membership on member-to-member generalisation, the two experiments of Chapter 4 found somewhat different findings. Experiment 5 showed that positive ingroup and outgroup experiences were generalised in similar ways, but experiences with people of unknown nationality (the control group) were generalised to a lesser degree. This indicates that the associative link of group membership between individuals facilitates member-to-member generalisation. However, Experiment 6 showed that, for Democrat participants, strong ingroup favouritism led to less generalisation of experiences for the ingroup compared to the outgroup and control. Republican participants did not show ingroup favouritism, and generalised experiences with all groups in a similar way. These

contrasting findings are explained in terms of views towards the ingroup and the outgroup. When both ingroup and outgroup are viewed positively, people do not differentiate between the groups in how much they generalise their experiences with these groups, as observed in Experiment 5 and for the Republican participants in Experiment 6. However, when the outgroup is initially distrusted, this leads to stronger generalisation of positive experiences, as these experiences violate expectations about the group and the information is therefore particularly informative.

Chapter 5 introduced trust violations to the Trust Game paradigm, to examine the effect of valence on member-to-member generalisation. As in Chapter 4, differences were observed between the two experiments on effects of group membership, as well as the influence of ingroup identification. Experiment 7 showed no differences between generalisation of ingroup and outgroup experiences with positive interactions (trust-building phase and trust-recovery phase), but results did show that identification with the ingroup predicted the strength of ingroup favouritism in investments. Moreover, ingroup identification also influenced the responses to trust violations from ingroup or outgroup members. Participants who highly identified with the ingroup generalised negative ingroup experiences more than negative outgroup and control group experiences. Participants who did not identify with the ingroup showed no difference between the groups in generalisation pattern of negative experiences.

Experiment 8, in contrast, showed differences between ingroup and outgroup generalisation of trust experiences during the trust-building phase. The pattern of initial distrust leading to strong generalisation of positive experiences from Experiment 6 was replicated. The outgroup was initially strongly distrusted, but positive experiences were generalised more strongly and used to inform trust decisions in new group members. In this study, participants changed their trust behaviour towards outgroup and control group partners in the first positive experiences of the game, but after that responded similarly to ingroup and outgroup violations and trust recovery later. Interestingly, no effects of ingroup identification were observed in Experiment 8.

While these results again seem contradictory, the behaviour in all four experiments can be explained to some extent by expectancy-violation effects. Previous research has shown that information that is incongruent with expectations

leads to more extreme group member evaluations, increases attention, and leads to better learning and memory (Bettencourt et al., 1997; Harris & Fiske, 2010; Kernahan et al., 2000; Stangor & McMillan, 1992). The research in this thesis indicates that, when perceptions of the ingroup and outgroup are positive, having positive interactions confirms these beliefs and therefore leads to similar levels of generalisation of both groups. However, when behaviour of group members is inconsistent with beliefs about the group, then generalisation of experiences to other group members is enhanced. When the outgroup was initially distrusted, people generalised positive experiences to inform trust decisions to unfamiliar outgroup members. When the ingroup was perceived as highly important, and therefore strongly favoured in trust decisions, people generalised negative experiences to inform trust decisions to unfamiliar ingroup members. Future research should systematically examine the role of group-based expectations in member-to-member and member-to-group generalisation.

Table 23

Schematic overview of findings from Experiment 5 to Experiment 8.

	Group	Trial number (generalisation)	Group x Trial interaction	Expectation - investment	Ingroup identification (ID)	Outgroup attitudes
Experiment 5 (*N* = 48)	Outgroup +	Investments ↑	Control slope < Ingroup = Outgroup	*r* = 0.48***	+ ID → stronger generalisation	*ns*
Experiment 6 (*N* = 76)	Ingroup +	Investments ↑	DEM: Ingroup slope < Outgroup = Control REP: *ns*	*NA*	+ ID → lower investments	*NA*
Experiment 7 *Building* (*N* = 226)	Ingroup +	Investments ↑	*ns*	*r* = 0.65***	+ ID → more ingroup favouritism	*ns*
Violation	Ingroup +	Investments ↓	*ns*		+ ID: Ingroup slope > Outgroup = Control	
Recovery	*ns*	Investments ↑	*ns*		*ns*	
Experiment 8 *Building* (*N* = 135)	Ingroup +	Investments ↑	Outgroup slope > Ingroup = Control	*r* = 0.47***	*ns*	*ns*
Violation	*ns*	Investments ↓	*ns*		*ns*	
Recovery	*ns*	Investments ↑	*ns*		*ns*	

Note. ns = not significant, *NA* = not applicable (not tested in this study), *** *p* < .001

Implications

In this section, I review two major implications of the research described in the thesis. Firstly, the importance of studying cognitive processes involved in intergroup contact, describing the role of social categorisation, meta-cognitive processes, and expectations about groups. Secondly, issues with using self-report measures are discussed; both in measuring intergroup contact and measuring outgroup attitudes.

The importance of studying cognitive processes involved in intergroup contact

The research conducted in this thesis has shown how cognitive factors play an important role in the relation between intergroup contact, outgroup attitudes, and intergroup behaviour. The two research strands of the thesis highlight three different cognitive processes of importance, namely social categorisation, meta-cognition of contact recall, and group expectations. Firstly, social categorisation processes are important in encoding and retrieving interactions with outgroup members as intergroup interactions, and not just between two individuals. Interactions between people from different groups can only influence attitudes when group membership is salient, and the individual is recognised as an outgroup member (Brown & Hewstone, 2005; Hewstone & Brown, 1986). This encoding process is important for contact generalisation to attitudes, but also for remembering past contact. People might often interact with people from outgroups, but not remember the interactions as "intergroup contact". Thus, social categorisation processes during intergroup interactions are vital for the study of intergroup contact, both in process and in measurement.

Secondly, as most research on intergroup contact uses self-report assessments of frequency of contact, the cognitive factors around recall of past contact can play a significant role in the contact-attitude relation. Research has demonstrated the influence of meta-cognitive experiences on evaluative judgments, and this thesis indicates that experiences of ease or difficulty when recalling past contact are related to self-perceptions of contact and outgroup attitudes. This cognitive process of recalling past contact and the meta-cognition that accompanies recall of intergroup contact have not received any attention in the literature.

In addition to highlighting the importance of cognitive factors influencing

contact recall, this research also shows the importance of cognitive outcomes of the contact recall process. The concept of self-perception of contact was introduced, which indicates a personal evaluation of someone's contact with the group. Meta-cognitive experiences of fluency should lead people to make inferences about their contact with the group. However, a measure of perceptions of contact has not been used in the literature before. Therefore, I designed a set of items to attempt to measure these perceptions of intergroup contact.

The findings from Experiment 1 to Experiment 4 found that self-perceptions of contact were strongly related to both attitudes towards the outgroup and intentions to engage in future contact. Moreover, self-perceptions mediated the relation between recall difficulty and outgroup attitudes in Experiment 1. These findings highlight the importance of people's perceptions of their own contact when considering their past contact and their attitudes towards the outgroup. Self-perceptions around intergroup interactions are likely to be relevant for real-life experiences with outgroup members. When presented with a contact situation in real life, people are likely to show self-awareness of how they feel about the group and how they wish to present themselves, which influences intergroup behaviour (Dasgupta & Rivera, 2006; S. H. Park, Glaser, & Knowles, 2008). Future research should examine contact recall processes in more detail, investigating how recall processes influence the standard measures of contact frequency, and how they are influenced by pre-existing attitudes. Moreover, the measure of self-perception of contact requires further development and validation, and effects on outgroup attitudes need to be examined.

Thirdly, the second strand of the thesis demonstrated the importance of group expectations and beliefs. When people initially distrusted the outgroup, they generalised their positive experiences most strongly to trust new outgroup members in Experiment 6 and Experiment 8. Furthermore, people who more strongly identified with the ingroup were found to generalise negative experiences with outgroup members in Experiment 7. These findings all indicate that the violation of initial expectations and beliefs about a group drives generalisation of experiences, which is supported by expectancy-violation effects in impression formation and information processing research (Bartholow et al., 2001; Bettencourt et al., 1997; Brannon & Gawronski, 2018; Stangor & McMillan, 1992).

In contrast to the findings from this research, research from Paolini and

colleagues (Graf et al., 2014; Paolini et al., 2014, 2010) suggests that generalisation of negative experiences with outgroup members to attitudes occurs more strongly when these experiences are *congruent* with negative expectations about the group. The valence-salience effect shows that negative experiences with outgroup members make group membership more salient, which in turn should increase generalisation. Paolini and colleagues argue that the increased group salience during negative interactions is due to a fit between their expectations about the group and the current interaction. Thus, the valence-salience research from Paolini and colleagues and the research conducted in this thesis show contradicting effects of group expectations on generalisation. This research suggests stronger generalisation when contact experiences are incongruent with group-based expectations (expectancy-violation). The valence-salience effect suggests stronger generalisation of intergroup contact when contact experiences are congruent with group-based expectations. It is unclear at this point what underlying mechanisms could explain this discrepancy. These contradicting findings show the need for more work on the moderating role of expectations about groups in contact generalisation.

The problem of self-report measures

The research conducted in this thesis has highlighted issues around using self-report measures in the study of intergroup contact and outgroup attitudes. Both strands of research show how other types of measures, such as the ease-of-retrieval paradigm and the Trust Game, can be applied to examine past, present, and future intergroup contact. The next section reviews how the findings from the two strands of research of the thesis have implications for the use of self-report scales to measure intergroup contact and outgroup attitudes.

Despite the fact that a large majority of studies on intergroup contact relies on self-report measures, recall processes of past intergroup contact have been undervalued in the existing literature. The existing research ignores a potential issue in using this self-report measure by not examining recall processes, and more broadly how the judgment of frequency of contact is made. The research from this thesis indicates that experiences of ease or difficulty in recalling instances of past contact (even when not directly manipulated) influence how people judge their contact with the group, and in turn their outgroup attitudes. Moreover, the process of retrieving examples of intergroup contact from memory is potentially susceptible to

bias from pre-existing attitudes. Memory research has shown that pre-existing knowledge influences memory processes, indicating better memory for information that is congruent with existing knowledge structures (Graesser & Nakamura, 1982; van Kesteren et al., 2012). Perhaps people with more positive attitudes towards the outgroup find it easier to recall instances of positive intergroup contact, or interpret contact situations as more positive, and therefore will also report more positive contact with the group on the standard contact measures. Thus, pre-existing outgroup attitudes might facilitate or hinder recall processes of past intergroup contact, which lead to a feeling of ease or difficulty during recall. The experience of (dis)fluency during recall, in turn, can influence self-report measures. This notion requires further scientific exploration, as it can have a substantial impact on the measurement of intergroup contact.

The second issue around using self-report scales is in measuring attitudes towards outgroups, which is a two-fold issue. Firstly, self-report measures of outgroup attitudes are sensitive to social desirability concerns and might not always portray someone's current feelings towards the group. Research from this thesis has shown that particularly students report very positive attitudes and warm feelings towards a range of outgroups (see Appendix H), and even display outgroup favouritism (also see Vermue, Seger, & Sanfey, 2018). It is difficult to establish to what extent these reported attitudes are influenced by social desirability concerns. Therefore, a measure of pro-social behaviour towards outgroup members, as used in Experiment 5 to 8, might be less susceptible to these issues.

Secondly, while attitudes towards groups are important to consider, reducing intergroup conflict and creating harmonious diverse societies relies on positive behaviour towards people from different groups (e.g. Turner, West, & Christie, 2013). Intergroup contact has been shown to be a successful tool to reduce prejudice, and is described as an effective way to reduce intergroup conflict (Al Ramiah & Hewstone, 2013). However, very little research examines conflict reduction as an outcome of contact over and beyond prejudice reduction, such as through support for collective action or reducing discriminatory behaviour. The second strand of the thesis demonstrates how different measures can be used to examine behavioural responses to outgroup members. Economic games such as the Trust Game provide a viable alternative or additional measure to standard attitude items to examine perceptions of groups and behaviour in intergroup interactions (Balliet et al., 2014).

The research conducted in the thesis has demonstrated that initial group-based biases guide trust behaviour in inter-individual settings, but people also use their intergroup experiences to form decisions to trust novel group members. This novel conceptualisation of intergroup contact shows how these methods extend and build on the knowledge obtained from traditional measures of contact.

Limitations

In this section, I focus on an important general limitation that connects the two strands of research of this thesis, namely the importance of selecting an appropriate sample and target group when studying intergroup relations. Specific limitations of the individual studies were discussed in the general discussion sections in the preceding empirical chapters.

Selecting samples

The research conducted for this thesis utilised both student samples and online general public samples with the aim to combine the benefits of both these samples and replicate findings over samples. The studies with student samples were all laboratory-based, and thus had the benefit of a large degree of control over the experimental setting, as well as easy availability to the researcher. However, a large limitation of the use of student samples is generalisability to the general public (Henrich, Heine, & Norenzayan, 2010). Psychology students are often younger, have a larger chance of being female, and are more highly educated then a general public sample (Gainsbury, Russell, & Blaszczynski, 2014; Roulin, 2015). Moreover, students are often more liberal and egalitarian in their views about groups, and have a stronger sensitivity to socially desirable and appropriate responses (Bailey & Williams, 2016; Henry, 2008; Peterson, 2001). Thus, both in demographic variables as well as relevant social variables students might be different from the general public. This is an issue for research within the domain of intergroup relations, where many contextual and individual difference variables influence how people perceive and respond to others from ingroups and outgroups. Therefore, each study that was conducted in a laboratory setting with a student sample was also replicated with a study in an online setting using a sample from a more diverse and representative

background.

Participants from more varied backgrounds were recruited through the online platforms Mechanical Turk in the United States, and Prolific Academic in the United Kingdom, which have been shown to be effective in reaching diverse samples (Gosling, Sandy, John, & Potter, 2010). In Chapter 3 and Chapter 4, comparisons between student and online samples showed that the online sample generally reported lower scores on the variables of interest (i.e. self-perception of contact, outgroup attitudes, future contact intentions, ingroup identification) and had a larger variation in scores than the student samples. Moreover, a comparison of the demographic variables of all experiments shows, as found it previous research, that the student samples were younger, had a smaller age range, and consisted of more females than the online samples. Therefore, the findings from the online samples might be more representative and generalisable than the findings from the student samples.

However, it should be noted that collecting data from online samples has its own issues, particularly the lack of experimental control. As participants complete the experiment online, there is no or little control over where the experiment is completed, whether the participant understands all the questions and tasks, whether the participant pays attention to the task or is distracted, and whether the experiment is completed in one session or is interrupted. However, recent studies have shown that online samples collected through MTurk generally provide high-quality data and participants are more attentive to instructions than student samples (Buhrmester et al., 2011; Casler, Bickel, & Hackett, 2013; Hauser & Schwarz, 2016). Although, it should be noted that recent concerns have been expressed about the use of automatic "bots" on MTurk (Litman, 2018). While the use of online samples is fast, convenient, and provides data of people from a wider background that might be more representative of the general public, it carries its own limitations.

Selecting target groups

A related limitation of this research, and a prominent issue within the field of intergroup relations, is the selection of target outgroups. While some research in the field is particularly interested in a specific group, such as national, ethnic, or religious groups, the research in this thesis was of a conceptual nature about cognitive processes involved in intergroup contact, and therefore did not target a

specific sample or group. Selecting the appropriate target group for a sample is important, as variation in views about both the ingroup and the outgroup are important moderating variables to intergroup processes. Therefore, the research in this thesis did not utilise minimal groups, where people generally do not hold strong views about the minimal ingroup or outgroup. Moreover, as the central tenet of the thesis was intergroup contact theory, the use of minimal groups where no pre-existing attitudes or prejudice is present, was inappropriate.

The importance of ingroup and outgroup views was demonstrated in both strands of the thesis. In the first strand of research, it was observed that people's attitudes about outgroups, attitude strength, and familiarity with the outgroup moderated some of the effects of retrieval fluency on self-perceptions of contact. In the second strand of research, identification with the ingroup moderated trust decisions in group members and generalisation of experiences over time. In general, people display varying levels of ingroup identification and variable outgroup attitudes towards distinct groups in society. Therefore, the effects examined in this thesis might be variable in strength and direction depending on the target ingroup and outgroup.

Regarding beliefs about both the ingroup and outgroup, multiple variables need to be considered. People might indicate high identification with the ingroup, but that does not always mean that the ingroup is central and important to someone's identity and sense of self. For example, in Experiment 5 participants highly identified with the British ingroup yet favoured the Chinese outgroup in their trust decisions. This decision to trust outgroup members is not a trivial one, as trust is one of the key variables in improving intergroup relations (Pagotto et al., 2013; Tam et al., 2009; Turner et al., 2013; Vezzali et al., 2012). Social identity is a multidimensional concept, and not all dimensions of identity have been considered in this thesis, such as the centrality of the social identity for the self-concept, or the emotional valence of the social identity (Cameron, 2004). Future research needs to consider different dimensions of social identity when examining intra- and intergroup processes. Importance or centrality of the ingroup to one's identity might be a stronger predictor of ingroup favouritism and generalisation than general identification with the group.

In the selection of an outgroup, a second set of variables should be considered. Explicit measures of outgroup attitudes were included in the research,

but this measure alone does not capture the full picture. Social norms about the expression of preferences or dislikes towards the target outgroup need to be considered. When expression of preference or dislike towards a group is more accepted (or even expected within a social group), people might show stronger responses to individual group members and more readily report prejudice towards the group. This is visible in both strands of research, where comparisons between studies using different groups (homosexual people vs ethnic minorities, nationality vs political affiliation), indicate variability in reported attitudes and behavioural favouritism. The influence of normative factors on intergroup contact, attitudes, and behaviour towards group members requires systematic investigation in future research.

Moreover, perceptions of entitativity of the group could play a substantial role, as group entitativity has been shown to influence judgments of groups and generalisation of experiences between group members (Crawford et al., 2002; Dasgupta, Banaji, & Abelson, 1999). A recent meta-analysis demonstrated that perceptions of outgroup entitativity are robustly and positively related to prejudice (Agadullina & Lovakov, 2018). Perceived group entitativity is important for both strands of research, as people might encode interactions more readily as intergroup contact when the group is perceived to be more entitative, and generalisation of experiences should occur more strongly for more entitative groups. Thus, while prejudice might be higher for highly entitative groups (Agadullina & Lovakov, 2018), memory might also be more accurate and member-to-member generalisation might be stronger for these groups that are perceived as highly entitative. This variable can be systematically investigated by comparing social groups that vary in their perceptions of entitativity, such as a small-scale group based on shared interests and a large-scale group based on shared nationality. In summary, it is important that future research on intergroup relations considers the multi-faceted relation between the ingroup and outgroup.

Future directions

From the findings, implications, and limitations of the two strands of research of this thesis, several future research directions can be identified. In this section, I

describe three main directions for future research, namely the role of contact recall on attitudes, the existence of memory biases on contact recall, and the importance of expectations in increasing group salience during intergroup contact and enhancing generalisation.

Firstly, the research from the first strand of the thesis assumed that people recall instances of past contact to make judgments about contact frequency that is needed for standard contact measures. Moreover, this line of research assumed that, as the contact-attitude relation has been firmly established in the literature, contact recall would also influence people's attitudes towards the outgroup through naïve theories. These assumptions were based on the availability heuristic (Tversky & Kahneman, 1973, 1974), indicating that retrieving specific instances of an event influences judgments of frequency of the event, and self-perception theory (Bem, 1972), arguing that attitudes are based on salient past behaviour. As the manipulation of retrieval fluency did not influence self-perceptions, attitudes, and behavioural intentions, future research should take a step back and investigate these assumptions. It needs to be established whether people use recall of past contact to inform their judgments of contact, and to inform their attitudes about the outgroup. This could be examined with experimental designs where people either recall past intergroup contact, or recall other social interactions, and examine influences on contact judgments and outgroup attitudes.

Secondly, the possibility of memory biases in recall of past contact from pre-existing attitudes towards the group requires further exploration. In addition to a lack of naïve theories on the contact-attitude relation, a second alternative explanation for the null-effects is that memories of past contact might be biased by pre-existing attitudes. People who have positive attitudes towards a group might be more motivated to remember positive intergroup interactions, and therefore report more positive intergroup contact. People with negative attitudes towards the group, on the other hand, might be more motivated to remember negative contact with the group. Future research should explore these potential biases in memory of intergroup contact, and explore how schemas, motivation, and attention play a role in encoding and retrieving memories of intergroup contact.

Lastly, the third main direction of future research should systematically investigate the role of expectancy-violation effects in generalisation of intergroup contact. The findings from Experiment 5 to Experiment 8 suggest a key role of the

violation of group expectations in how much experiences in the Trust Game are generalised. However, other research within the field of intergroup contact suggests that contact experiences are generalised more when group expectations based on past experiences are congruent with the valence of the current intergroup interaction, because group membership becomes more salient when a fit is observed (Paolini et al., 2014, 2010). To understand this discrepancy, more research is required that systematically examines the influence of group expectations on generalisation of contact experiences, and the influence of group salience within this domain. Group salience during the contact experiences in the game should be measured to examine what type of intergroup interactions heightens salience of group membership, interactions that are congruent with expectations, or that are violations of expectations.

Thesis summary

This thesis explored social-cognitive processes involved in intergroup contact, both in remembering past contact and generalising present contact experiences to inform decisions about future encounters with group members. The research in this thesis was driven by the aim to highlight the much-understudied cognitive perspective on intergroup contact theory, to expand on measurements of contact and attitudes beyond self-report surveys, and to move contact research into experimental studies on behaviour. The first strand of research fulfilled these aims by taking a construction approach to attitudes and examining how experiences of retrieval fluency during recall of past contact behaviours could influence perceptions, attitudes, and behavioural intentions. In Chapter 2 of the thesis, theories on the influence of meta-cognition on evaluative judgment (Schwarz, 2004; Schwarz et al., 1991; Tversky & Kahneman, 1973) were applied to intergroup contact theory. In two experiments, participants described either one or five different examples of positive interactions that they had with the outgroup. Results showed that the manipulation of number of recalled interactions was not successful in influencing either self-perceptions of contact, outgroup attitudes, or future contact intentions. However, difficulty in recalling contact was predictive of outgroup attitudes, and mediated by self-perceptions of contact.

Chapter 3 examined a second method of manipulating retrieval fluency through increasing salience of past contact behaviours in a checklist. Again, the manipulation of retrieval fluency did not influence the three outcome variables of interest. Three main explanations are proposed for the null-effect of manipulations of retrieval fluency on perceptions, attitudes, and behavioural intentions. Firstly, meta-cognition affects attitudes and judgments through the naïve theories that people hold and the inferences that they draw from their meta-cognitive experiences. It is possible that people do not hold naïve theories about the relation between their contact with the group and their attitudes towards that group, and thus outgroup attitudes are not influenced by contact-based retrieval fluency. Secondly, memory of past contact might be biased by pre-existing attitudes, such that people are keen to remember contact experiences that are consistent with their beliefs about the group. Thirdly, meta-cognition effects have been mostly established on cognitive judgments. Perhaps the affective and normative components of outgroup attitudes indicate that this type of attitudes is not influenced by meta-cognitive experiences of retrieval fluency.

The second strand of research moved from looking back to looking ahead towards future encounters with novel group members. For this second strand, a novel paradigm was designed that utilised iterated Trust Games (Berg et al., 1995) with multiple group partners to examine member-to-member generalisation of trust behaviour. The term member-to-member generalisation refers to the influence of previous contact experiences on behaviour towards novel group members. Chapter 4 examined the effect of group membership (ingroup vs outgroup) on generalisation of trust behaviour, while Chapter 5 also explored the effect of valence of interactions (positive vs negative) through trust reciprocation and trust violation. All four experiments consistently showed member-to-member generalisation processes, as people changed their trust behaviour towards novel group members based on reciprocity behaviour of previous group members. While differences between experiments were found in trust behaviour towards ingroup and outgroup partners, findings from all experiments indicate the importance of expectancy violation (Bettencourt et al., 1997; Stangor & McMillan, 1992) in generalising contact experiences. Participants changed their trust behaviour towards novel group members most profoundly when previous group members showed behaviour that was contradicting to expectations or beliefs about the group.

      Together, the research conducted in this thesis demonstrates the importance of cognitive processes in intergroup contact, the issues around using self-report measures of intergroup contact and outgroup attitudes, and the potential of using laboratory-based behavioural methods such as economic games. This research opens new avenues of research, from the role of group expectation congruency in generalisation of contact experiences, the existence of naïve theories on the contact-attitude relation, and the process of generalisation between attitudes and behaviour towards outgroup members.

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Appendix A
Pilot study on free contact recall

The aim of this first pilot study was to establish how many examples of contact people are able to recall when asked to describe as many as possible, to determine which number would be considered easy or difficult. Participants (186 undergraduate students, 87% female, $M = 19.97$ years old, $SD = 3.85$) completed a short survey online where they were asked to write down any, and up to 10 examples they could remember of both positive and negative contact with different target outgroups, as well as rate the ease of the task. As participants completed the recall task for two of the four groups, which were randomly selected, the distribution of participants per target outgroup was as follows: 98 participants provided data for Eastern European immigrants, 94 participants provided data for Muslims, 91 participants provided data for people on benefits, and 89 participants provided data for UKIP supporters.

In addition to the contact manipulation, another condition was included in which people were asked to report instances of exposure to the outgroup more broadly (including indirect contact and media exposure). This condition was added to examine whether recalling intergroup exposure would be easier for participants than intergroup contact, and which manipulation was most successful in creating the retrieval fluency effect. Moreover, frequency of positive and negative contact was also assessed using the traditional 7-point Likert scales.

The results showed that, of all the recall tasks (for all groups and positive and negative recalls), in 43% of cases participants did not write down any recalled interactions[22]. This percentage of zero interactions reported was higher in the contact condition (51%) than in the exposure condition (35%). Participants reported more interactions in the exposure condition ($M = 1.30$, $SD = 1.39$) than in the contact condition ($M = 0.81$, $SD = 1.17$), and reported slightly more negative interactions ($M = 1.09$, $SD = 1.38$) than positive interactions ($M = 1.02$, $SD = 1.24$). For most groups,

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[22] A recall number of zero was possible as there was no required number of recalled interactions to complete the task. We did not want to restrict participants to write down a specific number of interactions, which seems to have led to participants not writing anything and skipping the task. This problem was overcome in following studies by making text entry mandatory.

people reported more postive interactions than negative interactions, except for UKIP supporters. For this group, participants reported more negative interactions than positive interactions

Table A1

Mean and standard deviations for number of positive and negative recalled interactions with each of the outgroups

	Contact		Exposure	
	Positive	Negative	Positive	Negative
Eastern European Immigrants $N = 51$	$M = 0.94$ $SD = 1.27$	$M = 0.53$ $SD = 0.92$	$M = 1.45$ $SD = 1.36$	$M = 1.20$ $SD = 1.11$
Muslims $N = 49$	$M = 1.69$ $SD = 1.70$	$M = 0.80$ $SD = 1.27$	$M = 1.76$ $SD = 1.44$	$M = 1.73$ $SD = 1.85$
People on benefits $N = 47$	$M = 0.77$ $SD = 0.89$	$M = 0.66$ $SD = 1.04$	$M = 0.98$ $SD = 1.04$	$M = 1.37$ $SD = 1.51$
UKIP supporters $N = 48$	$M = 0.35$ $SD = 0.53$	$M = 0.83$ $SD = 0.91$	$M = 0.37$ $SD = 0.68$	$M = 1.67$ $SD = 1.61$

Appendix B
Outgroup attitudes questionnaires

The items displayed below show the measures of the outgroup feeling thermometer (Haddock et al., 1993), and the semantic-differential outgroup attitude scale (Wright et al., 1997). In the question framing, *X* refers to the name of the target outgroup, which differs between experiments. The instructions displayed below are as used in the experiments.

Outgroup feeling thermometer

How warm or cold do you feel towards *X*?

Very cold   Very warm

Outgroup attitudes
*Items with an * were recoded in order for higher values of the average score to indicate positive attitudes.*

Please rate your feelings towards *X* by marking the appropriate point between the following pairs of words.

Warm	○	○	○	○	○	○	○	Cold*
Negative	○	○	○	○	○	○	○	Positive
Friendly	○	○	○	○	○	○	○	Hostile*
Suspicious	○	○	○	○	○	○	○	Trusting
Respect	○	○	○	○	○	○	○	Contempt*
Admiration	○	○	○	○	○	○	○	Disgust*

Appendix C

Instructions contact recall task

Below are displayed the instructions for the contact recall task, as used for the pilot study, Experiment 1, and Experiment 2 of the thesis. The letter *X* was replaced with the name of the target outgroup, which varied between studies.

One-recall condition

We would like to ask you to provide us with 1 example of a positive social interaction that you have had with X.

Please provide an example of a situation where you have mixed socially with X. This could be on public transport, in the street, in shops, or in the neighbourhood. This interaction could be with a friend, acquaintance, or a stranger.

Please take a moment to think about what interactions with X you can remember, and use the text box below to describe your example.

Five-recall condition

We would like to ask you to provide us with 5 examples of positive social interactions that you have had with *X*.

Please provide examples of situations where you have mixed socially with *X*. This could be on public transport, in the street, in shops, or in the neighbourhood. This interaction could be with a friend, acquaintance, or a stranger.

On the next pages, please describe the interactions with *X* you can remember. Please describe only 1 example in each text box.

Appendix D

Behaviour statements used in Experiment 3 and 4

Instructions:

On the next page, you will see a number of statements about different types of interactions that you may or may not have had with people from ethnic minorities. We would like you to indicate whether the statement is true or false for you by ticking the box.

If you consider the statement to be true, tick the box behind the statement.

If you consider the statement to NOT be true, please leave the box empty.

	Statement	TICK IF TRUE
1	I have occasionally/frequently made eye contact with someone from an ethnic minority group.	
2	I have occasionally/frequently had a chat with someone from an ethnic minority group.	
3	I have occasionally/frequently had a relaxed interaction with someone from an ethnic minority group.	
4	I have occasionally/frequently been polite to a person from an ethnic minority group.	
5	I have occasionally/frequently had service from an ethnic minority waiter or shop assistant.	
6	I have occasionally/frequently been in a social setting with a person from an ethnic minority group.	
7	I have occasionally/frequently welcomed someone from an ethnic minority group.	
8	I have occasionally/frequently shown consideration to someone from an ethnic minority group.	
9	I have occasionally/frequently complemented a person from an ethnic minority group.	
10	I have occasionally/frequently greeted a person from an ethnic minority group.	
11	I have occasionally/frequently eaten restaurant or home-	

	cooked food prepared by someone from an ethnic minority group.	
12	I have occasionally/frequently purchased something from an ethnic minority group.	
13	I have occasionally/frequently been friendly towards someone from an ethnic minority group.	
14	I have occasionally/frequently sat next to someone from an ethnic minority group.	
15	I have occasionally/frequently worked together with someone from an ethnic minority group.	
16	I have occasionally/frequently messaged someone from an ethnic minority group.	
17	I have occasionally/frequently co-operated with someone from an ethnic minority group.	
18	I have occasionally/frequently participated in activities with someone from an ethnic minority group.	
19	I have occasionally/frequently shared social media posts with someone from an ethnic minority group.	
20	I have occasionally/frequently listened to someone from an ethnic minority group.	
21	I have occasionally/frequently asked questions to someone from an ethnic minority group.	
22	I have occasionally/frequently offered help to someone from an ethnic minority group.	
23	I have occasionally/frequently made plans with someone who is an ethnic minority group.	
24	I have occasionally/frequently joked with someone from an ethnic minority group.	
25	I have occasionally/frequently provided directions to someone who is an ethnic minority group.	

Appendix E

Mini meta-analysis of fluency manipulation effects

Mini meta-analyses were performed that incorporate the between-subject main effects of all five studies described in Chapter 3 (pilot, Experiment 1, Experiment 2) and Chapter 4 (Experiment 3, Experiment 4). Separate analyses were performed for each of the three outcome variables: self-perceptions of contact, outgroup attitudes, and future contact intentions. However, only the data of the four full experiments could be used for future contact intentions, as this variable was not measured in the Pilot study.

Separate mini meta-analyses were performed on the effect of the meta-cognition manipulation (ease to recall/ high salience vs. difficult to recall / low salience) on all three outcome variables, to examine the overall effect of the different manipulations. The meta-analyses were conducted using a template from Goh and colleagues (Goh, Hall, & Rosenthal, 2016, see https://osf.io/6tfh5/ for the materials), which relies on the means, standard deviations, and number of participants in each group of a two-group between-subject comparison to calculate Cohen's d for each study. These effect sizes are then entered into a set of equations to provide a mean effect size d and a standard error of the mean d. These two values are used to calculate a Z score, as well as 95% confidence intervals of the mean d. Lastly, the Z table for a two-tailed test with $\alpha = 0.05$ was used to determine the p value of the meta-analytic effect size.

For self-perception of contact, the meta-analysis resulted in a mean effect size $d = 0.009$ ($SE = 0.060$, 95% CI [-0.108, 0.127]). This meta-analytic effect size was not significant, $Z = 0.158$, $p = .874$. The meta-analysis for outgroup attitudes resulted in a mean effect size $d = -0.061$ ($SE = 0.072$, 95% CI [-0.203, 0.080]). This meta-analytic effect size was also not significant, $Z = -0.851$, $p = .395$. Lastly, the meta-analysis for future contact intentions resulted in a mean effect size $d = -0.014$ ($SE = 0.062$, 95% CI [-0.136, 0.107]). This meta-analytic effect size was also not significant, $Z = -0.226$, $p = .821$. These results show that, when taking all the data of all five studies together, there is no effect of contact-based retrieval fluency on either self-perception of contact, future contact intentions, or outgroup attitudes.

Appendix F
Ingroup identification questionnaires

The two questionnaires below were used to measure ingroup identification for the second strand of research of the thesis. The first questionnaire was used in Experiment 5. The second, more extensively questionnaire was used in Experiment 6 to Experiment 8. The *X* was replaced by the name of the ingroup selected for each experiment. The instructions displayed below are as used in the experiments.

First ingroup identification questionnaire
Adapted from Doosje, Ellemers, and Spears (1995), used in Experiment 5.

Please answer the following questions as they apply to you as an *X*. Choose the most appropriate number from 1 (do not agree at all) to 7 (completely agree).

I see myself as an X

1	2	3	4	5	6	7

Do not agree at all   Completely agree

I am pleased to be an X

1	2	3	4	5	6	7

Do not agree at all   Completely agree

I feel strong ties with X

1	2	3	4	5	6	7

Do not agree at all   Completely agree

I identify with other X

1	2	3	4	5	6	7

Do not agree at all   Completely agree

Second ingroup identification questionnaire

Adapted from Cinnirella (1997), used in Experiment 6 to Experiment 8.

Now, we would like to ask you to answer a number of questions about your attitudes towards *X*.

To what extent do you feel an X?

1	2	3	4	5	6	7

Extremely X   Not at all X

To what extent do you feel strong ties with other X?

1	2	3	4	5	6	7

Extremely strong ties   No ties at all

To what extent do you feel pleased to be an X?

1	2	3	4	5	6	7

Extremely pleased   Not at all pleased

How similar do you think you are to the average X?

1	2	3	4	5	6	7

Extremely similar   Not similar at all

How important to you is being an X?

1	2	3	4	5	6	7

Extremely important   Not important at all

How much are your views about the X shared by other X?

1	2	3	4	5	6	7

Shared by all   Not shared by any

When you hear someone who is not an X criticise X, to what extent do you feel personally criticised?

1	2	3	4	5	6	7

Extremely criticised   Not criticised at all

Appendix G

Trust Game instructions and game display

Below are shown the instructions for the Trust Game presented to participants on paper. Participants completed the questions on the last page on paper and presented the answers to the experimenter before commencing with the practice rounds of the game. Instructions on the images used for ingroup and outgroup varied between experiments, using either figures with flag colours (Experiment 5), Democrat and Republican Party logos (Experiment 6 and 7), or the displayed British political party logos shown below (Experiment 8).

In addition to the instructions and comprehension questions about the Trust Game questions, screenshots are presented that show how the game appeared on participants' screens. The screenshots are taken from the laboratory version of the experiment, used in Experiment 5 and 8, programmed in the Python-based software program PsychoPy (Peirce, 2007). The online version of the experiment was programmed to be as similar as possible to the laboratory version, programmed in Qualtrics.

The Investment Game

Conversion: 1 token = 50 pence

Welcome to *the Investment Game!* There are two players in this game: **player A** and **player B.**

In this experiment you will play the role of **<u>player A.</u>**

<u>The game goes as follows:</u>

In each round player A receives 10 tokens as a starting amount to play with. Player A can invest a part of his tokens in player B and keep the rest himself. Player A is free to invest all tokens, a part of the tokens or no tokens in player B. The amount of tokens that player A invests will be multiplied with a <u>factor 3</u> and be given to player B.
So if player A invests 5 tokens in player B, player B receives 15 tokens.
Of all the tokens that player B receives, he/she can give an amount back to player A. Player B is free to give all tokens, a part of the tokens or no tokens to player A. This amount is **not** multiplied, but directly given to player A.

Some examples of 1 game round:
- If player A keeps all 10 tokens to himself, then player A will end the game round with 10 tokens, and player B ends with 0 tokens.
- If player A invests 10 tokens in player B, then player B has 10 x 3 = 30 tokens.
    - Player B can now choose to, for example, give 15 tokens back to player A. Both players end up with 15 tokens.
    - Player B can also choose, for example, to keep all of the tokens for himself. Player B ends the game round with 30 tokens, player A with 0 tokens.
- If player A invests 5 tokens in player B, then player B has 5 x 3 = 15 tokens. If player B chooses to give 6 tokens back to player A, then player B will have 9 tokens left for himself. Player A will have 5 (left over) + 6 = 11 tokens at the end of the game round.

<u>The other players</u>

As player A you will be playing *the Investment Game* with a number of different partners. You will play **only 1 round** with each partner.

You will play the *Investment Game* with a number of people with different political affiliations. We have collected data from a large number of students at UEA that have participated in the Investment Game as player 2.
You may play the game with people that all support the same party, or with people that support different parties, or with people of which we do not know the political affiliation.

We are required to keep the identity of these other players anonymous. However, we will give you some information about the players, if the information is available. The political affiliation of the partner will be shown on the screen. In addition, we will show a combination of two letters (the initials) that are unique for each player. You will also be asked to provide 2 initials to be used in the game.
Unfortunately, we were not always able to obtain the information about the political affiliation of the partner. Therefore, sometimes it will be shown that the political affiliation of the partner is unknown.

At the bottom of each screen, it will be indicated with which player you are playing this round by use of the party logos. There will be 2 images on the screen, 1 in the left lower corner and 1 in the right lower corner of the screen. The left image indicates you, this figure will show your selected political affiliation. The right figure indicates the other player, with his/her selected political affiliation, shown by the logo of the party.

D.V.   = Player D. V. is a Labour party supporter**.**

C. S. = Player C. S. is a Conservative Party supporter.

A.G.   = Player A. G. is a Liberal Democrats supporter.

K. J.   = Player K. J. is a Green Party supporter

R. M.   = Player R. M. is a UKIP supporter.

D. R.   = The political affiliation of player D. R. is unknown.

You will play a number of rounds, but only 1 round with each partner. These partners can be a supporter of any political party.

NOTE: Every round that you play is a separate game, and you will start each round with 10 tokens. The amount that you have at the end of the round will **not** be added up to a total, but you will start over with 10 tokens on each round.

The experiment
Before you begin with the real game, you will play a number of **practice rounds**, to make sure that everything is clear to you. These rounds are not played with real people. This is visible from the figure that is shown as the other player: it will be black and have the initials A to D.

When you have finished the practice rounds, you will start with the game. *First*, you will be presented with the partner that is assigned to you for the round. *Next,* you will be asked about your **expectations** about how this person will play the game, how much do you think he/she will return to you if you invest? This will be asked in percentages of the invested amount, so you don't have to think about actual amounts.
Then, you will start the game round with the assigned partner. You can invest any amount between 0 and 10 tokens in the other player, by typing it in. If you do invest, the matching amount returned by this partner needs to be selected, which should take a couple of seconds. Last, you will see how much the partner has returned, and how much you both have left.
This is one game round, after that, the next round with a new partner starts.

The earnings
As mentioned on SONA, you have the chance to win your earnings in the Investment Game as real money! These earnings will be calculated from the amount that you have left of each round (which will be shown on the screen). The average of the amount left of each round, converted to pounds with a rate of 1 token = 50 pence, are your earnings!
You can win this amount at the end of the experiment. You can roll a dice and if you roll a 6, you win the money! This will be given to you directly in cash.

So, to summarise:

In *the Investment Game* you can choose whether you want to invest some of your 10 tokens in player B, and how much you would like to invest. The other player is not in the lab right now playing the game, but he/she has played the game before as player B. His/her answers will be used in your game.
Once you have made your decision, your investment will be matched with a response from player B to this investment. You will then be informed about how much money this player B has returned to you. Your earnings exist of the average of what you are left with at the end of each round.
This is 1 game round, after which you will start a new game round with 10 tokens, and you will play with someone else.

Please answer the following questions:

If you invest 3 tokens in another player, how many tokens will that player receive?

…………………………………………. Token(s)

If you invest 7 tokens in another player, how many tokens do you have left?

…………………………………………. Token(s)

If you have invested 5 tokens in another player, and that player gives back 7 tokens, how many tokens will you have left at the end of the round?

………………………………………….. Token(s)

How many rounds will you play with each partner?

…………………………………………. Round(s)

Will you get feedback about the decision of the other player after each round?

- o Yes, after each round.

- o No, only at the end of the entire game.

- o No, no feedback at all.

When you have answered all of the questions, please give the form back to the experimenter.

Trust Game round

L.B.

What percentage of the investment do you think this
person will return to you in the Investment Game?

0% of the investment   100% of the invesment

How much do you want to invest in the other player?

number of tokens [   ]

M.V.   - - - - - - ->   L.B.

You: 10 tokens   Player L.B.: 0 tokens

Next

Investment: 5 token(s)

player L.B. receives: 15 token(s)

M.V.   ———>   L.B.

You: 5 token(s)   Next   Player L.B.: 15 token(s)

Your investment: 5 token(s)

Player L.B. returned: 8 token(s)

You earned: 13 token(s)

M.V.   <———   L.B.

You: 13 token(s)   Next   Player L.B.: 7 token(s)

Appendix H

Pilot study on attitudes towards outgroups

In April 2016, I conducted a small questionnaire study to gauge students' opinions about different groups in society. British University students (N = 84, 83% female, M_{age} = 19.40 years, SD_{age} = 2.00) were asked to indicate how warm or cold they felt towards different outgroups, on a scale from 0° (very cold) to 100° (very warm), with 50° being neutral. Moreover, we asked the participants to indicate to what extent they considered themselves to be a member of each of the groups mentioned, on a 5-point scale ranging from 'Definitely not' (1) to 'Definitely yes' (5). In our analyses of the outgroup ratings, we only included participants that indicated they did not feel part of the group that they rated on the feeling thermometer scale (i.e. anyone answering three or higher on the scale). Therefore, the sample size differs per group rating.

The results of this study show that students express very positive attitudes towards many different outgroups of society (see Table H1). Of the 15 different groups examined, only UKIP party (UK extreme right wing nationalist party) voters and Conservative Party voters were rated lower than the middle of the scale (M_{UKIP} = 28.65; $M_{conservative}$ = 44.20), indicating more cold feelings towards the group. The groups that received the most positive ratings were disabled people ($M_{disabled}$ = 81.76), homosexual people ($M_{homosexual}$ = 86.00), and transsexual people ($M_{transsexual}$ = 77.43). Immigrants from Western Europe, the targeted outgroup of the two studies presented in this paper, received a very positive rating as well ($M_{immigrantsWE}$ = 71.27). These findings show that students indicate very positive attitudes towards foreigners from Western European countries, as well as other types of outgroups. Whether this is their true attitude, or whether these positive reported attitudes are influenced by social desirability concerns is difficult to determine at this point. It is clear, however, that students report very positive attitudes towards out-groups, which might make it difficult to generalise study findings to a wider population.

Table H1

Number of responses, range of scores, median, mean, and standard deviation of the feeling thermometer ratings for 15 different societal groups.

	No of responses	Range	Median	Mean	Standard Deviation
Muslims	81	9-100	70.00	67.30	21.83
Disabled people	82	41-100	81.50	81.76	16.87
UKIP voters	76	0-100	24.00	28.65	24.17
Homosexual people	70	40-100	90.00	86.00	17.34
Conservative party voters	49	0-100	44.00	44.20	25.49
Immigrants Western Europe	84	22-100	70.00	71.27	17.72
People without a college or University degree	84	10-100	75.50	74.50	22.77
Immigrants Eastern Europe	81	40-100	69.00	69.57	18.24
People on benefits	84	0-100	50.00	50.43	23.44
Transsexual people	84	24-100	82.50	77.43	21.15
Immigrants the Middle East	83	2-100	66.00	66.23	19.78
Vegans	66	8-100	61.00	61.79	25.10