

**An Implicit Theory of Groups: The Understanding of Groups in Children, Adolescents and Adults,  
and its Association with Generalised Prejudice.**

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Thesis submitted in partial fulfilment of the requirements for the degree of Doctor of Philosophy in  
the Division of Human and Social Sciences at the University of Kent, April 2023.

## Memorandum

The research for this thesis was conducted while the author was a full-time postgraduate student in the School of Psychology at the University of Kent, Canterbury (September 2018 – September 2022) on a studentship from the Economic and Social Research Council (ESRC).

The theoretical and empirical work contained in this thesis is independent work. The author has not been awarded a degree by this, or any other university, for the work included in this thesis.

The empirical work and reports outlined in Chapter 3 represent collaborative work carried out by the author and the Anne Frank Trust UK (AFT) as part of an ESRC SeNSS CASE (1+3) studentship. These reports do not contain data collected as part of the current thesis. The reports produced in collaboration with the AFT are publicly available documents and links to them are provided in both the text and the reference list.

## Acknowledgements

My sincere appreciation goes to my two supervisors, Dominic Abrams and Lindsey Cameron for their unwavering support and enthusiasm, and for providing a wealth of expertise, experience and advice. Thank you for your faith in me, for simultaneously giving me the space to develop as an independent researcher whilst never letting me stray too far from the correct path. Thank you as well for all the opportunities you have offered me during my time at Kent.

I would also like to thank all the members of GroupLab over the last four or five years – and there are many of you! GroupLab has provided an interesting and stimulating research environment and I have learned a great deal about other members' research. The research in GroupLab has both inspired me and helped me to develop my own thesis. My particular thanks go to Hiro Imada for fantastic stats advice, and to Tim Hopthrow for your never-failing encouragement and support. Thank you as well to all the professional services staff at Kent who have provided me with such fantastic administrative assistance, and answered my many and varied questions!

Thank you to my amazing group of friends, in particular Cath and Steph, for your ever enthusiastic confidence in my ability to succeed, or at the very least to get this PhD done! Thank you for your support, the comic relief, and the ever-ready gin and tonic to get me through.

And finally, my biggest thanks go to my family – your love and support means everything. To my mum, Anne, for your never-ending loyalty, and to my dad Keith, who although no longer with us, I know would have been so proud. Thanks to both of you for always encouraging my education. To my husband, Anthony and my three children Isaac, Reuben and Ned – there are few words I can use that express my love and gratitude for you. Thank you for always supporting me, for always believing in me, for giving me the space to pursue my goals, and for bringing me so much joy. This thesis is dedicated to you.

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## Abstract

Prejudice and discrimination are some of the most widely studied topics within the intergroup relations literature. At a time when intolerance, segregation and intergroup conflict continue to impact negatively on people's lives, the need to understand the bases of prejudiced attitudes remains a relevant and necessary area of study. If prejudice and discrimination are to be addressed however, it is necessary to understand how, when and why such attitudes develop.

The first part of this thesis (Chapters 1 and 2) reviews the current social and developmental thinking related to the development of prejudice; providing a critique of current theoretical models and highlighting gaps in knowledge. It argues that a more complete picture of the development of prejudice in children is needed, one which explores the role of individual differences, such as social dominance orientation, and in particular an Implicit Theory of Groups. Chapter 3 outlines the collaborative work carried out with the Anne Frank Trust UK (AFT) as part of the ESRC SeNSS CASE (1+3) studentship. It details links between the work of the AFT and the current thesis as well as outlining the development of the general measure of prejudice used in the studies reported here.

On the basis of this critical analysis the second part of the thesis (Chapter 4 and 5) reports results from a series of studies with children, adolescents and adults. These studies aim to develop and test a measure of an Implicit Group Theory which account for factors such as the perceived malleability and homogeneity of groups, as well as constructs such as entitativity and essentialism. The third part of the thesis (Chapter 6) employs the newly developed measure of an Implicit Group Theory to test its association with generalised prejudice in adolescents and adults.

Results demonstrated striking similarity in the Implicit Group Theory of adults and adolescents, and reveal that both perceived malleability of groups and social dominance orientation are associated with generalised prejudice in adults and adolescents. The Implicit Group Theory of children (9-10 years) appears to be less well developed, but results indicate that it is associated with social

dominance orientation, and has the potential to be a driver of prejudice at an early age. The work included in the thesis adds to the understanding of how a lay theory of groups may influence prejudice in childhood and adolescence as well as representing a potentially new and innovative approach for prejudice reduction programmes.

## **Covid-19 Impact Statement**

This PhD was started in September 2018, with the first phases of data collection with all three age groups (adults, adolescents and children) taking place in the spring and summer of 2019 (Studies 1a, 1b and 1c).

The second phase of data collection began in Autumn 2019, and data with adults and adolescents was collected (Studies 2a and 2b). In November 2019 I undertook a three-month research secondment with the Social Security Advisory Committee (SSAC) – an advisory non-departmental public body, sponsored by the Department for Work and Pensions. During this time, I led a three-month research project exploring the barriers to accessing the Motability scheme for disabled people in receipt of disability benefits. This opportunity meant that collecting Study 2 data with children was delayed until March 2020.

In March 2020 the UK government made the decision for the country to enter its first wave of 'lockdown' due to the Covid-19 pandemic, and all schools were closed. No data was able to be collected from children during this lockdown phase. In June 2020 students were allowed to return to school and due to some good relationships made with the schools in the first phase of data collection, Study 2c was able to go ahead (with certain restrictions) and data collection for this second phase was completed.

The UK experienced a number of further lockdowns over the following year, with particular restrictions being placed on households in the South East of England. Data was collected from adolescents at the end of the summer term in 2020 (Study 3b), and online with adults in August 2020 (Study 3a). However, gaining access to primary schools for data collection during this time proved difficult. As a result of the lockdown procedures, tight restrictions on the movement of people, and time pressures on the school curriculum after the return to face-to-face teaching, I was unable to collect data from 9–10-year-olds in the third set of studies.

Significant caring responsibilities during the Covid-19 pandemic and resulting lockdowns also impacted the time line for this thesis. Despite a three-month covid extension from SeNSS, funding expired at the beginning of 2022, and I was therefore unable to pursue Study 3c with children after this time.

Since the beginning of September 2022, I have been working for the School of Psychology at the University of Kent as a full-time lecturer in Social and Developmental Psychology, and have been completing the thesis in my own time. I intend to finish testing the model outlined in this thesis with children (9-10 years) in future studies

## **Chapter 1: The Development of Prejudice in Children**

*Developmental theories of prejudice, grounded in the social and cognitive paradigms, are crucial to our understanding of how prejudice develops in childhood. Research exploring individual difference variables have also contributed to our understanding of prejudice in adulthood, but are far less prevalent in studies within developmental intergroup relations research. This chapter aims to critically evaluate a number of developmental theories of prejudice including the Social Cognitive Developmental Theory, Developmental Intergroup Theory and the Social Understanding Hypothesis. It also aims to capture the contribution of individual differences research in adults, and will discuss Social Dominance Orientation, Right Wing Authoritarianism, Outgroup homogeneity, entitativity and essentialism. Whilst both strands of research have been crucial to our understanding of the scope and prevalence of prejudice in society, there is a paucity of research related to individual differences in the developmental literature, and therefore our understanding of how prejudice develops is incomplete. The chapter will argue the case for such a position as well as identifying one further individual difference, the perceived malleability of groups, that is essential to our comprehension of how, why and when, prejudice develops.*

### **Introduction**

A range of theories exist to explain the development of prejudice in childhood, ranging from those which fall under the heading of a social learning approach to more cognitive based and hybrid approaches. These approaches are grounded in empirical evidence and have served as a basis for intervention programmes and/or informed prejudice reduction approaches. What they also have in common is that they do not currently explain individual differences in levels of prejudice amongst children and adolescents. This chapter will critically evaluate the current theories of the development of prejudice in children, and in light of their limitations it will also consider some of the

most relevant individual difference factors that are associated with prejudice. These factors include ideologies such as Right-Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO), as well as constructs such as homogeneity, entitativity, and essentialism. Brief consideration will also be given to an implicit theory of groups (perceived malleability) although this will be outlined in greater detail in Chapter 2. Whilst these individual difference variables are well explored within the adult literature, they are largely missing from intergroup developmental research. Exploration of these variables offer a promising addition to the developmental intergroup literature.

### **Intergroup Attitudes in Children**

Psychological research has demonstrated that that children can hold implicit biases (e.g., Baron & Banaji, 2006; Rutland, Cameron, Bennett & Ferrell, 2005) and express negative intergroup attitudes from an early age. Young children have been shown to hold more positive views of their own group compared to other groups and this is true of attitudes towards ethnic groups, sports teams, gender-based groups, and even within the minimal group paradigm (e.g., Abrams, 1985; Abrams, Cameron & Rutland, 2003; Nesdale, 2001; Powlishta et al., 1994). Such prejudices and intergroup biases that have their origins in childhood are often embedded by adulthood, and it is generally accepted that the best time for anti-prejudice interventions to take place is during childhood and adolescence before implicit biases become entrenched (Rutland & Killen, 2015).

Recent reviews in this area outline the need for prejudice reduction interventions with children to be derived from, and grounded in, psychological theory (e.g., Cameron & Rutland, 2006; Paluck & Green, 2009), and interventions therefore tend to be largely based around intergroup contact, and to a lesser degree multiple classification skills training and social cognitive training (e.g., empathy). Whilst intergroup contact and social cognitive skills training have been shown to have relatively positive effects on intergroup attitudes (mean effect size  $d = .30$ ; Beelmann & Heinemann, 2014), multiple classification skills training has been less successful (Cameron et al., 2007). What is

missing from the design of these interventions however, and to some degree the developmental literature, is the effect that individual differences, more specifically lay theories or ideologies such as social dominance orientation, right wing authoritarianism and the perceived malleability and homogeneity of groups, have on levels of explicit and implicit biases.

### **The Development of Intergroup Attitudes**

Social learning theory (Bandura, 1971) was historically used to explain the acquisition of prejudice in children via mechanisms such as imitation, paired association learning and reinforcement. Allport (1954) suggested that children aged between 4 and 6 years learned to associate a race label with an emotion and a referent from observing their parent's views, and that between 6 and 12 years they begin to generalize both the label and emotion to a wider social group. Whilst there is little question that children are influenced by the attitudes and behaviours of parents and caregivers (e.g., Degner & Dalege, 2013), social learning theory is unable to account for development or age-related changes in prejudice in children for two main reasons. It cannot adequately explain why prejudice increases up until around 5 years of age and declines after the age of seven years, and it cannot explain why some children's attitudes towards social groups differ from those of their parents or caregivers.

In response to the inadequacies of the learning theory in explaining the development of prejudice, and influenced by stage theories of development such as that of Piaget (1962), the Social Cognitive Developmental Theory (SCDT) of prejudice was proposed and has become arguably the most influential theory of children's intergroup attitudes over the last two or three decades (Aboud, 1988; Bigler & Liben, 2006; Spears-Brown & Bigler, 2004).

## **Social Cognitive Developmental Theory**

SCDT was founded on both cognitive developmental theory (Piaget, 1962) and the application of this theory to social development (Kohlberg, 1969). It is inductively based on empirical evidence that children exhibit high levels of prejudice at the ages of 4 and 5 years and that these levels decline after 7 years of age (Aboud, 1980; Clark et al., 1980; Doyle & Aboud, 1995; Duckitt et al., 1999; Katz et al., 1975).

Two major propositions underpin the socio cognitive account of prejudice development in children: Self-Group-Individual focus and Affective-Perceptual-Cognitive processes (Aboud, 1988). The age-related changes in prejudice are mediated by a change in the target focus of children. Very early in life children are egocentric in terms of their cognition, by focusing only on themselves judgments about others may be distorted, and a child's own salient opinion cannot be disregarded when making a judgement about another individual (Higgins, 1981). With time children become aware of their affiliation with groups and are considered to be more sociocentric; holding a positive view of their group and a negative view of other groups as correct, and peaking in terms of their levels of prejudice. The theory argues that children at this age are cognitively immature, they see the world in bi-polar terms and cannot process multiple classifications; this underdeveloped cognitive ability does not allow them to perceive people of different groups in individualised terms (e.g., perceiving people from a different racial group as hard-working, confident, friendly, warm etc.)

After the age of around 7 or 8 years however, a cognitive shift occurs in children's development which changes the focus from the group to the individual. This cognitive development enables children to make judgments about individuals based on their unique qualities and minimizes the use of group category-based information (Katz, et al., 1975); children are therefore able to perceive differences between people within groups, and similarities in individuals from different groups. This development is also accompanied by an improvement in perspective taking and the shift from sequential to simultaneous perspective taking means that children of this age are now



able to compare two perspectives and reconcile them. These developments map onto the decline in prejudice at this age, and are supported by a large body of evidence that demonstrate these age-related patterns in the development of children's prejudice (e.g., Aboud, 1988; Aboud & Amato, 2001).

Running parallel, and possibly overlapping, with the cognitive shift to multiple classification, a developmental shift also occurs in terms of which of three psychological processes – affective, perceptual and cognitive – dominate a child's judgment. The theory proposes that in the early egocentric years, affective processes (e.g., emotional attachment) dominate a child's judgment. During the sociocentric phase children's thoughts are generally dominated by perceptual processes, such as identifying the self and others through observable cues. The development in multiple classification at around 7 or 8 years of age, is thought to be largely accompanied by a shift to a cognitive dominance in the thought processes of children. This shift to a reliance on cognitive thought processes underpins the ability to infer internal and abstract qualities about people and enables children to understand that outgroup members can be similar to ingroup members despite looking different, and that ingroup members can be different from one-another despite looking physically similar (Aboud, 2003, Bigler & Liben, 1993).

### **Limitations of the Social Cognitive Developmental Theory**

SCDT predicts that prejudice in young children should peak at around the age of 5 years, and decline from around 7 or 8 years of age, and whilst there is robust evidence that this developmental pattern exists to some degree, this trend is not always evident. The theory is predominantly based on research regarding race and ethnicity, and struggles to account for the development of prejudice across all domains, in particular nationality (e.g., Bigler, et al., 1997; Kinket & Verkuyten, 1999; Rutland, 1999; Tajfel et al., 1972; Verkuyten, 2001) and gender (Brown, 1995; Maccoby, 1988; Powlisha et al., 1994; Yee & Brown, 1994). Longitudinal data from a study on national identity

(Rutland, 1999) poses particular problems for the SCDT. The data from this study suggests that in the year 1995 6–8-year-olds in the U.K showed no national ingroup bias, but such bias was found in over 10-year-olds. In 1996 and 1997 there was a significant increase in national ingroup bias amongst all age groups and this increase was largely accounted for by children's level of national self-category salience. This increase in national ingroup salience was particularly true amongst the younger participants and was thought to reflect the presence of the European football championships being held in the UK in 1996. Studies such as these are in line with other research which draws on Social Identity Theory (e.g., Bigler et al., 1997; Kinket & Verkuyten, 1999) and which suggest that rather than there being a stable age-related pattern in the development of children's ingroup biases, self-category salience also has a strong role to play.

SCDT clearly cannot account for the results of studies such those described above. Whilst SIT can account for some of the findings, it has also become widely accepted that the development of prejudice may also be dependent upon children's abilities to self-regulate the expression of prejudice according to social norms (Brown, 1995; Powlishta et al., 1994; Rutland, 1999). As children become older, they internalise normative beliefs about what are legitimate forms of prejudice, and what admissible forms they may express (e.g., Macrae, et al., 1998). This goes some way to explaining why in the longitudinal study by Rutland (1999) children between 7 and 9 years of age show low prejudice towards ethnic groups, but higher prejudice with regards to national groups.

Further evidence supports the idea that there is a dissociation between the implicit and explicit attitudes of children and young people. For example, young females show less explicit bias against overweight bodies with increasing age (Powlishta et al., 1994) despite subscribing to an implicit attitude of beauty that does not include an overweight body image (Balaam & Haslam, 1998; Muth & Cash, 1997). Children become increasingly aware of implicit associations that are connected to social categories, but whether or not they use and endorse these associations depends upon the norms of the society or group within which the child lives.

The SCDT provides an account for understanding how the development of prejudice may be understood within a cognitive framework. As the evidence above has shown this framework does not allow for explanations of the development of all types of prejudice, or why some dimensions of human variation become foundations for stereotyping, prejudice and discrimination over and above others (e.g., gender but not left/right handedness). Neither does it present applications for how prejudice may be prevented. A further theory 'developmental intergroup theory' (DIT) has been put forward to address these issues (Bigler & Liben, 2006).

### **Developmental Intergroup Theory**

The DIT is grounded in two complementary theoretical approaches: cognitive developmental theory (e.g., Piaget, 1962) and intergroup theories of social identity (Tajfel & Turner, 1986) and self-categorization (Turner et al., 1987). With these theoretical approaches as a basis, and grounded in empirical research, it describes the foundations of how, and the mechanisms by which, children determine which groups should be the targets of stereotyping and prejudice, how they associate traits with groups and how they develop prejudice towards those groups.

The theory proposes three core processes as contributing to the formation of stereotypes and prejudice in children: i) establishing psychological salience of person attributes, ii) categorizing encountered individuals by salient dimension and, iii) developing stereotypes and prejudices concerning salient social groups. Each of these three processes will be briefly outlined.

Whilst almost all explanations of stereotyping are based on cognitive principles of categorizing, only Turner et al's (1987) Self-Categorization Theory explains why particular social categories are singled out as salient for categorization over and above others. DIT adopts this approach and rejects the notion that people are 'hard wired' through evolutionary processes to select specific dimensions as salient for categorization. Instead, the theory posits that perceptually

salient features (such as gender, race, attractiveness etc.) rather than perceptually indistinct features (such as nationality, or political affiliation) form the basis of social stereotyping.

Proportional group size also affects which social groups are stereotyped, with smaller (minority) groups being more distinctive than larger majority groups, and therefore making them more likely targets of stereotyping. Explicit labelling of groups or group members by adults, and implicit mechanisms (social grouping without explanation) also increase the psychological salience of grouping criteria for children.

The second of the three core processes of the DIT focuses on children's ability to categorise individuals into groups. As with adults, children categorize stimuli in order to reduce cognitive complexity and structure knowledge, and they classify individuals into groups using the dimensions that are psychologically salient. The way in which children categorize individuals and the degree to which this is achieved depends on classification skills, and in this way, DIT agrees with SCDT that such skills undergo age-related changes.

It is widely accepted that the mere process of categorization results in cognitive processes that lead to the attachment of meanings to social groups in the form of stereotypes (beliefs) and prejudice (affect). DIT outlines a number of factors that steer the acquisition of stereotype content and expression of prejudice following categorization by salient dimension.

Two internal processes and two external processes drive the attachment of value labels or meaning to psychologically salient groups in children. Internal processes are constructive and involve self-generation of links between social groups, attributes and affect. One such internal process involves the formation of essentialist beliefs for example (Gelman, 2003), which lead individuals to believe that members of a social category who share some visible markers of group membership also share important, non-obvious, unseen and inherent traits or qualities. The second internal process is ingroup bias – children, like adults, often view their group as superior to outgroups and

when stereotype content is generated through a constructive process (such as via essentialism) children can construct category attribute ties favouring the ingroup (Bigler et al., 1997).

External processes also play a role in how children develop stereotype and prejudices to salient groups. Children are exposed to statements which link social groups to attributes (e.g., 'women are caring') and such statements hold power on two levels: they mark the social group as important, and they provide information about attributes linked to the group. In addition, children acquire stereotypical knowledge via statistical learning of group-to-attribute relations (e.g., all U.S. presidents being male).

The DIT builds upon previous developmental theories of prejudice by outlining how environmental factors can increase the psychological salience of particular social groups and how internal and external processes can lead to the development of stereotyping and prejudices towards those salient groups in children. In doing so it provides answers to some of the limitations of the SCDT, however the cognitive elements of both theories are challenged by the developmental model of subjective group dynamics (DSGD, Abrams et al., 2009) and in particular the increasing awareness of social understanding and group loyalty in children as they get older.

### **The Social Understanding Hypothesis**

Further challenges to the theories outlined above, and in particular to cognitive theories of the development of prejudice in children, comes from work on the developmental model of subjective group dynamics (DSGD; Abrams et al., 2009), which proposes that with time and experience children develop reasoning skills which allow them to anticipate differences in the perspectives of ingroup and outgroup members. Related work (Abrams, 2011) challenges the argument that prejudice is a product of egocentrism (seen in younger children) and suggests that prejudice reduction is not an inevitable consequence of cognitive development. The study by

Abrams (2011) employed a minimal group paradigm with two age groups of children (6-7 years, 9-10 years) to test three hypotheses related to children's intergroup bias: the oppositeness heuristic hypothesis, the egocentrism hypothesis and the social understanding hypothesis.

The latter two hypotheses are of particular interest here. The egocentrism hypothesis states that younger children have lower social perspective taking abilities, egocentrically assume that peers share their own attitudes and therefore express more intergroup bias. The social understanding hypothesis by contrast, suggests that less egocentric thinking may potentially result in greater ingroup bias, because children develop a greater awareness of group membership and norms around group loyalty. According to Abrams (2011, p. 1583) "The social understanding hypothesis assumes that increased perspective-taking ability and increased general understanding of group loyalty norms should be associated with greater expectation of similarity between a child's own intergroup attitudes and those of ingroup members, but greater dissimilarity with those of outgroup members (differential projection)."

The study by Abrams (2011) provided a relatively pure test of the three intergroup bias hypotheses, and results provided strong evidence for the social understanding hypothesis as a basis for children's intergroup bias. Whilst children showed egocentric bias when it came to judging others' preferences for neutral items, with age they also understood that ingroups and outgroups are more likely to have contrasting evaluations of each other. Children can show egocentric bias when it comes to item preference, but their expectations can also take the form of differential projection for target evaluations. More specifically the relationship between egocentrism and intergroup bias was not the same as the relationship of age and egocentric bias; children who had more advanced perspective taking abilities expected a larger contrast between the evaluations of ingroups and outgroups and as a result expressed higher levels of intergroup bias. Although perspective taking does typically improve with age, as outlined in CDT (Piaget, 1962), it is also associated with a growing perception of oppositional group evaluation, and as such influences

children's intergroup biases. Prejudice becomes a more dynamic social process based on children's understanding about the implications of intergroup relationships for intragroup relationships, and vice versa, and this is the means through which they sustain positive identity. Therefore, the efforts to reduce intergroup bias via social-cognitive training may not be as straightforward as previously thought and may in fact make children more aware of intergroup differentiation.

Together the theories reviewed above propose a good account of how prejudice develops in terms of cognition and intergroup processes. However, what none of these theories takes in to consideration, or accounts for, are individual differences amongst children. Whilst the relationship of individual differences with intergroup bias and prejudice constitutes a large body of research amongst studies with adults, they have featured far less often as factors within developmental theories of prejudice. The next section will discuss some of the most relevant individual differences to prejudice research.

### **The Role of Individual Differences and Lay Theories in the Development of Prejudice**

The SCDT provides a robust framework upon which most contemporary research exploring the development of intergroup attitudes and prejudice is based upon. However, in addition to criticisms of the theory as outlined above, it should be noted that this developmental sequence is not always consistent, and abundant evidence exists that children, adolescents and adults, express intergroup prejudice to multiple groups (e.g., Abrams, 1985; Bennett et al, 1998; Rutland, 1999). Not all older children or adults who are cognitively mature follow the predicted developmental pattern by showing low levels of prejudice. Whilst this is answered to some degree by DSGD (Abrams et al., 2009) these observations have led some researchers to view social cognition as motivated or process orientated, whereby individuals can apply cognitive skills such as multiple classification when making judgments about members of outgroups, but may not always be motivated to do so. As Levy (1999, p747) states 'these cognitive skills that are acquired with age are also known to express themselves

as individual differences among mature perceivers and influence levels of stereotyping.’ What is not addressed however, is whether children and adolescents who have developed the appropriate cognitive skills also ‘choose’ whether to use them, or not, when making judgements about members of ingroups and outgroups. Cognitive skills that develop in childhood can be viewed as an individual difference, and whether children and adults are motivated to employ these skills when making judgements about others may depend upon, be affected by, or run parallel to, other individual difference variables and ideologies.

A host of individual difference variables have been shown to significantly influence levels of stereotyping and prejudice amongst adults. These person variables include personality factors (e.g., Akrami et al., 2011; Hodson & Ashton, 2009), cognitive style (e.g., Dhont et al., 2013; Roets & van Hiel, 2011) religiosity (e.g., Batson & Stocks, 2005; Hunsberger & Jackson, 2005), essentialism (e.g., Haslam et al., 2002; Mandalaywala et al., 2018), Social Dominance Orientation (SDO; e.g., Sibley & Duckitt, 2008), Right Wing Authoritarianism (RWA; Sibley & Duckitt, 2008) and broader lay theories such as the Protestant Work Ethic (PWE; e.g., Rosenthal et al., 2011) and malleability (e.g., Levy, Stroessner & Dweck, 1998 ). Despite their collective and significant influence on prejudice towards multiple groups in adults (Hodson & Dhont, 2015) research into the development of these factors and their subsequent relationship to prejudice in children and adolescents is scant within the developmental literature.

Whilst all of these factors have potential impact on prejudice in children and young people the variables of particular interest to the current work include those which can be thought of as lay theories or ideological frameworks – SDO, RWA, essentialism (including elements of homogeneity and entitativity) and in particular perceived malleability. Traditionally SDO and RWA are not treated as lay theories in the literature, however there is evidence that they are socially learned and reinforced (e.g., Duriez & Soenens, 2009), and by recasting them as theories the mechanisms for change become clearer than if they are thought of as deep-rooted person variables.



## **The Development of Right Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO)**

Two of the main factors that influence the perception, judgments and actions towards other people are Right Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO). Both are widely researched with adult participants and are estimated to account for around 50% of the variance in prejudice (Altemeyer, 1998; Son Hing & Zanna, 2010; Van Hiel & Mervielde, 2005). Whilst studies and measures are beginning to emerge for SDO amongst children and adolescents, given their influence on prejudiced attitudes in adults, there is surprisingly little in the literature about how either ideology develops.

Whilst RWA may impact levels of prejudice in childhood, there is a more tangible link between SDO and the focus of this thesis - implicit theories about groups. In simple terms, the extent to which one believes that groups can change (malleability) may be associated with the degree to which one believes that change is desirable and to what extent social hierarchy can and should be impacted (SDO) (e.g., Kahn et al., 2018). For these reasons, a short summary of the development of SDO (and not RWA) is included in this section, and the possible links between SDO and Implicit theories of groups are discussed in Chapter 2.

### **SDO**

SDO (Pratto et al., 1994) refers to a preference for intergroup relations to be hierarchical rather than equal in nature. People high in SDO are more likely to endorse ideologies that legitimize unequal distribution of social values, disagree with policies that promote equality between groups, and agree with more social discriminatory policies such as the death penalty. High levels of SDO makes people vulnerable to holding prejudiced attitudes because they tend to be more competitive (Altemeyer, 1998) and view the world as a ruthless place in which everyone needs to maximize their personal benefits. Research again suggests that SDO is socially learned via modelling parent's views (e.g., Altemeyer, 1998; Duriez et al., 2008), is well represented across cultures (Pratto et al., 1994) and may be connected with the roles people play.

Intergenerational research on the development of SDO in the 2000s led to the general acceptance that because it was influenced by the interaction of socialisation and genetic factors, SDO (and RWA) were unlikely to develop before adolescence (e.g., Altemeyer, 1998; Duckitt, 2001; Van Hiel et al., 2004). Only much more recently has research begun to explore the possibility of the development of SDO (but not RWA) in younger children (e.g., Cadamuro et al., 2021; Tagar et al., 2017). Furthermore, research suggests that concordance in racism between parents and adolescents could be largely accounted for by the concordance in SDO and RWA in parents and their adolescent children (Duriez & Soenens, 2009).

In contrast to the assumption that SDO does not emerge until mid to late adolescence, there is evidence to suggest that children are cognitively equipped to notice resource inequalities from early in their development (e.g., Elenbaas et al., 2020; Thomsen, 2020). Children's own status or the status of their group can lead them to deny or minimize the extent of social inequalities as early as 8 years of age (Emler & Dickinson, 1985; Rizzo & Killen, 2020), and by pre-school children believe that greater effort entitles a person to a greater share of rewards (Rizzo et al., 2016).

Following on from the acknowledgement that even young children have an awareness of group fairness and inequalities, Tagar et al., (2017) conducted a study to examine the behavioural expression of SDO in early childhood. In order to do this, they examined sensitivity to intergroup inequality, a defining characteristic of SDO, in preschool age children. Using measures of parental SDO and child resource allocation in unfair ingroup and control conditions, results revealed that children's sensitivity to the violation of intergroup fairness varied systematically with parental levels of SDO. That is, children of parents scoring low in SDO penalised members of the ingroup when they violated rules of fairness in the intergroup context, but children of parents scoring high in SDO showed no such pattern of penalisation. The study confirms that parents influence their children's levels of SDO, however it also for the first time supports the idea that the expression of SDO occurs in the preschool years, much earlier in childhood than previously thought.

Another recent study by Cadamuro et al. (2021) argues that SDO develops in middle-late childhood, alongside cognitive developments in multiple classification abilities (Aboud, 2003) and advances in theory of mind and perspective taking (Abrams et al., 2008). These advances in children's thinking, together with the development of morality allow for a better understanding of group norms, the positioning of groups in society and differences in group status and power and underlie the formation of SDO beliefs at this age. The study by Cadamuro et al., (2021) aimed to validate the long and short versions of SDO6 for use with children and explore associations between SDO and attitudinal and stereotypic bias. Paralleling results from adult studies, the findings provided support for a two-factorial structure of SDO; the two dimensions were SDO-Dominance and SDO-Anti-egalitarianism. Furthermore, positive associations were found between both factors of SDO and stereotypical and attitudinal biases, suggesting that SDO does indeed influence intergroup factors in childhood.

SDO is strongly linked to higher levels of prejudice in adults (Hodson & Dhont, 2015), and a small, but growing body of recent research is beginning to suggest that not only does SDO develop in children at a much younger age than previously thought but that it is also related to intergroup biases. This emerging data suggests that, whilst having been assumed to play such a marginal role in the development of negative intergroup attitudes in children for so long, the time has now come to pay more attention to the effects individual differences, such as SDO, may have on the development of prejudice in childhood and adolescence.

### **The Development of Essentialism and Related Concepts**

Homogeneity, entitativity and essentialism have been extensively researched both within psychology and other disciplines, however any concordance on their meaning or relationship has yet to be agreed upon. The majority of theorists do agree that whilst the terms are often mistakenly used interchangeably, they do represent three distinct concepts, they co-vary and that the

relationship between them, and with intergroup relations and prejudice, is far from straight forward (Yzerbyt, Judd & Corneille, 2004). Their inclusion in this area of research stems in particular from the question of how and when people come to perceive groups as groups and what elements are involved in the perception of a group?

Research in this area has historically focused on entitativity, variability and essentialism as qualities of groups themselves, with groups having defining characteristics that affect how they are perceived. Once people have been categorized into groups questions revolve around how the perceiver may (or may not) bestow that group with certain features or properties. The three factors (homogeneity, entitativity, and essentialism) have been discussed as important in this respect and for their influence on stereotyping, but in this thesis, I argue that perceived malleability should be added to this list and together the four constructs form an implicit theory of groups.

Whilst it is virtually impossible to discuss either homogeneity, essentialism or entitativity in isolation from each other, the following discussion aims to outline the evidence for each of these 'lay theories' of groups and their importance to a broad vision of an implicit group theory alongside perceived malleability. It will also discuss more recent research that extends the view of these three factors as qualities of a group in favour of a theory which views them as a priori beliefs about human nature, and more akin to an implicit theory. It will be argued that this implicit theory, alongside SDO and RWA, is an individual difference variable that influences children's levels of prejudice.

### **Perceived Outgroup Homogeneity**

Tajfel (1969, 1982), recognised that the mere act of social categorization accentuates intergroup differences, and is one of the factors which leads to the outgroup homogeneity effect. This effect leads to people judging members of an outgroup as more similar to one another, minimizing individual differences, whilst at the same time maximising the uniqueness or variability of

the ingroup members. The outgroup homogeneity effect has been demonstrated in numerous research studies across a wide variety of settings, social groups and with diverse measures of perceived variability (e.g., Boldry et al., 2007; Haslam et al., 1995; Shilo et al., 2018). It is well established as a small but robust effect (Mullen & Hu, 1989).

Numerous seemingly reasonable explanations have been provided for the outgroup homogeneity effect, many of which have been supported empirically (see Hee et al., 2011; Mullen & Hu, 1989). Reporting greater variability within the ingroup has been suggested as a method of bolstering individuality (Fromkin, 1973), thereby both enhancing positive social identity for the ingroup (Ostrom & Sedikides, 1992), and discounting the consensus within a group as being due to a common bias (Goethals & Darley, 1977). More time spent with the ingroup means we experience a greater diversity and variability within an ingroup compared to an outgroup (Quattrone & Jones, 1980) and furthermore, perceiving the outgroup as homogeneous makes the outgroup more predictable, provokes less anxiety and prepares individuals for potential future intergroup interactions (Irwin et al., 1967; Ostrom & Sedikides, 1992). Meta-analytical research into the outgroup homogeneity effect also supports the notion that perceived outgroup homogeneity makes the outgroup more predictable and less anxiety provoking. Results suggest that the type of group used in research of this kind contributes towards the effect size of relative heterogeneity (Mullen & Hu, 1989). Real groups (non-minimal) produce the strongest effect size when compared with artificial (minimal) groups and researchers have suggested that the realness of a group promotes outgroup homogeneity in order to make them more predictable, less threatening and less anxiety provoking (Boldry et al., 2007; Mullen & Hu, 1989).

### **Perceived Outgroup Homogeneity and the expression of stereotypes**

The outgroup homogeneity effect is a theoretically important effect when considering stereotyping. Outgroup homogeneity promotes the deindividuation of outgroup members and

fosters in group favouritism (Miller & Brewer, 1986). Furthermore, an outgroup that is perceived as homogenous is more likely to be ascribed stereotypical characteristics. When groups are viewed as homogeneous, members can be perceived as exemplary of their group, particularly in the absence or ignorance of any individuating information. In this respect perceived outgroup homogeneity has obvious relevance to stereotyping. One of the pivotal aspects of stereotyping is overgeneralisation (Allport, 1954), and when conditions exist that cultivate perceptions of group homogeneity, this makes it easier to form and apply stereotypes to a group. In support of this, evidence has demonstrated that people more readily ascribe stereotypic characteristics to outgroup members and counter-stereotypic characteristics to ingroup members (Park & Rothbart, 1982).

Although considerable evidence exists for the outgroup homogeneity effect, researchers have also demonstrated that there are limits to its influence and it is therefore not a universal principle (Simon, 1992). Moderators which affect the prevalence of perceived outgroup homogeneity include, but are not restricted to, group power (e.g., Guinote et al., 2002), group size (e.g., Simon & Brown, 1987), group-membership salience (e.g., Lee & Ottati, 1995), group status (e.g., Boldry & Kashy, 1999), and ingroup identification (e.g., De Cremer, 2001). In addition to this considerable list is the notion that the effect varies as a function of the stereotypicality of the traits on which judgements about variability are made (Simon & Pettigrew, 1990). Evidence exists demonstrating that people ascribe ingroup stereotypical traits to the ingroup and outgroup stereotypical traits to the outgroup; and that this effect is an expression of trait possession (Rubin & Badea, 2007).

### **The development of perceived outgroup homogeneity**

As with other related concepts, research into children and young people's perceptions of group homogeneity are relatively few in comparison to the studies conducted with adults, with the developmental intergroup research primarily focusing on ingroup favouritism, prejudice and

stereotyping. Research suggests that it is only after the age of around 7 years that children begin to include psychological, as well as physical, traits in their group conceptions (Monterio & Ventura, 1997), but despite these differences both children and adults form categories along the same principles (Mervis, 1987). Furthermore, this categorical knowledge affects the decisions children make in the same way as it does for adults (Martin, 1991).

Research into perceived homogeneity in children has focused almost exclusively on race and ethnicity. Evidence suggests that younger children perceive other children from the same race as more alike than children from different races, whilst slightly older children (9 years) perceive more variability within groups and less between groups; with age, children focus less on race as a distinguishing feature (Doyle & Aboud, 1995; Katz et al., 1975). Majority children, (European-American), have also been found to attribute greater homogeneity to outgroup peer dyads (African-American) in both heterogeneous and homogeneous schools (McGlothlin, 2004; McGlothlin et al., 2005). Further studies by Guinote et al. (2007), have demonstrated that white children (aged 6-7 years, and 9-10 years) perceive greater ingroup than outgroup heterogeneity, and Black children perceive more outgroup than ingroup heterogeneity. Furthermore, white children were found to favour their ingroup but Black children did not demonstrate such a preference. Interestingly there was no effect of development in the study, suggesting that the asymmetry present in perceived ingroup and outgroup variability is already present by the age of around 6.5 years. In the second study by Guinote et al. (2007) these results were replicated with boys and girls; boys perceived greater variability within the ingroup compared to the outgroup, whilst girls perceived the outgroup as more variable compared to the ingroup. No ingroup favouritism was found, and as in the first study there was no effect of development. Both these studies support the evidence from the adult data that greater perceived outgroup homogeneity is a function of group status, however they do not clarify the issue of whether the effects are driven by the target group or perceiver effects (i.e., membership to a high or low status group).

Another study of interest explored the outgroup homogeneity effect across development, cross culturally and with respect to biological and psychological properties of groups (Shilo et al., 2018). Shilo and colleagues assessed children's judgments of in and outgroup variability through their inductive reasoning strategies; they hypothesised that children would make inductive inferences about the entire outgroup from more limited information about outgroup members than they would for the ingroup. Given robust evidence that children hold essentialist beliefs about social categories by the age of 5 or 6 (e.g. Birnbaum et al., 2010; Kinzler & Dautel, 2012; Rhodes & Gelman, 2009), two age groups were included in the study: 5- and 8-year-olds. Results indicated that children in both age groups and cultures (Germany and Israel), selected homogeneous samples of group members more often when inferring the biological properties of the outgroup compared to the ingroup members; no such effect was seen for psychological properties. This suggests that the readiness to homogenize outgroups on some property dimension (in this case biological) appears structurally similar across cultures. However, the comparative properties used for the biological and psychological traits of the study is questionable. Biological properties referred to factors such as the existence of a particular region of the brain, whereas psychological properties represented more flexible and fluctuating properties such as favourite foods. More comparable properties on the two dimensions are needed to make a more reliable comparison between perceived biological and psychological group homogeneity in children.

Given that the evidence for a developmental perspective of homogeneity is scant and inconclusive, taken together with evidence from the adult data that homogeneity effects are associated with negative attitudes towards outgroups, further investigation of these effects are warranted. In particular the establishment of reliable measures of group homogeneity are needed in addition to more clarity on the development of perceptions of group homogeneity with age.



## **Entitativity**

Another concept relevant to the discussion on an implicit theory of groups is that of entitativity. Entitativity was first introduced over 50 years ago by Campbell (1958) who explained it in terms of the degree to which a group or individual had the nature of an entity; a coherent and unified 'realness'. Campbell suggested that entitativity could be understood in either (or both) of two ways: as properties of groups themselves or as theories that perceivers hold about groups. The former interpretation provided the focus for much of the initial empirical research on entitativity; identifying properties of social groups that may lead to higher or lower evaluations of groups as entitative. The later interpretation underpins expected similarities between group members and endows the group with both social meaning and predictive value.

More recently the concept of entitativity as a feature of group perception has gained further attention and whilst research in this area is plentiful a more precise definition has not been firmly established. What factors constitute entitativity is open to debate; for example, similarity of group members, together with essentialist notions which underpin stereotypic conceptions of social categories have been emphasised as important (Yzerbyt et al. 1997; Yzerbyt et al., 1998), as has the importance for 'groupness' of the organization and structure of a group (Hamilton et al., 1998). Common fate, common history, common attributes and common purpose have all been put forward as elements that make up entitativity (Brewer et al., 2004), however the nature of this 'social glue' that is perceived to hold people together as a group is a difficult question to answer and may depend to some extent on the type of group being discussed (Hamilton et al., 2004).

## **Entitativity and type of group**

With so many potential cues to the perception of entitativity, if groups can vary to the extent that they are perceived as entitative and if entitativity influences how people think about

groups then it is important to understand both. Parallel studies in the U.S and Poland which explored the nature of group types and which employed either a ratings method or sorting task, produced very similar results (Lickel et al., 2000). Participants in both countries and using both methods generated the same clusters of 4 types of groups: intimacy groups (e.g., family), task groups (e.g., a jury, work colleagues), social categories (e.g., men, women, Asian people) and loose associations (e.g., people who like rock music, people in line at the supermarket). Whilst this evidence relies on consciously motivated tasks to establish the taxonomy of groups, further support that this typology occurs implicitly and spontaneously when encoding social information has also been demonstrated in memory tasks (e.g., Sherman et al., 2001).

These studies demonstrate, that each type of group has certain properties associated with it; no single feature distinguishes one group from another, rather the pattern of properties differ meaningfully and distinguish the groups from each other. For example, social categories are perceived as having low permeability but long duration, being large in size but low in interaction and common goals; intimacy groups by contrast are perceived as small, having high levels of interaction, common outcomes and goals, but being low in permeability.

The four types of groups were also demonstrated to differ in terms of their level of perceived entitativity. Analysis of entitativity ratings of the groups revealed that intimacy groups were rated as having the highest levels of entitativity, with task groups, social categories and loose associations following in that order. Particular properties of the groups also predicted perceived levels of entitativity. Consistent evidence demonstrated that perception of interaction, group-member similarity, common outcomes and goals, and importance of the group were strongly intercorrelated, and all highly correlated with perceptions of entitativity. Group size, duration, and permeability were shown to have weaker, but not unimportant, relationships to entitativity. Interestingly group member interaction was the single strongest predictor of group entitativity.

## **The Development of Entitativity**

Whilst the comprehensive study by Lickel et al. (2000) identified both the antecedents associated with perceived entitativity and the type of group more likely to be perceived as higher in entitativity, these findings are restricted to adults. Relatively little is known about the development of entitativity in children and adolescents. The social world is composed of an array of different groups and relationships, and children as well as adults, have to overcome the challenge of deciphering which social groups are meaningful. This process is essential for children not only to help them understand the behaviour of individual group members but also in the prediction of intergroup processes and how group members might expect to relate to one another. Very early in childhood, around 4 – 6 years, children are able to predict what they think others will do or like on the basis of a group membership such as ethnicity or gender (e.g., Diesendruck & Halevi, 2006; McGlothlin & Killen, 2006; Waxman, 2010). Furthermore, given the information that two people are from the same or different groups enables children as young as four years of age to make inferences about whether those individuals will harm each other, and by six years old make inferences about whether they will help each other (Rhodes, 2012). By seven years of age, and given the same type of information, children can infer whether these two individuals will be friends with each other (McGlothlin et al., 2005). In spite of its contribution to knowledge in this area this type of research typically focuses on the expectations of the individual members of groups to the detriment of research on the expectations and perceptions of the group as a unit; neither do the studies tell us how children perceive and understand types of groups or group entitativity.

To the best of the author's knowledge there are only two studies which aim to redress this balance. The first by Sviryzdenka et al. (2010), set out to answer two main research questions: do children perceive different groups as having different levels of entitativity, and if so, what group properties determine their understanding of entitativity? Participants were asked to rate 12 groups

selected from the 40 included in the original study by Lickel et al. (2000) in terms of entitativity and 10 other properties. They were also required to sort 30 groups, again based on the Lickel et al. study, into different group types. Both adults and 10-year-old children were included in the study. Because no other study had previously explored children's conceptions of entitativity the researchers only sampled 10-year-olds, rather than younger children, as a sensible first method in establishing broad differences.

The results of the study revealed that both children and adults classify groups in terms of at least the four main group types as seen in previous work (i.e., intimacy groups, task groups, social categories and loose associations). However, children and adults differ in terms of which group properties determine perceived group entitativity. This latter finding confirms the hypothesis that children put more emphasis on concrete properties such as level of interaction in determining entitativity of a group, whilst adults stress more abstract properties such as the importance of the group to its members. These findings align with robust Piagetian theory on the concrete-abstract developmental trend which purports that with increasing age children and adolescents begin to think about group membership less in terms of concrete properties such as behaviour and more in terms of abstract properties such as values and beliefs (Bennett & Sani, 2003).

Additional results from the study suggest that adults put emphasis on the abstract property of similarity amongst groups members to a greater degree than children do; for adults, homogeneity affected the perception of entitativity for intimacy groups, social categories and loose associations, for children homogeneity only determined entitativity for social categories. This study demonstrates that whilst children and adults may structure types of groups in the same way, the properties that determine entitativity of those groups differs and is subject to a developmental trend.

Six years after this study another study was published which explored younger children's perceptions of group types and group entitativity (Plötner et al., 2016). Given the age of the children participating in the study (5-6 years old), the authors argue that the sorting and rating tasks typically

used in this type of research were too complex. Instead, they created prototypes for each of the four types of groups and then asked children to evaluate the prototypes in terms of entitativity and 12 other group characteristics. The 12 other characteristics included were generally based on those used by Lickel et al. (2000) and Svirydenka et al. (2010).

Four main findings emerged from the data. Firstly, whilst children do have some understanding of what a group is, this understanding is limited and when asked to name other types of groups, they are not able to do this as easily as adults can. The second main finding was that when forced to choose the best example of a group young children choose task groups over social categories; collaborative activity within a group provides a stronger example of 'groupness' over and above perceptual similarity. Thirdly, intimacy groups, task groups and social categories are all perceived to be 'real' groups and entitativity judgments were almost identical for all three types; loose associations did not qualify as a real group for younger children because it scored significantly lower in terms of perceived entitativity. This finding is of particular interest as it suggests that whilst younger children have an understanding of groups when compared to adults and older children their perceptions of group entitativity are less nuanced or less developed.

One final finding of interest, was that the children in the study distinguished different types of groups as each having a unique pattern of group characteristics. For example, they judged intimacy and task group members as being loyal, having social obligations and behaving in a prosocial manner towards each other. In contrast social category members were judged as being similar to one another and having properties which marked those similarities; the children inferred similarities in traits from simply observing a likeness in the way people look. However, it should be noted that the social category in this study was portrayed as people who wear the same 'outfits' (in this case scouting uniforms); it is unclear therefore if children would expect people in social categories such as those based on nationality or gender to be as similar to each other as was found in the current study. Ultimately however, this study provides the first evidence that younger children

hold an intuitive theory about different types of groups and that these have an influence on how they perceive those groups, how members behave within those groups and also that they use this typology to predict inter and intra group interaction.

Taken together, what is evident from the results of these studies is that much remains to be discovered about the development of entitativity perceptions and conceptions, particularly in adolescence. Both younger and older children develop a typology of groups similar to that seen in adults, they also develop an understanding of perceived entitativity of groups. What is less clear is how these perceptions of groups develop through to adulthood, how they interact with other implicit theories of groups such as malleability, or what the consequences of the development of such implicit theories are for intergroup interactions.

### **Essentialism**

Essentialism is closely associated with perceived group homogeneity and entitativity, and often studied alongside such factors (e.g., Yzerbyt, Judd & Corneille, 2004). Although Allport formally introduced the term 'essentialism' nearly 70 years ago in his seminal work and discussion of prejudice (1954), it was only in the late 1980s that this construct was reinstated by Medin (1989) in his work on categorization. For Medin, psychological essentialism referred to the tendency of people 'to act as if things (objects) have essences or underlying natures that make them the things they are' (Medin, 1989, p1476).

Although essentialism, entitativity and homogeneity, often co-vary it has been suggested that unlike homogeneity and entitativity, essentialism has a different conceptual basis and implies attributional consequences that the other two factors do not (Yzerbyt, Judd & Corneille, 2004). Essentialism does not just provide a description about what makes a group (e.g., similarity, groupness) but also a theory about why that might matter and what that implies. For example, the

attributional process suggests a reason why the members are perceived as similar and the group as entitative: it is recognised as a group and its members are similar because they share an underlying essence that is stable and fixed. This implied theory about the underlying essence that members of a group may share has led to a 'natural kinds' explanation, similar to that seen in biological categories within the natural world, and one which has been the focus of much research into two qualitatively different kinds of categories: natural kinds and human artifacts.

Natural kind categories are thought of as reflecting some underlying essence, usually biological in nature, that delineate one group from another; within the social world such essences are often (mis) attributed to groups of people, often social categories, and these provide people with the causal linkage between surface characteristics and deeper features. By acting as if objects have essences, we may categorize individuals such as boys and girls on surface features such as hair length and clothing for example, and believe that these features are indicative of deeper underlying essences of masculinity and femininity. Despite the fact that social categories are artifacts people often erroneously attribute essences to such groups and treat them as natural kinds.

An important consequence of viewing social categories as natural kinds is that it allows inferences to be drawn about the group - it has inductive potential. One of these inferences is that members of a group share an underlying essence, and this subsequently may allow the overgeneralisation of other shared traits commonly seen in stereotyping. In addition, a second property of natural kinds is that membership is unalterable and therefore characteristics are stable over time. Rothbart & Taylor (1992) argued that holding essentialist beliefs is akin to perceiving them as natural kinds and that these beliefs can lead to the (mis) perception of 'real' differences between groups. They propose that essentialist beliefs are made up of two components: fixed beliefs (differences between people are seen as unalterable), and being inductively potent (they are rich in information and meaning).

## The Development of Essentialism

Understanding how social categorization develops is critical for cognitive and social development and also for the development of social stereotyping and prejudice, however few studies have looked at how or why essentialism develops in children, and even less in adolescents. Rhodes (2013) proposed that children intuitively map theories about the structure of the social world along two dimensions: social categories as natural kinds and social categories as marking people who are obligated to one another (the first of these is the most relevant to the current discussion).

Hirschfeld (1996) suggested that natural kinds guide the development of social categorization, and therefore children view membership to a social category, in a similar manner to the way they perceive animals, as stable, determined by birth and predictive of physical and behavioural properties. By the ages of 3-5 years children treat gender as a natural kind; they view it as marking an objective structure (Rhodes & Gelman, 2009; Rhodes, Gelman & Karuza, 2014), stable, determined by birth and with predictive power (Taylor et al., 2009), and also an indicator of people who are similar (Diesendruck & Halevi, 2006; Gelman et al., 1986). However, whilst it is agreed that children develop essentialist beliefs about gender at a very young age there is mixed evidence regarding the emergence of essentialist beliefs about other social categories in childhood

Despite this early appearance of essentialist beliefs about gender, data suggests that children do not map these types of beliefs onto all groups or categories, as they do in the natural world, but rather they apply them to social categories selectively. Hirschfeld (1995), proposed that children as young as 4 years of age understood that features such as skin colour are inherited and stable and that this was indicative of their understanding of race as a natural kind. However, the study did not test whether children viewed those features as inductively informative nor as marking types of people. In fact, children treat many features (such as eye colour/hair colour) as inherited



and stable but do not view them as indicative of natural kinds; further evidence to support this comes from studies using novel categories – the young children in these studies were found to be able to distinguish between categorizing people and treating those categories as natural kinds (e.g., Bigler & Liben, 2007; Dunham et al., 2011; Kalish & Lawson, 2008). Indeed, Rhodes & Gelman (2009) found that children treat race as a subjective category, unlike gender or animal species which they view as more objective. Evidence also demonstrates that pre-school children do not expect people of the same race to share novel psychological properties (Shutts et al., 2014).

In contrast to essentialist beliefs about gender, natural kinds beliefs about racial categories appear to develop later in childhood (around 7-10 years) and are dependent on children's cultural context (Kinzler & Dautel, 2012; Rhodes & Gelman, 2009). Similar developmental trajectories are also seen for the emergence of essentialist beliefs about religion and ethnicity (e.g., Birnbaum et al., 2010; Deeb et al., 2011). Despite the establishment of these different developmental paths the question remains as to why essentialist beliefs about gender emerge much earlier than similar beliefs about other social categories. One explanation is because children are exposed to cultural input about gender at a much earlier age than input for other categories; in particular cultural transmission via generic language (e.g., boys like football, girls like pink), leads young children to develop natural kinds beliefs about categories that they otherwise may not have (Rhodes et al., 2012).

Rhodes and Mandalaywala (2017) suggest that the development of essentialist beliefs about social categories follow the same processes as those which underlie biological essentialism but their emergence and strength are dependent on the environmental and cultural input that the child receives. Over the course of a child's first few years, they make sense of the biological world via a number of processes: category boundaries are discrete, category boundaries are objective, categories mark homogeneous kinds, category membership is causally powerful, category membership is intrinsic and category membership is stable across time and environment. These

processes are empirically distinct and dissociable, but often related components of essentialism; for example, age as a category can be viewed as homogenous and inductively rich but not stable over time. These processes form a framework for children to organise the natural world, and can lead children to assume that new categories they encounter (including novel animal categories) follow the same rules, even when they have very little information available to them. Whilst this framework underlies the development of essentialism of social categories in children, children receive less consistent evidence regarding the social world and the status of categories is therefore highly variable compared to biological classification.

Considering essentialism as both a cognitive process and a social construction helps to account for both the similarities and differences across culture and within the developmental process. Evidence has shown that cultural context has a very direct impact on which groups children essentialize. Children who grow up in societies that have race and ethnicity segregation develop stronger essentialist beliefs about those social categories (Diesendruck et al., 2013), white children in the U.S hold more essentialist beliefs about gender and language-based groups than about race (Kinzler & Dautel, 2012; Rhodes & Gelman, 2009), and children who grow up in Northern Ireland develop higher levels of essentialist beliefs about religious categories compared to areas in which religious segregation is not common (Smyth et al., 2017). Similarly, children who grow up in environments with inter-ethnic conflict (e.g., Israel) develop essentialist beliefs at a very young age (around 5 years) and this remains fixed throughout adulthood (e.g., Cosmides et al., 2003; Diesendruck et al., 2013; Rhodes & Brickman, 2011).

However, cultural input not only has an impact on which groups are essentialised but also on how beliefs are revised throughout development. For example, children have a tendency to essentialize occupations (task groups) at a young age and view these categories as having an underlying essence; for example, they perceive medical doctors as having distinct and unique essential qualities that marks them as different from police officers, nurses or teachers. If the cultural environment in which

they live reinforces, or fails to support, these theories then they will either be maintained or rejected. Supporting evidence demonstrates that children who grow up in societies with relatively little job mobility have a higher tendency to essentialise occupation-based groups (Hirschfeld, 1995; 2001).

Whilst essentialist views about gender are found, in general, to decline with age (e.g., Taylor 1996; Taylor et al., 2009) there is evidence to suggest that despite domain general cognitive changes associated with this decline, cultural context also plays a huge role in the maintenance of such essentialist beliefs. Research in the U.S which compared children from one relatively liberal town with children from a more conservative community, found that whilst in the liberal communities children's essentialist beliefs regarding gender declined with age there was no developmental decline in those children who lived in conservative community (Rhodes & Gelman, 2009). In short, essentialist theories are formed to make sense of the world and subsequently shaped by the social and cultural environment. Environmental feedback means that developmental trajectories of essentialist beliefs vary across societies (Birnbaum et al., 2010; Diesendruck et al., 2013; Gelman, 2013), that individuals vary to the extent that they endorse essentialist beliefs (e.g., Jayarante et al., 2006; No et al., 2008) and that individuals essentialise some categories more than others (e.g., Barsalou, 1987; Kalish, 2002).

The social construction of essentialism is also important in terms of intergroup dynamics. As far back as the 1950's, Allport (1954) proposed that social categorisation both underpinned and promoted intergroup prejudice. It can be also be viewed as a strategic social construction that serves to legitimize existing hierarchies and power structures in society, and not only influences the formation and endorsement of social stereotypes but also has implications for intergroup attitudes and intended intergroup contact (Chao & Kung, 2015). Indeed, numerous studies have demonstrated the link between holding essentialist theories and higher levels of stereotyping, prejudice and negative intergroup attitudes in adult populations (e.g., Haslam, Rothschild & Ernst,

2002; Keller, 2005; Leyens et al., 2007; Prentice & Miller, 2007; Yzerbyt, Corneille & Estrada, 2001). This link is not only seen in western societies but cross culturally. In the U.S, non-Black individuals who hold essentialist beliefs about race have a greater tendency for negative attitudes towards Black people, as measured by both traditional and modern racism prejudice measures (Jayaratne et al., 2006). Similar results have been demonstrated across cultures, for example in mainland China (where there are 56 recognised ethnic groups) stronger endorsement of ethnicity related essentialist beliefs were associated with more negative stereotypes towards ethnic outgroups and lower desire for intergroup contact (Gao & Wan, 2013). Comparable results have also been demonstrated in studies in both Israel/Palestine (Halperin et al., 2011) and Japan, (Tsukamoto et al., 2013).

Essentialist thinking encourages the perception of social groups as distinct and as having discrete boundaries and unique attributes (Plaks et al., 2012), and as such these can lead to an avoidance of intergroup situations for both majority and minority groups (e.g., Morris et al., 2011; No et al., 2008). Although the majority of studies have found that essentialist thinking is associated with negative intergroup attitudes and outcomes, some studies have demonstrated weak or even positive associations (e.g., Haslam & Levy, 2006; Haslam, Rothschild & Ernst, 2000; Hegarty & Pratto, 2001). In response to this pattern of mixed evidence, it has been suggested that whether or not essentialism is related to negative attitudes and intergroup relations depends on why people hold essentialist beliefs – whether as a way to structure the complexities of the social world or alternatively, employed as a justification for already held beliefs and attitudes (Haslam & Whelan, 2008; Pettigrew, 1979; Rangel & Keller, 2011; Verkyuten, 2003).

### **Essentialism and Intergroup Relations in Children**

A major limitation of research in this area is that it has been carried out almost exclusively with adults. Despite a hypothetical link between children's essentialist beliefs and intergroup biases (Bigler & Liben, 2007), evidence for the existence of essentialist beliefs in children and the importance of tackling prejudice and discrimination at an early age, very little empirical research

exists which examines the consequences of essentialism for intergroup relations in childhood. To the authors best knowledge relatively few studies have been carried out in this area and those that have are almost entirely with children under the age of 10 years.

Correlational studies suggest that there is an association between beliefs about the stability and constancy of racial identity and intergroup attitudes (Rutland, Cameron, Bennett & Ferrell, 2005) as well as with racial stereotypes (Killen et al., 2013; Pauker et al., 2010), however it is not possible to draw firm conclusions about the direction of the relationship between the variables and impossible to rule out the possibility that children who display more racially biased attitudes try to 'justify' their attitudes by endorsing essentialist theories.

In order to provide a clear test of whether essentialism influences intergroup relations in children Rhodes et al. (2018) created a novel social group ('Zarpies') and evaluated whether experimentally induced essentialist beliefs about the Zarpies led to increased negative intergroup attitudes and fewer resources being allocated to the outgroup compared to a control group. Essentialist beliefs were induced by referring to the Zarpies using generic language (e.g., Look at this Zarpie! Zarpies climb fences'), in contrast children in the control group were only exposed to non-generic (or specific) language (e.g., 'Look at this Zarpie! This Zarpie climbs fences'). All children, in both conditions, were aged between 4.5 – 7 years. Results from study 1 showed that children who were manipulated to hold essentialist beliefs shared fewer resources with the outgroup after hearing examples of negative behaviour by its members. Results from study 2, demonstrated that children in the experimental condition (generic language) withheld resources from the outgroup even when they hadn't been exposed to negative examples of behaviour and study 3 revealed that children in the experimental condition also withheld resources from the outgroup when it was explicitly presented as an outgroup. Interestingly, in none of the studies did the children express more negativity to the outgroup.

This pattern of results is consistent with notions of essentialism increasing beliefs about the discreteness of category boundaries; furthermore, it is congruous with evidence that children's sharing behaviours are strongly related to their expectations of reciprocity. Withholding resources may reflect their expectations about how others will share with them without actually leading to dislike (e.g., Paulus & Moore, 2014). Whilst one perspective from the adult literature suggests that essentialist beliefs lead directly to prejudice via the increased salience of group differences and groups as distinct kinds of people (Leyens et al., 2001), the results from the study by Rhodes et al. (2018) appear to contradict this. Children who were experimentally induced to hold essentialist beliefs and as a consequence group differences, did not show higher negativity towards members of the essentialized group; for children essentialism does not lead directly to negative intergroup attitudes via either perceived group difference or the attribution of these differences to immutable or biological causes. Research exploring whether essentialism perhaps interacts with other factors to impact intergroup attitudes would be fruitful. What this series of studies does highlight however, is that essentialism alone is sufficient to have an immediate and causal effect on social outcomes in children.

A number of studies have also explored the causal link between essentialism and intergroup bias in children living in the context of intergroup conflict. Diesendruck & Menahem (2015) demonstrated the early link between essentialism and inter-group attitudes in Jewish-Israeli secular 6-year-olds attending almost exclusively Jewish non-religious schools. By inducing essentialist beliefs through storytelling, a method adapted from one used in the adult population (e.g., Keller, 2005), the study demonstrated that when compared to a control group, children in the experimental group reported significantly more negative attitudes towards the outgroup (Arabs), and more positive affect towards the ingroup. Attitude was measured via a drawing task (children were asked to draw a Jew and an Arab and the distance between them measured), and a child version of an ethnicity based IAT (Baron & Banaji, 2006). Affect was measured by assessing the facial expressions on each character in the drawing; these were coded as either positive, neutral or negative. Results found that

children in the experimental condition drew the two characters further apart, that boys in the experimental condition showed a stronger implicit bias to the outgroup, and children in the experimental group showed a stronger affective bias for their ingroup. This latter finding is consistent with research that young children display ingroup favouritism rather than a dislike for the outgroup – in this case there was a positive valuation of the ingroup but no corresponding negative valuation of the outgroup. One important theoretical implication of the study is that in certain circumstances the link between essentialism and attitudes may be present as early as 6 years of age.

A more recent study building on the empathy-attitudes-action model (Taylor et al., 2020), tested the hypothesis that holding lower essentialist beliefs about ethno-religious categories would be associated with higher empathy for outgroups and in turn would be linked with more positive outgroup attitudes and prosocial behaviours (O’Driscoll et al., 2021). The sample was comprised of 88 children aged between 5-9 years, all of whom attended either predominantly catholic or protestant schools in Northern Ireland. The following measures were used: essentialism components questionnaire to measure children’s essentialist beliefs about ethno-religious categories (Disendruck & Haber, 2009); a 4-item empathy scale adapted for use with children from Northern Ireland (Turner, Tam et al., 2013); a three item attitude scale adapted from a measure used to examine the effects of empathy on attitudes (Nesdale et al., 2009); and a sticker allocation task, based on sex-matched protestant/catholic children in hospital, to measure prosocial behaviour (O’Driscoll et al., 2018). Mediation analyses showed that lower essentialist beliefs about ethno-religious categories predicted greater empathy for the outgroup which in turn was related to more positive outgroup attitudes. More positive attitudes also predicted a higher level of prosocial behaviour towards the outgroup as measured by greater sharing of stickers with an outgroup member. There was no significant direct effect of essentialist behaviour on outgroup prosocial behaviour, however the indirect effect of children’s essentialist beliefs on prosocial behaviour was significant.

The findings support previous research suggesting that essentialist beliefs influence prosocial or sharing behaviours in children (e.g., Rhodes & Mandalaywala 2017), however unlike other studies the results suggest that essentialist beliefs may also be associated with outgroup attitudes via feelings of empathy. In the case of the study by O’Driscoll et al. (2021), the in group and outgroup used were very socially salient to the participants (Catholics and Protestants), unlike the novel social group ‘Zarpies’ used by Rhodes et al. (2018). It is possible that essentialism only leads to prejudice, in terms of attitudes, once it interacts with information such as status differences between groups, a factor that would have been more visible to the children in the Northern Irish study than those in the novel group study. The study is limited by its cross sectional, correlational design; essentialist beliefs about ethno-religious categories may be explained in terms of a justification for a lack of empathy towards outgroups, or the reverse direction may also be possible – that is higher levels of outgroup prosocial behaviour may lead to lower essentialist beliefs. Whilst this is a valuable contribution to an essentially small field of research, and has important implications for peacebuilding amongst young people, future research which replicate this study using larger samples, with more comprehensive measures and across a range of ages would be beneficial.

What is quite clear from the research on essentialism, but also studies of implicit theories more generally, is the lack of data relating not only to children, but also adolescents. Whilst the development of cognitive processes has received a vast amount of attention in younger children, up until relatively recently brain development had been studied purely in terms of childhood and adulthood, with little attention paid to the continued developmental changes in adolescence. More recent research suggests that, contrary to previous thinking, adolescence provides a time for further change and cognitive development (Choudhury et al., 2008). Although brain adaptation can occur throughout the lifespan the most dramatic maturational phases are thought to be during the fetal period, childhood and adolescence (Toga et al., 2006), and in particular adolescence is a time



associated with the cognitive development of executive thinking and social cognition (Blakemore & Choudhury, 2006).

**Summary of Chapter: The development of prejudice - social cognitive theories and individual differences.**

It is well established that children display ingroup favouritism and express negative intergroup attitudes from an early age (e.g., Baron & Banaji, 2006; Rutland, Cameron, Bennett & Ferrell, 2005). It is also widely accepted that prejudice reduction interventions need to be grounded in robust psychological theory (Cameron & Rutland, 2006; Paluck & Green, 2009) and a number of approaches have been put forward to explain the development of prejudice in childhood.

The predominant theory of prejudice development is the Social Cognitive Development Theory (SCDT; Aboud, 1988; Bigler & Liben, 2006; Spears-Brown & Bigler, 2004) which suggests that prejudice increases through early childhood with children exhibiting high levels of prejudice around 4-5 years. Prejudice then declines after around 7 years of age in line with developing cognitive abilities including multiple classification skills. The theory is based on empirical evidence from studies related predominantly to ethnicity and has been criticised for being unable to account for the development of prejudice across domains.

Developmental Intergroup Theory (DIT; Bigler & Liben, 2006) and the developmental model of subjective group dynamics (DGSD; Abrams et al., 2009) have been proposed more recently in an attempt to fill the gaps in our knowledge on the development of prejudice, and add a more 'social' account to the literature. DIT draws on both theories of cognitive development as well as social identity and categorization theories and explains which groups become targets for prejudice as well as how children develop prejudice towards those target groups. DGSD on the other hand, explores children's increasing social understanding and awareness of group loyalty norms together with the

impact these have on prejudice in this age group. The social understanding hypothesis, in particular, makes a good case for why prejudice reduction is not an inevitable consequence of development.

The chapter went on to discuss a number of individual difference variables that are also considered in the literature as having a relatively large impact on the expression of prejudice in adults (e.g., Altemeyer, 1998; Son Hing & Zanna, 2010; Van Hiel & Mervielde, 2005). These included Social Dominance Orientation (SDO), Right Wing Authoritarianism (RWA), outgroup homogeneity, entitativity and essentialism. RWA and SDO are widely accepted as ideologies that influence prejudice and discrimination, whilst the latter three variables are considered as ways of understanding groups and group properties. The evidence presented provides a clear account of the association of all of these individual difference variables with prejudice in adults. Very little evidence, by contrast, has measured these variables in children and adolescents, and even less has looked at the association with prejudice or how they impact the development of prejudice through childhood.

The theories of prejudice development discussed provide a good understanding of how prejudice develops in terms of cognition and intergroup processes. The literature from individual differences research provides strong evidence that these variables play a large role in the expression of prejudice in adults. What is missing from both areas however, is an exploration into the presence of these, and other, individual difference variables in childhood and how they affect the development and expression of prejudice.

One further individual difference variable of interest in the current thesis, and in particular in relation to children's development of prejudice, is an implicit theory of groups (sometimes also known as entity versus incremental theory). Whilst a relatively large body of work has explored how an implicit theory of individuals impacts the endorsement and maintenance of stereotypes in both adults and children (e.g., Levy & Dweck, 1998; Levy, Stroessner, & Dweck, 1998; Plaks et al., 2001), very little research by contrast has studied an implicit theory of groups.

### Looking Forward: An Implicit Theory of Groups

The final individual difference of interest in relation to children's development of prejudice, and the focus of the current work, is the lay theory - perceived malleability of groups.

The perceived malleability of groups refers to a pair of contrasting lay theories about how malleable individuals consider groups to be. Are groups fixed in their nature or are they malleable and do they therefore have the potential to change and develop? Work related to beliefs about perceived malleability is not specific to the intergroup relations literature, indeed it originated as an attempt to understand children's achievement motivation within an academic domain (e.g., Dweck, 1999; Dweck & Legget, 1988), and has primarily focused on the perceived malleability of the self and other individuals.

Research in this domain has however moved on, and it is well established that the endorsement of an implicit theory of malleability can vary by person, group and culture (e.g., Hong et al., 1999), is learned through socialisation and can be activated or de activated by the environment (e.g., Hong et al., 1999; Levy, Stroessner & Dweck, 1998). It has also now been established that holding a fixed, or entity theory, about the nature of people promotes an understanding of individuals and their behaviours in terms of underlying stable characteristics and traits, and is associated with higher levels of stereotyping (e.g., Levy & Dweck, 1998; Levy, Stroessner, & Dweck, 1998; Plaks et al., 2001).

What is missing from this research however, is a firm understanding of how an implicit theory of the perceived malleability of groups, as opposed to individuals, may affect intergroup attitudes and relations, and how it is related to other constructs such as essentialism, perceived group homogeneity and entitativity, as well as to other individual difference variables such as SDO. It is also unclear how, and when, such an implicit theory develops. Given that the focus of the current work is on perceived malleability of groups, and the development of a scale to measure it, its role as an implicit theory is discussed in detail in the next chapter. The upcoming chapter will discuss the

origins of the implicit theory of perceived malleability of individuals, together with a consideration of what such a theory means for stereotyping and intergroup relations. Research on the perceived malleability of groups will also be considered and an outline of the research with children, adolescents and adults will be provided.

## Chapter 2: Implicit Theories of Individuals and Groups

*Implicit theories, and specifically holding an entity or fixed mindset about individuals, are associated with higher levels of stereotyping, and are therefore of significance to any discussion on intergroup relations and prejudice reduction. This chapter describes the origins of the research on implicit theories of individuals, as well as the impact holding such a theory has on outcomes including the avoidance of challenge, and a perception of traits as stable and predictive of future behaviour. The chapter explores the development of this area of research, including the small body of work that has studied implicit theories of groups, and why these are qualitatively different from implicit theories of individuals and worthy of measurement in their own right. The impact implicit group theories have on other areas of intergroup relations such as conflict resolution are considered. The chapter goes on to explore the notion that our current understanding of an implicit theory of groups, is limited by both a lack of research, particularly with children, and a narrow focus on perceived malleability. It aims to capture the close relationship of perceived malleability with variables such as essentialism, entitativity and homogeneity and argues for a broad vision of an implicit group theory that encapsulates all four of these variables.*

### Introduction

The literature presented in Chapter 1 outlined a number developmental theories of prejudice, as well as several individual difference variables that have been explored within the personality and intergroup relations literature. It argued that individual difference variables are considered as having a relatively significant impact on prejudice and discrimination in adults, but are consistently omitted from intergroup research with children. It also proposed that one individual difference variable, or lay theory, that has received less attention in terms of its impact on intergroup relations and generalized prejudice is an implicit theory of groups.

In this thesis I argue that an implicit theory of groups has been overlooked in terms of measurement and its impact on intergroup outcomes such as attitudes and generalized prejudice. Groups have properties that individuals do not and therefore there is a need to establish how and why implicit group theories need to be conceptualized and measured differently. This chapter aims to frame that argument by providing some information on implicit theory research to date, both in terms of individuals and groups, as well as through an exploration of its association with the closely related variables of homogeneity, entitativity and essentialism.

### **Implicit theories**

Implicit theories refer to people's beliefs or mindsets about the underlying nature of human attributes which they use to understand events and make inferences about the world around them. Whilst there is considerable agreement on the foundations of the physical world there is greater variation of thinking in how people understand the social world and intergroup interaction. Sometimes also called intuitive theories, Lickel et al. (2001; p129) define them as 'a system of interconnected beliefs that lay people hold about some domain'. The model of implicit theories has its roots in both the theory of personality (Kelly, 1955), and the theory of social perception (Heider, 1958), and was first presented as a theoretical model by Dweck, Chiu and Hong (1995a). They describe implicit theories as 'a theoretical model of how implicit beliefs influence people's inferences, judgments, and reactions, particularly in the face of negative events,' (p.267). In this way implicit theories can be thought of as a core assumption in a person's world view, a cognitive structure that helps them to categorize, make sense of and infer meaning from the vast and complex amount of information they encounter in the social world. The theory defines an individual's reality and is prescriptive as well as descriptive; giving meaning, and influencing reactions to events (Dweck, Chiu & Hong, 1995a; Plaks et al., 2009). Implicit or lay theories are non-scientific and therefore may

or may not be accurate; they do not determine the behaviour of an individual but rather provide a framework which guides the formation of judgments and reactions.

The model of implicit theories refers specifically to the perceived malleability of personal attributes (such as intelligence, morality and personality), both of the self and of others. Two assumptions can be made about the malleability of personal attributes; the first is that attributes such as these are fixed and cannot be changed (entity theory), whilst the other assumption is that the attributes in question are malleable and can be changed and developed (incremental theory). The model identifies both the cognitive and behavioural consequences of the two theories; an entity theory is an implicit belief that personal attributes, their own or those of others, are fixed and are not malleable. A person who holds an entity theory therefore, tends to interpret behaviour or outcomes in terms of a person's traits. An incremental theory, by contrast, is an implicit belief that personal attributes are malleable and can be changed; an individual who holds an incremental theory does not focus so much on traits but are more likely to understand behaviours or outcomes in terms other factors such as intention, emotional state, or needs and goals. Entity theorists are also more likely to believe that behaviour is consistent over time and is an accurate indicator of personality (Chiu, Hong & Dweck, 1997). Furthermore, whether an individual holds an entity or an incremental theory about an attribute affects their reactions to negative outcomes or behaviours. For example, individuals who hold entity theories are more likely, when compared to incremental theorists, to show higher levels of negative affect, helplessness and a greater desire for punishment following a failure or negative behaviour (Dweck et al., 1993; Dweck & Legget, 1988; Henderson & Dweck, 1990).

### **Early work on Implicit theories**

Early work related to implicit theories focused on intelligence, and explores the perceptions of the capacity of individuals for development, change and growth; both in themselves and of others. In terms of intelligence, those who believe that intelligence is an entity within people, or a fixed

ability, and one that cannot be cultivated through learning are described as having an 'entity' theory of intelligence. On the other hand, those who believe that intelligence is not fixed but rather something that is malleable and can be improved given the motivation, guidance and opportunity, are known as holding an 'incremental' theory of intelligence (Carr, Rattan & Dweck, 2012; Dweck et al., 1993). This does not mean that incremental theorists deny that there are differences between people in their levels of intelligence, but rather they focus on the idea that everyone, no matter their level of intelligence, can increase their abilities with effort and guidance (Bandura & Dweck, 1985; Dweck & Leggett, 1988). At its core, the theory differentiates individuals based on their beliefs about the individual capacity to change and grow; this can also be applied to themselves and can determine the extent to which they validate themselves via fixed traits or challenge themselves to grow.

Implicit theories do not, however, solely apply to intelligence. They can be thought of as more global ways of viewing ourselves and others in terms of personality (e.g. Dweck & Leggett, 1988; Erdley et al., 1997), relationships (Kamins et al., 1996; Knee, 1998; Knee et al., 2003) and morals (e.g., Chiu, Dweck et al., 1997). Implicit theories can be thought of as an individual difference or system that help individuals organize and make sense of the world around them (Lickel et al., 2001; Molden & Dweck, 2006). Whilst the different domains of implicit theory may be correlated, the association is relatively weak, suggesting that an individual may hold inconsistent implicit theories about different abilities or personality traits (Dweck, Chiu & Hong, 1995a; Dweck, Chiu & Hong, 1995b). Holding an entity or an incremental theory is not a generalized cognitive style but rather is domain specific, and therefore having a measure to evaluate implicit theories in different domains is necessary.

### **The effect of Implicit Theories**

The effects, both on the individual themselves and on others, of holding an entity versus an incremental theory have been well researched and are far-reaching. Students who hold an entity,



rather than an incremental theory, about personality, are more likely to blame an attribute of the self when faced with setbacks, more likely to endorse performance rather than learning goals, and are more vulnerable to a helpless response when rejection occurs (Erdley et al., 1997).

Results such as these have also been found consistently within the domain of intelligence research. For example, Junior High Students in the U.S who held an entity theory of intelligence were significantly more likely to ascribe failure at a hypothetical academic task to their intellectual abilities compared to students who held an incremental theory; these students attributed the failure to a lack of effort (e.g., Henderson & Dweck, 1990). Similarly, college students in the U.S. who hold an entity theory are also more likely to attribute academic setbacks to a lack of intelligence; incremental theorists by contrast responded to the same scenarios by reporting higher levels of new strategies or higher levels of intended effort in the future (Zhao & Dweck, 1994).

Holding an entity theory is also associated with the avoidance of challenge, and provides further evidence that holding such a theory fosters a greater focus on traits and trait judgments. Studies have demonstrated that students holding an entity theory choose performance orientated tasks over learning goal tasks when compared to those holding an incremental theory. The performance tasks provide the students with an opportunity to gain positive judgments but at the cost of not learning anything new, they also avoid the risk of exposing flaws in their intellectual abilities that may be exposed by the learning tasks (e.g., Bandura & Dweck, 1985; Dweck & Legget, 1988). In a study, not about intelligence but about shyness, Beer (2002) found that, even after controlling for shyness, people who held an incremental theory, compared to those who held an entity theory, were more willing to enter into more challenging situations. Entity theorists try to avoid situations which will put their ability into question, whereas incremental theorists enter situations that will allow them to grow and develop.

In terms of what individuals value most in a romantic relationship and despite no difference between the two types of theorists on measures of self-esteem and social desirability, entity

theorists are far more interested in gaining validation from their partners and wanting their partners to think of them as someone who is perfect. Incremental theorists by contrast, are more interested in having a partner who challenges them to grow (Kamins et al., 1996). Although self-validation and growth were not mutually exclusive the two types of theorists were, in general, interested in different aspects of a relationship.

Similarly, entity theorists, or those termed as having *destiny* beliefs, more strongly believe that relationships have an inherent character; they are either meant to be or not to be. In a study by Knee (1988) those with destiny beliefs tested partners quickly, moved on quickly and were more likely to leave a relationship in the event of a negative event. By contrast, incremental theorists, also known as individuals with *growth* beliefs, had a more long-term and committed approach to dating, had less one-night stands, believed more strongly that relationships develop over time through hard-work and conflict resolution, and demonstrated active coping strategies over the 6-month study to solve problems within the relationship. Whilst this research applies to romantic partnerships it is not unfeasible to imagine that a similar process may occur in inter-personal friendships or inter-group interactions.

### **How Implicit Theories Influence the Perceptions of Others**

Research suggests that holding an entity or incremental theory has an effect on how individuals perceive themselves, cope with setbacks, or behave in romantic relationships. It follows that the theoretical standpoints from which individuals perceive others also impact on attitudes and behaviors towards other people and groups in society. Individual differences research with children (Heyman & Dweck, 1998), adolescents (Hong, 1994) and college students (Chiu, Hong & Dweck, 1997) demonstrates that those who hold an entity theory, compared to an incremental theory, ascribed classmates' performances to their intelligence rather than how they approached their work.

These judgments were made despite little information being given on the nature of the task, the students' motivation or any other relevant factors.

Similar results have been shown in personality studies. Entity theorists are more likely to attach extreme global negative traits to someone based on a very small amount of information, taking that behavior as indicative of an underlying nature (Erdley & Dweck, 1993). Interestingly, entity theorists are also more likely to attach global positive labels to others as well (e.g., Hong, 1994); they are far more likely to draw conclusions about whether someone is 'good' or 'bad' from one action than incremental theorists are. Consistent with these findings, research also indicates that whilst entity theorists rely on trait information, they do not adjust opinions given situational information (Molden, Plaks & Dweck, 2006). Furthermore, entity theorists are more likely to make stronger conclusions about the personality and moral character of someone from their appearance (Gervey et al., 1999).

Entity theorists make more extreme judgements of people and are more likely to believe that traits are fixed and cannot be changed; as such they expect a high degree of consistency and little variability in the behaviour of people over time. If these trait related behaviours are perceived by entity theorists as highly regular, then it follows that an entity theorist will also believe that small samples of behaviors can lead to the reliable inference of personal traits; the traits have strong predictive value for an entity theorist. Following on from this it can be reasoned that these judgements may also influence people's perceptions of groups. Because entity theorists ascribe meaning to fixed traits it follows that they would be more likely to rely on stereotypes of groups; a stereotype is essentially ascribing a fixed trait to a group of people. (Levy, Stroessner & Dweck, 1998).

### **Implicit Theory and Stereotyping**

Over recent years, the cognitive-developmental theory has become the dominant theory explaining the age-related changes seen in social attitudes. As such, a decline in prejudice from early

to middle childhood is explained by increasing cognitive skills and abilities such as classification skills, abilities to see differences within groups and similarities between groups, as well as advances in perspective taking skills (Levy & Dweck, 1999). What this theory does not explain however, are the individual differences in levels of stereotyping among children who exhibit a similar level of cognitive skill, or between older children and adults who have already reached mature levels of cognitive skill. One possibility is that exposure to environmental influences or experiences aid the development of cognitive schemata about groups (Black-Gutman & Hickson, 1996). These schemata or implicit theories then influence how children perceive groups, how they process information about groups and ultimately impact upon their behaviour or reactions to groups. Children develop an understanding of the world and whilst this information may not be specific to a particular group, this overarching way of thinking about the social world may affect the level to which they stereotype others. Piaget and Garcia noted this possibility by suggesting that in addition to their developing cognitive abilities, children also have a conception of the world at their disposal, and these two factors together determine the assimilation of their experiences (Piaget & Garcia, 1983;1989).

Studies by Levy and colleagues have demonstrated how those who hold an entity theory, relative to those who hold an incremental theory, show far higher levels of stereotyping of groups (e.g., Levy, 1998; Levy & Dweck, 1998; Levy & Dweck, 1999; Levy, Stroessner & Dweck, 1998). These studies have been conducted with a range of ages including adults (undergraduates) and children (11-13 years), and the results are consistent in terms of both positive and negative stereotyping as well as towards existing and novel groups. Those holding an entity theory are simply far more likely to believe that the behaviors that they perceive on the outside are reflective of a person's underlying nature. Just as entity theorists are more likely to make extreme trait judgements about another person based on a small sample of behaviour, when compared to incremental theorists, results suggest that entity theorists make more extreme judgements about the traits of a group based upon very brief information about a small number of group members (Levy & Dweck, 1999).

In a series of five studies Levy, Stroessner and Dweck (1998), demonstrated that people holding an entity theory, compared to those holding an incremental theory, made more stereotypical judgments of several real groups in society, and formed more extreme stereotypes with regard to novel groups. Furthermore, entity theorists perceived greater homogeneity within groups relative to incremental theorists. Perceived variability in groups is a key component of stereotyping but one which has been overlooked in favour of malleability in research on implicit theories and the perception of groups.

Although incremental theorists are equally knowledgeable about societal stereotypes (Levy, Stroessner & Dweck, 1998), across these studies and when compared to incremental theorists, entity theorists gave more credence to societal stereotypes, perceived groups as more homogenous despite being presented with information outlining differences within groups, attended to stereotype consistent information and tuned out information that contradicted their stereotypes (Plaks et al., 2001). Entity theorists are not only more likely to form stereotypes but are also more likely to endorse and maintain them.

There is consistent evidence that holding an entity theory is associated with a higher level of stereotype formation, relative to holding an incremental theory. A core aspect of the entity theory is that stereotypes are valid and useful in predicting the behaviour of group members; entity theorists expect group members to behave in a consistent manner to the stereotype. In order for this to work entity theorists tune out information that challenges the stereotype and prefer to attend to stereotype consistent information (Plaks et al., 2001). The more inconsistent the behaviour the more entity theorists ignore it. Incremental theorists on the other hand, pay greater attention to stereotype inconsistent information than to stereotype consistent information; thus, they are more likely to update their impressions given new information and thereby potentially render the stereotype as worthless. Research suggests therefore, that not only are entity theorists more likely to form and endorse stereotypes, but by preferentially attending to stereotypic information, they are

also more likely to maintain them. Whilst the studies outlined here consistently demonstrate an association between holding an entity theory and higher levels of stereotyping, they say little about intergroup relations or attitudes towards the stereotyped groups.

The majority of studies which explore implicit theories and stereotyping are correlational in nature and therefore cannot answer questions of whether implicit theories cause differences in the formation and endorsement of stereotypes. In response to this, Levy, Stroessner & Dweck (1998), in their 5-study series, manipulated participants' implicit theories of malleability of personal attributes. The manipulation of an implicit theory used fictitious, but highly compelling 'scientific' articles; the use of historical figures are the most common methods of presenting evidence for either the entity or incremental theory. College aged students who were presented with an article endorsing the entity theory agreed, to a significantly higher level, with the stereotyped traits of outgroups than those exposed to an article about the incremental theory. Similar results have been demonstrated with children aged between 9 and 10 years. Following an oral presentation, rather than a written format, children who had been exposed to the entity theory showed significantly stronger stereotypes when asked to form an impression of a novel group than those exposed to the incremental theory (Levy & Dweck, 1999).

Whilst studying the formation of stereotypes about novel groups in adults, Levy, Stroessner & Dweck (1998), also measured affective positivity towards the groups. This was measured using a scale similar to the thermometer measure of prejudice (McConahay, 1986), ranging from 100 (very positive) to -100 (very negative). As expected, adults holding an entity theory of individuals reported significantly higher levels of prejudice toward the 'negative' novel group, they also exhibited significantly higher levels of positivity towards the 'positive' novel group. Research with children has also demonstrated that holding an entity theory is associated with more negative attitudes and lower willingness to volunteer on behalf of a stigmatized group (Karafantis & Levy, 2004). Children who held an incremental theory, in contrast to those who held an entity theory, reported a greater

willingness to volunteer again and greater enjoyment in the activity, following a volunteering session on a UNICEF programme designed to help low-income stigmatized children.

Unfortunately, but not surprisingly, greater endorsement of stereotypes by entity theorists has also been shown to affect behavior towards members of other groups. In games that could be played either cooperatively or competitively entity theorists, in contrast to incremental theorists, played more competitively when they believed their opponent was from an outgroup (Freitas et al., 1997). In an experiment involving novel outgroups, children who held entity beliefs were less likely to make friends with children in a novel 'negative' group and more willing to make friends with children in a novel 'positive' group (Levy, 1998; Levy & Dweck, 1998). As alluded to already, entity theorists are more likely to endorse both negative and positive stereotypes. However, positive stereotypes do not equate to positive attitudes or outcomes, any stereotype robs a person of their individuality, and positive stereotypes in particular can lead to a more benevolent form of prejudice (Fiske, 2012; Fiske, 2018).

Results such as these demonstrate that, in the short term, implicit theories can be manipulated and that those who adopt an entity theory are more likely to perceive differences in behavior as support for a more deeply rooted or fixed sign of personality. Whilst holding stereotypes is not confined to entity theorists, stereotypes can be dangerous when people draw strong conclusions about others based on too little information and research suggests that holding an entity theory increases the chances of this happening. Conversely, holding an incremental theory does not stop individuals holding both positive and negative stereotypes, however it is more likely that incremental theorists perceive more variability within a group and view negative behaviors as something that can be changed and positively developed.

Inferential tendencies associated with holding either an entity or an incremental theory may also be applied to perceptions or judgments made about social groups. For instance, due to possible shared norms, social and cultural environments and possible shared goals it may be the case that

members of a group display the same or similar behaviours from time to time. Entity theorists, with their heavy focus on fixed traits, may assume that group members who display similar behaviours possess the same fixed traits and that these characterize the group. Incremental theorists, on the other hand, may focus more on psychological processes such as the intergroup context and as such do not characterize a group so readily according to fixed traits (Hong et al., 1999).

### **Behavioural Implications of Implicit Theories for Intergroup Relations**

Members of stereotyped groups still regularly experience prejudice (e.g., Abrams et al., 2018; Swim et al., 2001; Swim et al., 2003), and whilst anticipating that they would stand up to prejudice many do not do so in the moment (Swim & Hyers, 1999; Woodzicka & LaFrance, 2001; 2005). Implicit theories are one factor which have been linked to the willingness to stand up to, or confront, prejudice. In a series of experimental studies Rattan & Dweck (2010) explored minority group members responses to both subtle and more extreme forms of prejudice. People who held an entity theory of individuals were more likely to remain silent or engage in unrelated conversation topics with the person who expressed the prejudiced statement. Those who held an incremental theory were more likely to directly confront the biased statement. Entity theorists, believing people are unlikely to change, were more likely to avoid that person in the future, whereas incremental theorists reported a greater willingness to interact with the person who expressed the bias either in a social or workplace situation. In parallel with previous work which highlights entity theorists disregard for counterstereotypic information, when compared to incremental theorists, they were also less willing to interact with the person who had expressed the bias, even when presented with evidence that the biased individual had changed their behaviour on other future occasions (Rattan & Dweck, 2011).

Research has shown that incremental theorists, relative to entity theorists, believe that people's past behaviours are not necessarily indicative of their future behaviours. In addition to the



influence of implicit theories on stereotyping their effect on trust following an interpersonal apology has also been demonstrated. Incremental theorists are more likely, compared to entity theorists, to trust a transgressor after receiving an interpersonal apology (Haselhuhn et al., 2010). Whilst this study represents a relatively untapped area within implicit theory research it does aid the understanding of the wide range of potential consequences of holding either an entity or incremental theory of personal attributes and furthermore the potential for how the theories may extend beyond individuals to the attributes of social groups.

### **Implicit Theory and Intergroup Relations**

Whilst research in this area has explored implicit theories and the impact on levels of stereotyping, this area of study has seen relatively little development in terms of the intergroup context or intergroup relations.

The traditional and historical stance of the intergroup paradigm has taken specific attitudes and their mediators as the focal point of explaining intergroup dynamics, however this way of looking at intergroup relations makes the assumption that more generalized beliefs about groups or implicit theories are irrelevant. As highlighted in the previous section people's implicit theories about the malleability of individuals play an important role in the production and maintenance of stereotypes, one of the fundamental aspects of intergroup dynamics and prejudice. If fixed beliefs about individuals lead to higher levels of stereotyping what are the effects of fixed beliefs about groups? Beliefs about groups are qualitatively distinct from beliefs about individuals and as Rydell et al. (2007) argue, impact social-cognitive processes and phenomena over and above the effects of implicit theories about individuals.

### Implicit Theories about Groups

The first, and one of the few studies to explore implicit theories about groups was by Rydell et al. (2007). They proposed that people's implicit theories of groups were distinct from their theories of individuals, and aimed not only to examine people's theories of groups, but also how these theories affect the way groups are perceived and how they relate to levels of stereotyping. Rydell et al. argue that people's theories of groups are distinct from their theories of individuals for two main reasons. Firstly, forming perceptions about groups is a deductive process, where a general perception about the group leads to a more specific inference about an individual member. In contrast, forming perceptions about individuals is an inductive process, observation of particular individuals leads to the formation of a general rule or stereotype about other members of the group. Secondly, beliefs associated with the malleability of groups is focused, not on the individuals of that group, but on whether change is possible through a coordinated effort, whereas implicit theories about individuals relate to beliefs about the ability of an individual person to change their attributes through personal development (Molden & Dweck, 2006).

The results of the study by Rydell et al. (2007) demonstrated that adults who held entity theories about groups were more likely, than those who held an incremental theory, to stereotype; this was also true for those who held entity theories about individuals but implicit theories of groups and implicit theories of individuals were only moderately correlated. Differences in perceived entitativity of groups were also found; those who held an entity theory of groups also perceived greater entitativity in groups than those who held an incremental theory, meanwhile implicit theories of individuals were unrelated to entitativity. Regression analysis showed that perceptions of entitativity accounted for a significant amount of variance in the relationship between implicit theories of groups and stereotyping; however, when both implicit theories of individuals and groups were regressed onto stereotyping only implicit theories of groups remained a significant predictor of

stereotyping. It appears that there are important differences between the two theories and that the reasons why they both influence stereotyping may be different at times.

With no causation being able to be inferred due to the correlational nature of the study, Rydell et al. (2007) carried out a second study which manipulated implicit theories about groups. This aimed to demonstrate that inducing an entity mindset would lead participants to endorse higher levels of perceived group entitativity and stereotyping. The manipulation was in the form of information read by the participants endorsing either an incremental or entity theory of groups and adapted from work on implicit theories of individuals (McConnell, 2001); importantly this manipulation only affected people's implicit theory of groups and not their implicit theories of individuals. Results showed that participants in the entity theory condition scored higher on the implicit theory measure (indicating a higher level of entity thinking), reported greater perceived entitativity of groups and stereotyped significantly more than incremental theorists. Further analysis showed that even in an experimental situation perceptions of group entitativity were a significant, but partial, mediator of the relationship between implicit group theories and stereotyping; group entity theorists' stereotype more than group incremental theorists partly because they perceive groups as more entitative.

There are several other reasons why implicit theories of groups may differ from implicit theories of individuals. Research suggests that people also hold implicit theories about how groups interact as well as having an intuitive system or way of classifying groups (Fiske, 1992; Lickel et al., 2001). People hold different expectations of groups and individuals and process information about them in different ways; they expect more consistency from individuals but are less motivated to integrate discrepant behaviour of group members (Susskind et al., 1999). In addition, people hold essentialist beliefs about groups, even when socially constructed (Rothbart & Taylor, 1992; Yzerbyt et al., 1997), and wrongly assume that information about an individual can be inferred from their group membership, or that membership to the group is impossible to change (Rydell et al., 2007). If these

distinctions are the case, then it follows that stereotyping and prejudice are influenced by numerous beliefs about group properties, and implicit group theories are not limited to beliefs about malleability.

Past research has clearly demonstrated that implicit theories about groups and group properties play an important role in stereotyping. Factors beyond the malleability of groups, such as homogeneity and entitativity may also play a part in group and intergroup perceptions but their role as a factor in implicit group theories remains unclear. What else is unclear is the relative weight incremental and entity theorists assign to entitativity - would those who hold an incremental theory of group malleability be more likely to stereotype a highly entitative group than those who hold an entity group theory but the group in question has less entitativity? What is clear however, is the need for a greater understanding of what a broad implicit group theory would look like.

### **Implicit Group Theories and Conflict Resolution**

More recent research in this area has moved on from the influence of implicit theories on stereotyping, and has been directed towards the impact that beliefs about group malleability have on conflict resolution.

In a series of four studies Halperin et al. (2011) applied implicit group theory ideas to the issue of ongoing conflict. The studies were designed to explore whether the belief that groups were malleable could impact outgroup attitudes and willingness to compromise for peace amongst a sample of Israeli Jews, Palestinian Citizens of Israel and Palestinians in the West Bank. Holding an incremental theory of groups predicted more positive attitudes towards Palestinians by Israeli Jews and greater willingness by Israeli Jews to compromise with Palestinians. In the three further studies an incremental or entity theory was induced in a general sense (i.e. without mentioning specific groups); results demonstrated that in each of the three groups (Israeli Jews, Palestinian Citizens of Israel and Palestinians in the West-Bank), holding an incremental theory led to more positive

attitudes to the outgroup, greater willingness to compromise with the outgroup for peace, and greater willingness of Palestinians in the West-Bank to meet with Israeli Jews to hear their point of view on the conflict. The impact of implicit theories on outgroup attitudes and possible conflict resolution was seen in all three of the key groups involved in the conflict, regardless of power, history or aspirations and raises the possibility of a role for implicit group theories in promoting peace and aiding conflict resolution.

### **Implicit Group Theories and Contact Motivation**

Increasing people's beliefs in the ability of groups to change may also reduce intergroup anxiety and increase contact motivation, thereby breaking the cycle of contact avoidance (Halperin et al., 2012). Whilst the benefit of intergroup contact on intergroup attitudes is a widely supported and robust hypothesis, intergroup contact can only achieve positive effects when group members are motivated or willing to engage in contact. One of the key reasons for the failed promotion of peaceful resolution in long-term conflicts is the lack of motivation for intergroup contact (Crisp et al., 2010), and research has suggested that intergroup anxiety plays a primary role in contact avoidance (Pettigrew & Tropp, 2006). Halperin et al. (2012), further developed the application of implicit theories to conflict resolution, as discussed above, by exploring whether holding an entity theory of groups leads to increased intergroup anxiety and decreased willingness for contact.

The study was carried out in the context of the ongoing conflict between Greek and Turkish Cypriots around the partition of the island, however only Turkish Cypriots were included as participants. Participants' implicit theories about groups were manipulated by reading an article that portrayed aggressive groups as having either a fixed or malleable nature; the outcome measures included beliefs about groups (from Halperin et al., 2011), intergroup anxiety about meeting a Greek Cypriot, and contact motivation (having either a Greek Cypriot or Turkish Cypriot as a conversation partner). Results demonstrated that participants in the malleable condition were more willing than

those in the fixed condition to have contact with Greek Cypriots. Furthermore, participants in the malleable condition reported significantly less anxiety about meeting someone who was Greek Cypriot, and this lower anxiety predicted greater willingness for contact with Greek Cypriots. Whilst this study makes clear theoretical and practical contributions it also demonstrates that willingness for contact with specific outgroups can be promoted by manipulating implicit theories about groups in general. In other words, implicit theories about groups may play a vital role in generalised prejudice reduction and willingness for contact, and promoting an incremental way of thinking about groups may have a wider effect on attitudes to multiple outgroups.

Although neither of the two studies discussed above mention specific outgroups in their measure of group theories, the items tend to revolve around conflict, violent tendencies of groups and moral values of a group or nation. As such, these items may influence a participant's response particularly if they are part of an intractable conflict; more general group theory items are needed to assess a more generalized mindset about groups and how they may influence outgroup attitudes and willingness for contact.

### **Implicit Group Theories and Social Identity**

An important question about implicit theorists, as raised by Rydell et al. (2007), is just how entity group and incremental group theorists differ. Entity theorists are more likely to stereotype, search for similarities between members of a group and clearly differentiate between groups, whilst incremental theorists try to understand groups through more psychological mechanisms and their relative social standing relative to other groups. Taking this one step further research has also highlighted the possible connections between Implicit Theories and Social Identity Theory (S.I.T; Tajfel & Turner, 1979).

Social psychologists, and in particular those in the field of intergroup relations, have dedicated substantial time to the understanding of social identification and its ramifications, yet a surprisingly modest amount of systematic research has explored the possible individual differences underlying social identification. One of the core concepts from Social Categorization Theory (Turner et al, 1987) asserts that self-identity is not a fixed entity but rather a fluid social construction, and the idea that this fluid self-categorization needs to be understood in terms of the perceiver's background is clearly outlined in the theory:

“The content of categories is selectively varied to match what is being represented in terms of our background theories and knowledge.” (Turner et al., 1994, p. 457).

Consistent with this idea, there is a small body of work which suggests that social identification is not only moderated by people's implicit theories, but also that the two interact to influence prejudice and intergroup bias.

One of the first such studies took place in the context of the political transition of Hong Kong from British to Chinese rule in the late 1990's (Hong et al., 1999). Using the backdrop of the political handover the longitudinal study examined how individuals use their social identity to inform social comparisons and whether this is systematically linked to their implicit theories; in other words, how social comparison can be moderated by people's beliefs about malleability.

People identify with groups in part to meet two basic needs: inclusion - the need to find commonalities with others and connect to other individuals in the social world, and differentiation - or the need to maintain a level of distinctiveness (Brewer, 1991). In the context of Hong Kong, the two main social identities ('Hongkongers' and 'Chinese') emphasize different dimensions in social comparison in order to ensure their group maintains a socially distinct and positive identity. 'Hongkongers' tend to compare themselves to other groups along lines of modernity whereas 'Chinese' in Hong Kong tend to compare according to Confucian values (Lam et al., 1999), by doing so each group maintains a positive and distinct identity. Based on previous implicit theory research the

authors hypothesized that entity theorists would rely more heavily on trait-based intergroup social comparison, in particular with the approach of the political handover, whereas incremental theorists would rely less on trait-based comparisons even in the run up to the handover.

Results confirmed the hypotheses and demonstrated that entity theorists use their social identity to inform their social comparisons; they select trait-based dimensions upon which to base their comparisons in order to achieve optimal distinctiveness. The results suggest that the way in which people make social comparisons, in this case in a transitional political climate, are systematically related to their implicit theories of human attributes; the results support the idea that entity theorists rely more heavily on fixed traits than incremental theorists, but the proposal that incremental theorists focus more on dynamic processes is unclear from this study and warrants further attention. Hong et al. (1999) note that whilst their approach focuses primarily on the relationship between social comparison dimensions and beliefs about malleability, it is also important to consider wider aspects of Social Identity Theory such as the social mobility belief system (Hogg & Abrams, 1988). People who endorse a social mobility belief system believe it is possible to move between groups and that intergroup boundaries are permeable. In contrast those who hold a social change belief system believe that intergroup boundaries are impermeable and people cannot, for example, move from a lower status to a higher status group. Either of these theories has consequences for social comparison, and both incremental and entity theorists may search for new forms of social comparison in order to achieve social distinctiveness for their group. This highlights the need for understanding the link between malleability and permeability beliefs, how they interact to affect intergroup relations and whether they both have a place in an implicit theory of groups. Similarly, Hong et al. (1999) draw attention to other group properties that may be important to social comparison processes and cite interesting findings that Hong Kong people who hold an entity theory are more likely, relative to those who hold an incremental theory, to perceive Chinese mainlanders as a homogeneous group (Hong & Chiu, 1997).



Another notable point of interest from the study was the fluidity of implicit beliefs over the time frame of the study. More people reported a change from an incremental theory to an entity theory over the course of the study than did the other way around; implicit theories can alter according to the (in this case political) environment and may have consequences for social comparison or a reliance on the fixed traits of groups.

Further research in this area has also demonstrated that social identification effects are weakened when people hold a malleable view of personal attributes (Hong et al., 2003), and that recategorization, seen in the Common Ingroup Identity model (Gaertner et al., 1993), is more likely to take place within someone holding an incremental theory compared to someone holding an entity theory (Hong et al., 2004).

Whilst studies exploring the interaction of implicit theories of groups and social identity are not large in number, the results of these studies are interesting for a number of reasons. Firstly, they suggest that incremental theorists are also susceptible to the use of stereotypes and prejudice if they adopt an exclusive sub-group identity. And secondly, they imply that holding an entity theory steers people towards forming rigid and fixed views of other group which fosters prejudice towards members of that group and that this occurs independently of self-categorization. As such, the premise that endorsing a common group identity may lead to a reduction in negative outgroup bias may not necessarily be true for those people who hold an entity view of human characteristics.

All the studies discussed above in relation to S.I.T, measure implicit theories in terms of individual people, and not groups. Given that the difference between implicit theories for groups and individuals is qualitatively different and social identity theory is based on membership to a group it may be that a more nuanced approach to this area of research using an implicit group theory measure would provide greater clarity on the relationship between S.I.T and implicit theories. Furthermore, each study uses its own measure of implicit theories adapted from previous work; the

development of a reliable and standardized measure of the implicit theory of groups would allow for a better comparison of studies.

### **Peer Conflict and the Promotion of Incremental Thinking**

Conflict resolution in intergroup situations does not hold the monopoly on aggression, anger or willingness for contact. Adolescents, in particular in a school context, also experience bullying, rejection and exclusion (e.g., Craig et al., 2009; Crosnoe, 2011; Jadambaa et al., 2019). In one of the only studies to explore implicit theories of adolescents and aggression towards others Yeager et al. (2011), set out to establish the relationship between implicit theories of individuals and judgments of others in a bullying situation. Across Finland and the U.S, students who held an entity theory were more likely, compared to those who held an incremental theory, to hold higher levels of desire for aggressive retaliation against a bully, and higher levels of intention to engage in that behaviour. This was accompanied by higher feelings of shame, stronger perceptions of the bully as a 'bad' person, and higher levels of hatred towards the bully. Students who held an incremental theory, or had been manipulated into holding an incremental theory showed less intention for revenge, less shame and less hatred; they also displayed higher levels of prosocial behaviours such as the intention to help or forgive the bully in the future.

More importantly, a further study with adolescents was designed to test whether inducing an incremental theory of individuals in adolescents could not only affect the way in which they apply resolutions to peer conflicts but whether this could be a long-term effect (Yeager et al., 2013). Students were recruited from a US high school with a high rate of student aggression and randomly assigned to one of three groups: a coping skills group, an incremental mindset group, or a no intervention control group. Each of the two experimental groups received 6 intervention sessions and all three groups were tested for aggressive retaliation one-month post intervention. In a game

involving rejection and controlled provocation students who had been in the incremental mindset intervention group assigned 40% less aggressive retaliation (giving a peer a spicy/hot sauce) than students in the other two groups. Students were also given the opportunity to send a note to the peer who had rejected them; students in the incremental mindset group sent on average three times as many prosocial notes compared to students in the other two groups. Teacher nominations, at the end of the school year, for students who had displayed a reduction in aggression as well as an increase in prosocial behaviour, also confirmed the hypothesis, with students in the incremental mindset group receiving significantly more nominations. Whilst the coping skills intervention helped students to reduce depressive symptoms (as did the incremental mindset group), it did not enable the students to deal with peer conflict in a non-aggressive manner.

This study is important for a number of reasons. Not only does it provide support for the notion that implicit theories can help in the pursuit of conflict resolution, and demonstrate that this is possible in adolescents as well as adults, it also lends support to the notion that mindsets are not fixed but can be manipulated or altered in a positive way as young people develop and grow. The results of the study contradict past research that aggressive tendencies in adolescents are fixed by mid to late teens (e.g., Skiba et al., 2006), instead they suggest that implicit theories can be used to change the aggressive tendencies or reactions to provocation in adolescents. In the context of implicit theories and social cognitive theories of development, patterns of traits such as aggression or prejudice can be seen not as fixed or intractable by adolescence, but a result of the social cognitive frameworks that young people have developed, and more strikingly in terms of intergroup relations and prejudice reduction, frameworks which can be altered.

### **A Broad Vision of an Implicit Group Theory.**

The contribution of research exploring implicit group theories and issues such as conflict resolution is notable and despite having the potential for positive impact it remains a small body of work. In addition to gaps in the research in terms of the development of implicit group theories, all of the studies mentioned follow the 'blueprint' for research in this area focusing solely on the perceived malleability of groups despite the fact that perceptions of groups are qualitatively different from those made of individuals. The research largely ignores factors such as the perceived homogeneity of groups, essentialism and group entitativity. It is vital that perceptions of malleability and these other areas of 'lay' group theories are tested in a systematic way to explore their effects on intergroup relations.

One further gap in the implicit theory research is the clear link the promotion of incremental thinking has with a more generalised positivity towards outgroups. The limited evidence that does exist in this area tends to focus on one or two specific outgroups as the target of prejudice and negative bias. As has been clearly demonstrated however, and in particular in the conflict resolution research, an incremental mindset can be manipulated to be focused on groups in general rather than towards a specific outgroup. If this is the case, a more incremental way of thinking about groups has huge potential to affect a generalised positive shift to multiple outgroups in society. Further testing of these ideas is vital.

As outlined above, and in the previous chapter, there is more to the perception of groups or group properties than simply malleability. Other individual differences such as homogeneity, entitativity, and essentialism are further elements which need to be discussed in relation to implicit theories and may work alongside theories of perceived group malleability to influence prejudice and intergroup relations.

The last section of this chapter will re-visit these concepts and examine their possible relationship with implicit theories of perceived malleability and intergroup attitudes and relations.

### **Perceived Group Homogeneity and an Entity Theory**

Entity theorists rely on fixed traits as an indicator for an individual's behaviour, and as previously discussed, research suggests that entity theorists also believe that members of groups share the same traits (Hong et al, 2004; Levy, Stroessner & Dweck, 1998; Plaks et al., 2001; Rydell et al., 2007). Whilst incremental theorists display similar stereotype knowledge when compared to entity theorists, the latter regard stereotypes as truer and indicative of future behaviour. Bastian & Haslam (2006) suggested that one cause of the 'fixedness' of entity theorists' views of groups was due to a biological basis – they endorse biological factors as the basis for stereotypes, whilst others suggest that entity theorists tend to encode group behaviours differently to incremental theorists (Plaks et al., 2005; Plaks et al., 2001). Entity theorists encode group behaviour in a way that fosters a consistent and clean picture of the group, whilst incremental theorists acknowledge within-group heterogeneity to a greater extent and even pay greater attention to counterstereotypic information (Plaks et al., 2001). It has also been found that people who tend to categorize groups in terms of traits (entity theorists) perceive greater similarity between group members and generalize these traits from one members of the group to other members of the group more readily (Rubin & Badea, 2007). As such entity theorists, with their overreliance on trait possession, may perceive all groups (both ingroup and outgroups) as more homogenous relative to incremental theorists. Furthermore, entity theorists tend to maintain sharper boundaries between groups, whilst incremental theorists, with their tolerance of counterstereotypic information, perceive boundaries as more fluid and flexible.

Evidence suggests that both the outgroup homogeneity effect and the ingroup homogeneity effect (e.g., Ryan & Bogart, 1997; Simon, 1992; Simon & Brown, 1987; Simon & Pettigrew, 1990), exist

within an intergroup setting. Both serve a separate purpose; perceived outgroup homogeneity makes the outgroup more predictable and less anxiety provoking, and ingroup homogeneity strengthens feelings of groupness or entitativity, and both can foster feelings of intergroup hostility (e.g., Hee et al., 2011). One important question is whether people regard groups as homogeneous irrespective of whether they are the ingroup or the outgroup; in other words, do people hold an implicit theory of group homogeneity and how is that related to intergroup relations?

### **Entitativity**

It is commonly accepted that social categories are the most likely type of group to be stereotyped or associated with high levels of homogeneity. However, the studies by Lickel et al. (2000), which suggested that social categories were rated as relatively low in both entitativity and group member similarity (compared to other group types), and discussed in the previous chapter, pose some interesting dilemmas for current thinking on groups, stereotyping and prejudice.

Hamilton et al. (2004) provide several explanations for these results. Firstly, social categories are often thought of in terms of a contrast group (e.g., Black/White, Men/Women), whereas other types of groups are not; when a group is viewed in terms of how it compares to the contrast group the perception of it as entitative is emphasized and the likelihood of stereotype formation is increased. Secondly, the participants in the Lickel et al. (2000), study were explicitly asked to rate the degree of similarity within a group; whilst members of a social category usually share one distinguishing feature (e.g., they are all women, or French, or Black), aside from this central feature members will likely show huge variation. Participants in the study may have recognized that variability when explicitly rating their degree of similarity, over and above the level seen when considering group similarity in everyday life.

Although social categories are rated as lower in perceived entitativity and homogeneity when compared to other types of groups this does not stop people from developing and articulating stereotypes about them. Is it then the case that there is something else about social categories that engenders societal stereotypes or is it that whilst they may exist, we rarely use the term 'stereotype' to describe beliefs about other types of groups, e.g., intimacy or task groups? Further research suggests that people do hold generalized beliefs and expectancies about task groups in addition to social categories, and whilst the nature and content of people's cognitive representations of each may vary, the representations for both task groups and social categories are structurally similar in many ways (Spencer-Rodgers et al., 2007). Perhaps more importantly, these results indicate that entitativity, homogeneity and essentialism are distinct concepts and furthermore may function differently in terms of group perception for different types of groups.

### **Entitativity and Implicit Theories**

Whilst the literature provides substantial support for a relationship between entitativity, homogeneity and essentialism, the links between entitativity and malleability are less well known. In their paper exploring the qualitative differences between implicit theories of groups and individuals Rydell et al. found that implicit theories about groups influence stereotyping by changing perceptions of group entitativity (Rydell et al., 2007). As in previous work linking entity theories of individuals with higher levels of stereotyping, their study shows that people who hold an entity theory about groups endorse group stereotypes more than those who hold an incremental theory about groups; furthermore, the difference in level of group stereotype endorsement is partially mediated by perceptions of group entitativity. They argue that one of the reasons that group entity theorists stereotype groups more often is because they perceive groups as being more entitative than group incremental theorists do; and their higher perceptions of group entitativity enable them to rely on stereotypes when making predictions or judgements about other groups. This suggests that both

implicit theories about groups and perceptions of group entitativity are important to the understanding of stereotyping, and that if either of these is missing (or at a lower level) than endorsing and applying stereotypes to groups may be less likely. Rydell et al. argue that this then has implications for the reduction of prejudice and stereotyping; manipulating people's implicit theories of groups and fostering greater belief in incremental style thinking this has the potential to reduce stereotyping in two ways – increasing beliefs in the malleability of groups and reducing the perceived entitativity of groups.

Research has also shown that perceived group entitativity may act as a causal factor in the context of social judgments and aid people when accounting for the behaviour of group members. In a similar vein to entity theorists, people who view groups as highly entitative tend to judge the behaviour of group members based on traits or characteristics and disregard situational factors (Yzerbyt et al., 1998). Negative, rather than positive, information also influences information formation processes to a higher degree when a target group is perceived as entitative (Abelson et al., 1998).

## **Essentialism**

When discussing essentialism one series of studies in particular has developed and refined the operationalisation of the construct (Haslam & Ernst, 2002; Haslam et al., 2000; Haslam, Rothschild & Ernst, 2002). The first of these (Haslam et al., 2000), tackled the lack of systematic research given to the organisation of essentialistic thinking about social categories and explored how essence related beliefs are structured and interrelated. They took nine conceptual elements from the wide range of essentialism literature to include in the study, these were: the existence of defining characters, discreteness (i.e., the existence of sharp boundaries), categories as 'natural', inductive potential, immutability, historical invariance, homogeneity, categories are based on intrinsic properties and identity determining. Participants in the study were asked to rate a sample of social



categories on a set of items relating to the nine elements outlined above, in addition they were asked to rate each group in terms of social status. The results revealed two clear sets of beliefs; one corresponded to the notion of 'natural kinds' with categories such as gender and ethnicity best exemplifying this, the other set of beliefs corresponded to 'entitativity' or the realness of the group, and this was best exemplified by groups in the study such as Jews and AIDS sufferers. This two-factor structure was replicated in the second (Haslam, Rothschild & Ernst, 2002) and third studies (Haslam & Ernst, 2002), In addition the studies revealed that essentialist thinking is not consistently applied across all social categories, that essentialist beliefs are dynamically interlinked and that such beliefs can be experimentally manipulated. The authors suggest that in order for a category to be essentialised both ontological assumptions (natural kinds and entitativity) must be held to some degree.

Several years after the studies by Haslam and colleagues new research came to light questioning whether essentialism was indeed a two-factor concept or whether essentialism was differentiated from both entitativity and natural kindness (Demoulin et al., 2006). Natural kind categories are structured around the deeper features of members of the category; these features in turn provide the casual linkage to surface characteristics and thereby explain why members of the category or group look a certain way. However, Demoulin et al. argue that the finding that people essentialise natural kinds has itself led to the very close link between natural kinds and subjective essentialism – but they are in fact not the same thing. Subjective essentialism are 'lay beliefs and theories about underlying properties of social groups.....members of a given group, over and above their similarity of surface, share with one another deep underlying features that characterize them and differentiate them from members of other groups' (p.25). Social categories should not be attributed an essence as they are social constructions (human artifacts) and not natural kinds, however people often (mis)attribute an essence to social categories and this misattribution stems from the erroneous perception of social categories as natural kinds. They also argue that rather than simply being a component of essentialism, entitativity is also a complex concept in its own right.

They highlight research which demonstrates that whilst perceived group entitativity facilitates the emergence of essentialist beliefs (e.g., Dasgupta et al., 1999; Rogier & Yzerbyt, 1999; Yzerbyt & Rogier, 2001) the reverse path is also observed – higher levels of essentialist beliefs can also lead to higher levels of perceived group entitativity (Yzerbyt, Corneille & Estrada, 2001; Yzerbyt, Estrada et al., 2004).

Demoulin et al. (2006) highlight the lack of a direct measure addressing the belief in an underlying essence in the studies by Haslam and colleagues and their studies aimed to build on this previous work by disentangling the belief in an essence, from both entitativity and natural kindness in forced social categories (FSC) and chosen social categories (CSC). In addition, they sought to explore whether the content of essentialist theories vary specifically with type of group hypothesising that FSC would be high in natural kindness and moderate in entitativity whilst CSC would be high in entitativity and moderate in natural kindness. They proposed that all groups can be essentialised; whether they are is not dependent on the type of group (FSC vs CSC) but rather the content of those essentialist theories will vary by group type.

The study by Demoulin et al. (2006) measured three clusters of properties: natural kinds (e.g., discreteness, immutability), entitativity (e.g., similarity, organization) and subjective essentialism (e.g., inherence, underlying reality). Twenty-four social groups (half FSC and half CSC) were rated on items corresponding to the three clusters of properties; these social groups were selected to be participants' ingroups and the other half being participants' outgroups. The main findings of the first study demonstrated that people can differentiate between CSC and FSC groups, and that the two types of groups were associated with different levels of entitativity and natural kindness. Both FSCs and CSCs were rated on each scale to either a lesser or greater degree; FSCs were more highly rated as natural kinds and CSCs were rated higher in terms of entitativity. The results also demonstrated that FSC and CSC do not differ in the extent to which people essentialised them, and importantly that the underlying reality (inherence) was uniquely and significantly

predicted by both entitativity and natural kindness. Natural kindness and entitativity are jointly and independently predictive of the degree of essence ascribed to a group; this finding is imperative as it highlights the importance of differentiating between the three unique but related concepts – essentialism, entitativity and natural kindness. Subjective essentialism can no longer be equated with the sole perception of groups as natural kinds.

Despite the diversity of approach to essentialism research there seems to be considerable agreement that immutability (the belief that objects are fixed and unchanging) is fundamental to essentialist thinking. Bastian & Haslam (2006) argued that immutability or the belief in the fixedness of traits should not be thought of as solely a focus of implicit theory research but that it had also been included as part of the work on psychological essentialism (e.g., Gelman, 2003). They go on to suggest that immutability (or malleability) covaries as part of broad set of essentialist beliefs, actually making up part of natural kind beliefs. Evidence suggests that essentialist beliefs also play a significant role in group stereotyping (e.g., Jayaratne et al., 2006; No et al., 2008; Yzerbyt, Corneille & Estrada, 2001; Yzerbyt & Rocher, 2002) and Bastian & Haslam (2006) conducted a set of studies to explore whether implicit theories (entity beliefs) were responsible for stereotype endorsement, as had been demonstrated in previous work, or whether a comprehensive set of essentialist beliefs (including immutability) were equally or even more predictive. In doing so, they replicated the 1998 study by Levy, Stroessner & Dweck on implicit theories and stereotyping as discussed earlier, but with the addition of essentialism measures.

The study by Bastian and Haslam (2006) measured beliefs that human attributes are: biologically based ('natural kinds'), discrete (they place people in bounded types), informative (have inductive potential) and fixed (entity theory). The latter of these measures is based upon the 8-item implicit person theory measure used by Levy et al (1998) which assesses whether people can or cannot change their characteristics. The results of the study supported the authors' hypotheses that entity theories are components of a set of essentialist beliefs, that essentialist beliefs predict

stereotype endorsement (this was not reducible to immutability beliefs as other components of essentialist beliefs independently predicted stereotype endorsement), and finally that people who hold more essentialist beliefs explain the continuation of stereotypes as being due to inherent factors. The authors argue that both the effects and correlates of implicit person theory may be understood in terms of psychological essentialism.

The study by Bastian and Haslam (2006) explores essentialism of human attributes rather than of social categories; it should be noted that the entity items used are part of a measure of person related implicit theory and not implicit group theory – these are qualitatively different and the lack of consideration of this may influence the conclusions of the study. Indeed, the results are similar to those of Levy, ‘... people who hold essentialist beliefs about human attributes are apt to endorse stereotypes both negative and positive, consistent with Levy et al’s (1998) findings regarding entity theorists’ (p234). Although the findings suggest that viewing human attributes as fixed and/or as essence-based lead to higher stereotype endorsement, it does not tell us whether when an individual displays higher levels of one factor (e.g., entity-based thinking) they also have higher levels of the other factor (e.g., essentialist beliefs) and vice versa. If one factor is manipulated can this reduce levels of both essentialist and fixed/entity beliefs akin to the effects seen in the research on implicit theories and entitativity by Rydell et al. (2007)?

Haslam, Bastian et al. (2006) support this notion of implicit theories being part of a broader framework of essentialist beliefs. Using the studies discussed above as evidence, they argue that immutability is one of the two fundamental components of essentialism, and furthermore the links between essentialism have been demonstrated to be cognitive in nature rather than simply empirical co-variates. Again, it could be argued that the studies cited as evidence here are based on implicit person theories and as demonstrated earlier these are qualitatively different to implicit group theories (Rydell et al., 2007). As such, items measuring implicit group theories and essentialism may

indeed load on different factors when measured, rather than all being part of one factor as found in the studies by Haslam and colleagues.

Furthermore, implicit theories research includes both sides of the coin: entity and incremental theories. These are not simply thought of as opposite, or as a lack of the other, but are two distinct ways of processing information about people and groups. Essentialist research by contrast only looks at essentialist beliefs (entity/ immutability beliefs), it does not consider non-essentialist beliefs or what they might look like. The question remains that when it places immutability beliefs within a broader framework of essentialism, is it simply ignoring incremental beliefs or is it suggesting that incremental beliefs (or non-essentialist beliefs) are simply an absence of essentialist beliefs. The latter would seem untenable because incremental thinking is not simply the absence of entity/immutability beliefs but rather a different style of cognitive processing.

Haslam, Bastian et al. (2006) conclude that an expanded focus to essentialism research would be beneficial; it could be argued however, that given the differences between implicit person and implicit group theories, this expanded focus would be better invested in a broad implicit theory of groups (including perceived malleability, essentialism, entitativity and homogeneity) rather than placing all factors within a broader set of essentialist beliefs.

### **Implicit Group Theory and Social Dominance Orientation**

Little research has explored the relationship between SDO and implicit theories of groups in terms of their perceived malleability, however there is evidence to suggest that both ideologies perform similar functions. As discussed earlier in this section holding an entity theory predisposes individuals to discount counter stereotypical information and maintain stereotypes (Levy, Stroessner & Dweck, 1998; Plaks et al., 1998). In a similar manner Tausch & Hewstone (2010) tested a parallel hypothesis related to SDO. They proposed that group stereotypes legitimize social hierarchy, a central tenet of Social Dominance Theory (Sidanius & Pratto, 1999), and therefore individuals high in SDO

would be predisposed towards the maintenance of stereotypes that justify the lower status of some social groups even when presented with counter stereotypical information.

The results of the study by Tausch & Hewstone revealed that SDO was negatively related to stereotype change thereby confirming the hypothesis, and the authors concluded that for those individuals high in SDO, stereotypes serve as hierarchy enhancing legitimizing myths. Such a motivational account suggests that stereotypes are maintained because they serve important needs. In terms of SDO they serve to defend the social order and in terms of an IGT they serve to simplify the social world. Whilst the two ideologies may serve different purposes, the evidence that they both contribute to stereotype maintenance suggests that there may be some overlap or relationship between the two variables.

More recent research has directly investigated the relationship between SDO and an implicit theory or mindset of intelligence (Hoyt et al., 2018). Hoyt and colleagues propose that SDO is a foundational belief system that motivates the endorsement of an entity theory of intelligence which in turn serves as a legitimizing belief system to justify hegemony and social order. Via a series of three experiments, they sought to manipulate individuals' mindsets about intelligence by providing participants with 'scientific' articles. Results indicated that individuals who were high in SDO held a more fixed mindset about intelligence, and were less open to the mindset manipulation. The results also suggest that there is no evidence that the mindset manipulation impact SDO levels, and therefore the authors make the case that SDO is the foundational belief, coming earlier in the psychological chain than an implicit theory of intelligence.

The results of this study are quite compelling, however as with much of the research into Implicit Theories, this study explores beliefs about individuals not groups and is conducted solely with adults. In order to establish whether or not SDO does precede Implicit Theories more evidence with children and adults as well as longitudinal evidence is needed.

The information presented here points to a theoretical connection between SDO and implicit theories. Taking this further, Kahn et al. (2018), propose that given implicit theories about groups deal with the possibility of change or malleability, they underpin attitudes about the desirability of that change. Essentially, the extent to which one believes groups in society can change (IGT) determines one's attitude towards the desirability of that change. In a series of studies exploring the relationships between IGT, SDO and political identity, they found that SDO mediates the relationship between IGT and political identity with regards to social and economic success, but not when political identity is related to conflict. Whilst we can draw conclusions from this study which help to explain why people endorse or reject social dominance beliefs, that is the more one holds an entity theory about groups the more they will accept inequality between groups, the evidence is correlational and therefore no conclusions about the causal effect of an IGT on SDO can be drawn.

### **Summary**

The body of work on implicit theories, from that on theories of human attributes through to those on implicit theories of groups, consistently demonstrate that holding an entity theory is associated with higher levels of stereotyping, negative outgroup bias and less willingness for contact with outgroups.

The work addressing intergroup conflict provides hope for improving intergroup relations. Whilst it may seem disheartening at first to learn that around 40% of the population may hold an entity theory of individuals (Dweck, 1999) and therefore may rely heavily on stereotyping to inform their judgments about groups, the research also suggests that these beliefs can be manipulated or changed. By changing people's implicit theories, or fostering incremental style thinking in children and young people, this can provide an environment in which stereotypes and prejudice are less likely to survive and flourish, and one in which people are more willing to embrace intergroup contact.

Despite this compelling evidence there remains large gaps in this research area. Whilst much of the early work by Dweck and colleagues focused on school children and their implicit theories of intelligence, there are almost no studies exploring the implicit group theories of children and adolescents, nor what their consequences might be for intergroup relations. Furthermore, almost no research, to the authors best knowledge, exists on the development of implicit group theories from childhood through teenage years and beyond. Given the widely accepted premise that childhood and adolescence are key points of intervention when it comes to prejudice reduction this seems to be a missed opportunity.

In addition, there are many gaps in the work in terms of the scope of Implicit Group Theories. All of the studies mentioned follow the pattern set by the research on implicit theories of individuals; they focus solely on malleability of groups despite the fact that perceptions or judgements of groups are qualitatively different from those made of individuals. Despite the evidence that variables such as malleability, essentialism, entitativity and homogeneity co-vary, and each have an impact on related aspects of intergroup relations, no work has developed a measure that evaluates each of these variables in regards to an implicit group theory. The chapter has presented a wide range of research that supports the idea that groups have properties that individuals do not, and therefore there is a strong case for the development of a reliable implicit group theory measure. Furthermore, only a very small body of work has explored the relationship between SDO and an Implicit Theory of Groups despite compelling evidence about their theoretical link and combined potential to underpin stereotyping and prejudice.

The lack of evidence related to the development of an Implicit Theory of Groups, Social Dominance Orientation, and variables such as essentialism, entitativity and homogeneity make it difficult to predict which of these constructs may develop first in the psychological chain. The empirical work in this thesis is exploratory in nature and aims to establish relationships between

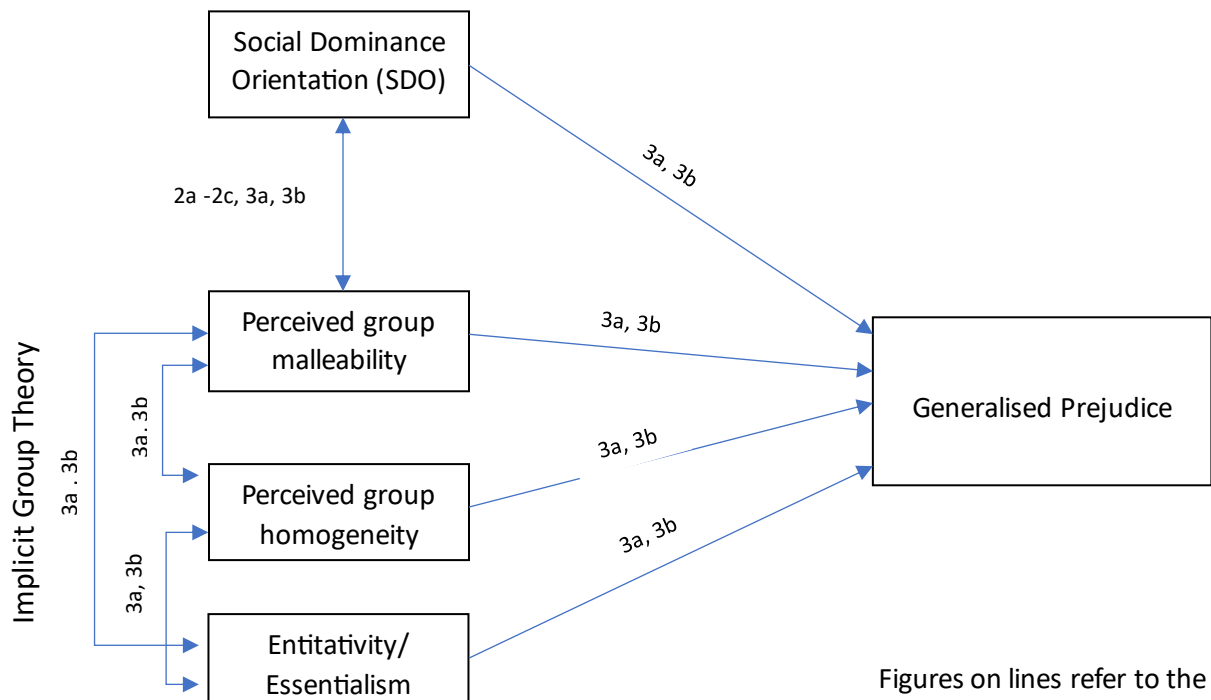


these variables. A conceptual model of how these variables may relate and where the relationships are tested within this thesis is outlined in Figure 1.

The empirical work included in this thesis, and outlined in Chapters 4 – 6, aims to develop and test a broad measure of implicit group theories for use with children, adolescents and adults. Chapter 4 begins by testing perceived malleability and homogeneity items in these three age groups. Chapter 5 continues by both refining malleability and homogeneity items, in addition to testing items related to essentialism, entitativity and SDO in samples of children, adolescents and adults. And chapter 6 reports the testing of an implicit group theory model in addition to exploring the association of an IGT and SDO with measures of generalised prejudice.

**Figure 1**

*Conceptual model showing relationships between variables*



Figures on lines refer to the empirical studies where relationships are tested (e.g., 1a – 1c)

The following chapter provides additional background information to this thesis. It outlines the collaborative work carried out with the Anne Frank Trust UK (AFT) as part of my ESRC SeNSS CASE (1+3) studentship, provides information about the measure of generalised prejudice included in studies 1a, 3a and 3b of the thesis, and discusses links between the current work and that carried out in conjunction with the AFT.

### **Chapter 3: Collaboration with the Anne Frank Trust UK – Impact on prejudice reduction in young people.**

*This chapter describes the mission and work of Anne Frank Trust UK and explains the collaborative work undertaken as part of the SeNSS CASE (1+3) studentship. It briefly outlines the work they do as an educational charity, the role of evaluation within their educational provision, the theoretical foundation for the evaluation methodology and a description of the measures used to evaluate the impact of their educational programmes. My role in the collaboration included preparation of four impact evaluation reports. These are summarised. The chapter explains the development of measures and preparation towards the future aims of the Anne Frank Trust evaluation programme: to establish relationships between underlying mechanisms, such as empathy, and increased positive attitudes to multiple groups. The final section of the chapter explains how the evaluation work with the Anne Frank Trust relates to the other research and aims for this PhD thesis, particularly the identification of underlying mechanisms of generalised prejudice in children and young people.*

#### **The Anne Frank Trust UK**

The Anne Frank Trust UK (AFT) is an educational charity that aims to empower young people with the knowledge, skills and confidence to challenge all forms of prejudice and discrimination. The charity was established in the U.K. in 1991 and partners not only schools, but also local authorities and the criminal justice sector to deliver educational programmes in a variety of settings.

The educational programmes use the powerful life story, and untimely death, of Anne Frank to impart knowledge about the harmful consequences prejudice and negative intergroup attitudes can cause. The programmes also aim to encourage individuals to take personal responsibility for challenging prejudice, have respect for others and hold positive attitudes towards all groups in society.

Anne's famous diary was published in 1947 and has been read by millions of adults and children across the world since that time. The educational programmes delivered by the AFT use Anne's diary as their starting point, and although set in another time, exploring the Holocaust through the eyes of a teenager enables young people to feel more connected to the subject matter. The young people involved in the programmes, not only gain knowledge about Anne's life and the Holocaust, but can begin to relate what happened in the second world war to recent global events as well as their own lives and communities. This is clearly evidenced in qualitative work carried out with the young people who have been through the programme (Goodbun, 2021), and also via impact data that demonstrates that the effect of the programme is not restricted to attitudes towards Jewish people (e.g., Goodbun, 2022).

The AFT run a number of different programmes in schools, which change and develop according to demand and funding. However, the programme that forms the cornerstone of their vision is their main schools programme – "Anne Frank: A History for Today". The focal resource for this programme is their acclaimed portable exhibition. The exhibition is set up in situ (usually a school) and up to 20 pupils, of mixed needs and abilities, are then selected by the school to train as 'peer guides.' A member of the AFT staff team teaches this group of peer guides about Anne Frank's life and the Holocaust using the aids provided in the exhibition. Workshops also take place with the students to enhance and widen their learning and to ensure the history is related to modern day prejudice. A range of workshops exist including keeping safe online, responding to gender-based, homophobic or Islamophobic bullying, and speaking out against extremism. Further information about the range of programmes available can be found on the AFT website

<https://www.annefrank.org.uk/>

The peer guides lead tours of the exhibition in the days following their training for students across all year groups in their school. This unique aspect of peer education has huge impact both on

the peer guides, in terms of confidence, and engaging other pupils more actively than if the information was being imparted by a teacher or other adult (Goodbun, 2021).

Although it is situated London, the AFT has education staff based in Scotland and six regions of England. The schools that take part in the programme are often (but not always) in areas of deprivation, or where intergroup hostilities and hate crime are evident. In the academic year 2018-2019, the programmes reached 152 schools, delivered workshops to 15,129 young people and trained 1,351 Peer guides. Between 2019 - 2020 the programmes were delivered to even more young people – 23,984 in 216 schools, training 1,518 peer guides and 1,398 ambassadors. This reach has remained constant despite the disruption of the Covid-19 pandemic which forced many of the programmes to be run online or as a hybrid model. During the school year 2020-2021, the Anne Frank Trust worked in 178 schools, reaching almost 14,000 young people, and in 2021-2022 its work grew further, reaching 46,133 young people across 184-year groups in 160 schools.

### **Impact Evaluation**

Impact evaluation is essential for any intervention or educational programme, and programmes run within the charity sector are no exception. Impact evaluation provides numerous benefits to any charity. It can inform decisions in regard to the content and style of a programme, solve problems and build knowledge, help to provide accountability to any donors or stakeholders and ultimately it can demonstrate the success or shortcomings of a programme. All of this information can be used to make judgements about the efficacy of a programme, and help to inform decisions about continuing, replicating or adapting a programme for future use. Issues around diversity within peer guides samples in the AFT programmes, and the sensitivity of newer evaluation measures, have been highlighted through the evaluation process described in this chapter, and subsequent steps put in place to resolve such issues (Goodbun, 2021, 2022).

## Impact Statement

In 2014 the AFT and the University of Kent (UoK) began a partnership designed to ground the charity's work in strong academic theory, rigorous research methods and enable independent evaluation of the Trust's educational impact on young people. Professor Dominic Abrams was at the forefront of this initiative and his body of work provided the foundations of the Anne Frank Trust's evaluation methodology. These links between research and the emergent methodology developed with the AFT have notably drawn on:

- Evidence that arts-based interventions can mobilise pro-social intergroup attitudes (Van de Vyver & Abrams, 2018).
- Evidence that children's learning about Anne Frank can address antisemitism at the same time as leading to generalised improvement in attitudes to other social groups (Abrams et al., 2015).
- Development of the Contact Star as a measurement approach that can be applied to multiple social groups, drawing on work led by Professor Abrams with the Equality and Human Rights Commission (Swift et al., 2016).
- A focus on improving children's ability to empathise with victims of discrimination by strengthening their understanding of how group and intergroup dynamics create social pressures that reinforce prejudice (Abrams, 2011; Abrams, Palmer et al., 2014).
- A conceptual basis from research involving ESRC CASE students, which shows how marginalisation works within as well as between groups (Abrams, Palmer et al., 2017).

In 2017, through the SeNSS CASE (1+3) studentship, I began collaborative work with the Trust designing and refining outcome measurement tools, advising on evaluation and analysing impact data across all programmes based in schools. This work built both on the previous ESRC CASE studentship of Kiran Webster (nee Purewal) which explored theory of social mind and group norm

understanding, and the theoretical work outlined above. The aim being to further explore the underpinnings of generalised prejudice in children and young people. Both studentships, and the work carried out in collaboration with the AFT ultimately aim to address the challenge of understanding whether children's generalised understandings of groups might be an avenue for tackling all prejudices. Over the course of the current studentship, I have written a number of internal reports and four annual impact reports for the AFT.

### **Measuring the Impact of AFT Educational Programmes.**

All evaluation measures used by the AFT pre 2022 were administered using paper-based surveys at two time points – pre and post intervention. The pre and post evaluations are essential for measuring impact of the programme on the young people involved.

In contrast to more academic research, which often focuses on reducing negative attitudes based on one characteristic (e.g., race, gender, disability etc), challenging all forms of prejudice and discrimination is key to the vision of the AFT. Although the education programme uses anti-Semitism and Anne Frank as its focal point, the programme relates these issues to other forms of prejudice which exist in wider society, and tries to foster positive intergroup attitudes, and willingness for contact, with multiple groups in society.

Measuring generalised prejudice, or prejudice to multiple groups, tends to lie in the academic domain of work on Right Wing Authoritarianism (RWA) and Social Dominance Orientation (SDO) (e.g., Hodson & Costello, 2007; Sibley & Duckitt, 2008) and almost exclusively in adults. The AFT, by contrast, use the diary of a teenage girl to connect young people to issues of prejudice and discrimination, and to encourage empathy and a sense of commonality with other groups in society which may be different to their own. Essentially the AFT are leading the way in terms of educational interventions designed to increase positive attitudes to multiple groups in society, and the collaboration with the AFT is one of the earliest and most well developed in the UK to evaluate interventions to tackle generalised prejudice among young people (Kingett et al., 2017).

### **Impact Measures used in AFT programmes**

Delivering the educational content to young people is a priority for the AFT educational team. Whilst evaluation plays a significant role in the programmes, it is often constrained by the reality of time and delivery issues, including fitting within the school's curriculum/timetable, and the delivery of surveys by teaching staff rather than researchers.

Simple items are needed within the surveys to ensure that they are both self-explanatory and time efficient. Ultimately this means that there is a compromise between scientific rigor and the needs of the AFT for a simple and achievable evaluation survey.

The following sections include detailed information about some of the main evaluation measures developed with the UoK and used within the AFT educational programmes. The measure of attitudes and commonality are only completed by Peer Guides. Other measures detailed below are used more widely during workshops for larger groups.

#### **Attitudes**

To measure attitudes to multiple groups the AFT use 'The Contact Star' (Purewal, 2015); a measure designed in collaboration with the University of Kent in 2015. An example Contact Star is shown in Figure 1; a full-size Contact Star measure can be found in Appendix A. The star asks young people to consider how much they would be willing to spend during lunchtimes for a whole week with individuals that they have never met before and who are from a number of different social groups. Each point of the star is labelled with one of the social groups and the young people are asked to indicate their responses on a scale from 1 – 7. 1 indicates that they are 'not at all willing' and 7 indicates that they are 'very much willing' to spend lunchtimes with an individual from the social group.



Figure 2

*An example Contact Star*



The contact star has been refined and adapted over the years to measure attitudes to different groups, and to reflect updated category labels.

The contact star above was used between the beginning of the 2017-2018 academic year until the end of the 2019-2020 academic year. At the beginning of the 2020-2021 academic year a number of labels were changed to be more appropriate and inclusive, and three groups were added to make a 16-point contact star. Having a range of different social groups on the contact star enables the evaluation of attitudes to different stigmatised groups, but also allows for the calculation of an overall attitudinal score to outgroups and can therefore be used to evaluate levels of generalised prejudice.

Attitudes to the following groups were measured as part of the 16-point Contact Star:

- Gypsy Traveller
- British
- LGBTQ e.g., Gay
- Black
- Disabled
- Muslim
- Homeless
- Old
- German
- An immigrant
- Overweight
- Jewish
- Christian
- A Refugee
- A teacher
- Someone living with a mental health issue.

### **Feelings of Commonality**

Alongside this, feelings of commonality are also measured towards the same groups that appear on the Contact Star. Feelings of commonality are a psychological mechanism and one of the factors which underpin attitudes towards other people and groups. Feelings of commonality do not simply represent group membership but are more akin to psychological connections a person may feel towards a group. For example, people who describe themselves as French, may have varying

views on how much they have in common with other people who also describe themselves as French.

This second element of the questionnaire asks the young people to use a four-point scale to report how much they feel they have in common with each of the groups included on the contact star (1 = Nothing in common, 2 = A little in Common, 3 = Quite a lot in common, 4 = very much in common). (See Appendix B).

The groups included on the feelings of commonality measure varied according to which version of the Contact Star was being used.

### **Knowledge, Empathy, and Confidence (KEC)**

Other constructs that are often measured by the AFT as indicators of impact are knowledge, empathy and confidence. These three elements are measured in one stand-alone questionnaire, and are commonly used in programmes other than “Anne Frank: A History for Today.”

Prior to the beginning of the 2018-2019 academic year a five item KEC was used to measure impact of the AFT programmes on knowledge, empathy and confidence. The items were all measured on a five-point agreement scale (1= strongly disagree, 5 = strongly agree). The items were:

- I am not usually bothered if other people have bad luck (Empathy)
- I often feel moved or have concerned feelings when I see something happen to other people (Empathy)
- I know a lot about what prejudice is (Knowledge)
- I know a lot about the harm that prejudice can cause (Knowledge)
- I feel confident (Confidence)

Analysis of the KEC data suggested that little/no improvement was being seen in terms of empathy as measured by the two empathy items, contrary to anecdotal accounts provided by the

AFT educational team. Anecdotal evidence also suggested that some of the young people struggled with the counter intuitive empathy item.

In order to solve these measurement issues and develop a more robust and reliable KEC measure, further developing the impact evaluation tools for use on all programmes, an extensive pilot study was undertaken with young people via the AFT education programmes in Scotland during the latter half of 2018.

### **KEC Pilot Study (2018-2019)**

The aims of the pilot study were threefold:

1. To select reliable empathy items for inclusion in the measure
2. To ensure the item 'I feel confident' was measuring self-confidence.
3. To ensure participants' responses to knowledge items were not being affected by social desirability.

An initial piece of work was conducted with 100 adults online via the online survey tool Prolific. This aimed to narrow down the items for use in the pilot study with young people. Following analysis of this data the items selected for inclusion in the pilot study were as follows:

*Knowledge* – two items from the original measure remained unchanged.

*Empathy* – 9 items from the Multidimensional scale of empathy (Davis 1980, 1983). The items represented all four facets of empathy from the original Davis scale: perspective taking, concern, fantasy and distress. Examples of each are as follows:

- Perspective taking – I sometimes try to understand my friends better by imagining how things look from their perspective.
- Concern – When someone gets hurt in my presence, I feel sad and want to help them.
- Fantasy – I really get involved with the feelings of a character in a story.

- Distress – Being in a tense emotional situation scares me.

*Confidence* – the original item ‘I feel confident’ was included alongside two self-esteem items: ‘On the whole I am satisfied with myself’ and ‘At times I think I am no good at all.’ Both items were taken from the Rosenberg Self-Esteem Scale (1979).

*Social desirability* – 10 items from the social desirability scale – SDS-17 (Stober, 2001) were selected for inclusion. Example items include ‘I always eat a healthy diet’ and ‘I occasionally speak badly of others behind their back’.

A copy of the pilot KEC can be found in Appendix C.

In total 70 Peer Guides completed the pilot KEC at both pre and post programme time points. Analysis revealed that the three perspective taking items loaded consistently on one factor in both the pre and post conditions. In addition, these three empathy related items demonstrated the most progress in terms of mean scores pre to post programme and were selected for inclusion in the revised KEC. No significant relationships were found between social desirability and self-reported knowledge at either pre or post time point and therefore the knowledge items remained unchanged. Significant correlations were found between the original confidence item and the two self-esteem items; it was concluded therefore that the original confidence item was reliably measuring confidence of young people and therefore remained unchanged for inclusion in the revised KEC. In addition, one further confidence item was added to measure confidence in talking about prejudice – an important factor in empowering young people to challenge all forms of prejudice and discrimination. A copy of the revised 7 item KEC can be found in Appendix D

### **Impact Measures used in Other Programmes**

#### **Free To Be**

Free To Be is an anti-bullying programme funded by the Department for Education which ran from 2016-2021. The programme involved workshops and ambassador training in which young

people (11-14 years) worked with a film maker to create films that challenge prejudice-based bullying.

The programme was evaluated by asking the young people to indicate their agreement to a range of statements at two time points (pre and post programme). The aim of the evaluation was to assess the impact of the programme in the specific areas of:

- Knowledge about Anne Frank's life, the Holocaust and the harm that prejudice-based bullying can cause.
- Confidence to report prejudice-based bullying.
- The (inappropriate) use of stereotypes about people from other ethnic groups.
- Empathy towards others.

All 6 statements were measured on a five-point agreement scale (1 = Strongly Disagree, 2= Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, 5= Strongly Agree). The six statements were as follows:

- I know a lot about Anne Frank's life and the Holocaust.
- I know a lot about the harm prejudice-based bullying can cause.
- I feel confident to report prejudice-based bullying.
- It is not OK with me to use stereotypes about people from other ethnic groups.
- I often feel moved or have concerned feelings when I see something happen to other people.
- I find it easy to empathise with people experiencing discrimination.

### **Building a Stronger Britain Together (BSBT)**

In 2019-2020 the Home Office funded the BSBT project which provided workshops to young people aimed at preventing extremism. The workshops used the story of Anne Frank to present a relatable example of what can happen when prejudice goes unchecked and explored how Nazi

propaganda was used to dehumanise Jewish people. This information was used as a springboard into discussions about images and ideologies (e.g., the Far-Right narrative) that may be used to divide society in the present day.

Pre and Post programme evaluations were used to assess the impact of the programme in the following areas:

- Knowledge about prejudice and the problems it can cause in schools and communities.
- Awareness of the potential dangers of extremism.
- Valuing respect for others whatever their identity.

All 5 items were measured on a five-point agreement scale (1 = Strongly Disagree; 5 = Strongly Agree). The five statements were as follows:

- I know what prejudice is.
- I understand prejudice can cause problems in my community/school.
- I believe prejudice can lead to extremism, which can be dangerous.
- I think each of us should play a part in challenging prejudice.
- Everyone should be respectful of others whatever their identity (e.g., race, religion, sexuality).

### **Wider Impact of the AFT Programmes**

All of the AFT core programmes (e.g., A History for Today; Voices for Equality), have workshops attached to them for whole class groups. These run alongside the smaller, more focused sessions which train peer guides. Historically, the students who are not peer guides, but may visit the exhibition or take part in a stand-alone workshop, have not been part of the evaluation process.

In 2021 I collaborated with the AFT to design an evaluation measure for use with students not trained as peer guides. This phase of evaluation, builds on the collaborative evaluation work between the University of Kent and the AFT, and aims to capture impact on those students who are involved in whole class workshops, rather than just peer guides and ambassadors. The workshops cover different themes including Islamophobia, Homophobia, Gender Expectations and Anti-Semitism, but additional workshops focusing on Anti Black Racism, Transphobia and Ableism were, at the time of writing, being developed.

The workshops aim to use voices of lived experience to develop knowledge, skills and empathy around issues of prejudice and discrimination, and during the workshops young people reflect on current issues of prejudice with the intention that they are motivated and committed to challenge it - becoming positive agents of change.

Through varied activities and creative facilitation, the workshop sessions allow young people to consider the issues in today's society including the reasons why such forms of prejudice may take place, the different ways in which it can present, and the impact it can have.

The questionnaire was designed to be suitable for both older primary students and secondary school age students and is split into two sections. The first aims to measure knowledge, critical thinking, empathy, values, understanding, and agency as well as views on 'banter'. The second section provides the student with three scenarios in which prejudice-based bullying may occur, and gives them a range of options to indicate how they would react in these situations.

The same questionnaire can be used for all workshops, irrespective of theme, and it was predicted that following the workshops the young people would demonstrate improved attitudes towards others, increased empathy and agency, and commitment to challenge prejudice. Tensions around the time available to participants to complete the measure and the age range of participants together with the need to understand complex constructs that may influence generalised prejudice, once again led to compromises that resulted in a measure which favoured simplicity. The need to



evaluate impact on the wider participant pool, and not just peer guides, was another driving factor in the development of this measure and added to the need for a simple and self-explanatory measure. Although more complex measures may be favoured in academic research the measure developed here was considered efficient and achievable for the AFT to use with large numbers of young people. A copy of the questionnaire can be found in Appendix E.

Following an analysis of this measure using data from 2021-2022, six of the original items in the first section of the questionnaire (excluding the banter item) were included as an additional section in the Contact Star measure. Every student who now completes the Contact Star is also required to respond to the six items outlined above. This was a huge development in terms of the evaluation strategy of the AFT and inclusion of this measure will enable future analyses to establish relationships between generalised prejudice and the underlying mechanisms/mindsets associated with them (e.g., empathy, values etc), and supports the research outlined in Chapter 6.

### **Longer Term Impact of the AFT Educational Programmes**

Three separate evaluations have also taken place to measure the longer-term impact of the Anne Frank Trust's educational programmes on the young people who take part. Two of these evaluations measured longer-term impact on attitudes via the Contact Star (2019, 2021), and one measured the longer-term impact on knowledge, empathy and confidence via the KEC measure (2021). In each case the Trust contacted schools which had previously taken part in the programmes and asked students to repeat either the Contact Star or the KEC survey.

### **Summary of Findings of the Evaluation of the AFT Educational Programmes**

Over the course of the SeNSS CASE (1+3) studentship, I have written four annual reports for the AFT. The evaluation of impact on attitudes using the Contact Star is included in all four evaluations and reports, providing a consistent measure of impact. However, each report varies in its

focus and other evaluation measures are included. Report 1 aimed to provide the first formal report on the impact of the schools programme on attitudes to Jewish people and other groups in society, as well as reporting a longitudinal evaluation of the longer-term impact of the programme on young people's attitudes. Measures included the contact star and the original KEC.

Report 2 aimed to provide a more comprehensive analysis of the AFT's programmes, reporting results from measures including the Contact Star, the measure of commonality and from the anti-extremism programme. This report also included a qualitative analysis focusing on why the young people held particularly positive or negative attitudes to different groups in society.

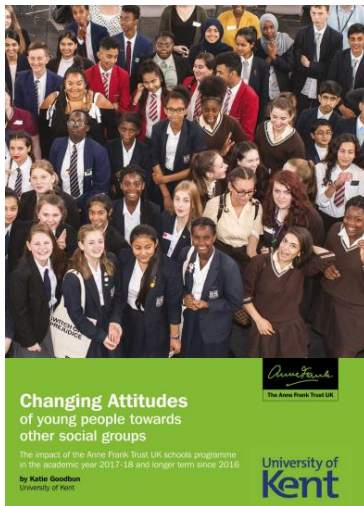
Report 3 aimed to highlight the continued impact of the AFT during the Covid-19 pandemic and was the first report to include results from the revised KEC measure. It also included a long-term evaluation of the Contact Star and KEC measures, as well as a qualitative analysis of focus group data.

Finally, Report 4 aimed to outline the equitability of impact across groups and impact on primary school students. Measures included the Contact Star, and the recently designed workshop questionnaire described above. It also included an introduction to the AFT's Youth Empowerment Programme.

The results of each of the reports are summarized on the following pages.

## Report 1 – Changing Attitudes of young people towards other social groups

<https://www.annefrank.org.uk/Handlers/Download.ashx?IDMF=b1258dfe-2aa4-4fbe-959b-8e2a96ab4653>



**Aim:** To analyse the impact of the schools programme on attitudes to multiple groups in society, both immediately after the programme and longitudinally (up to three years later).

**Findings:** In general, the programme was successful in significantly improving attitudes towards Jewish people as well as towards people from many of the other categories on the Contact Star. In particular, there was a significant positive change

in attitudes towards Gypsies, Muslims and the Overweight. Given the focus of the intervention on Anne Frank and the Holocaust, there was an anticipated increase in positive attitudes towards Jewish people, however the increase in positivity to other stigmatised groups indicated that young people are able to use the lessons they have learnt from the programme and apply them to many other forms of prejudice in today's society. Mediation analysis suggested that the improved attitudes to multiple groups were largely being driven by a change in attitude towards Jewish people.

The programme was particularly influential in creating a positive change in young people who had expressed a higher level of negativity before participating. Although both those who scored above or below the pre intervention average score showed improvement in attitudes, students who were below the average score pre programme improved their attitudes to a significantly greater degree compared to those who started out with an above average score. This was an encouraging

statistic and highlighted how the programme is particularly effective at increasing positive attitudes to other groups in those young people who held more negative attitudes to begin with.

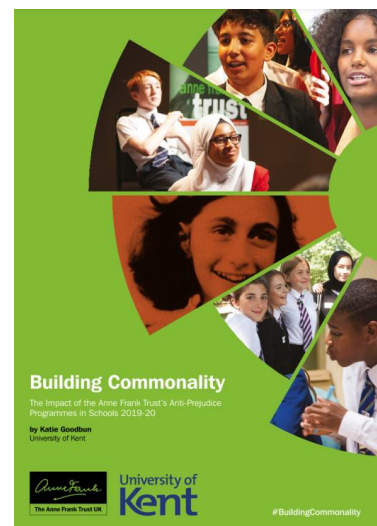
The young people who took part as Peer Guides, experienced a significant increase in their knowledge about prejudice as well as in their self-confidence. Those whose confidence increased reported that they were also less likely to ignore a hate related bullying incident.

The longitudinal analyses included in the 2017-2018 report indicated that 66.7% of young people whose attitudes had improved after completing the programme in previous years either maintained these positive attitudes or improved them further.

## Report 2 - Building Commonality

<https://www.annefrank.org.uk/Handlers/Download.ashx?IDMF=10334de0-e641-4430-ba46-c0d0cd1415ef>

Aim: The 2019-2020 annual report aimed to build on the evaluation conducted the previous year and provide a richer, more comprehensive analysis of the Trust's programmes. In addition to evaluating the impact on attitudes to multiple groups, the 2019-2020 aimed to report the impact of the core programme on feelings of commonality, the impact of the anti-bullying workshops, and include a qualitative analysis offering a nuanced understanding of the attitudes of young people towards particular groups in society.



Findings: Analysis of responses on the Contact Star mirrored much of what was reported in the previous year. The programme was successful at significantly improving attitudes towards Jewish people, as well as many of the other groups in society. Of particular note was the significant improvement in attitudes towards groups often highly

stigmatized in society such as Gypsies and the Homeless. The progress in attitudes to multiple groups once again demonstrated young people's ability to apply what they had learnt to wider issues of prejudice, and the impact was again greatest on those young people who started out with the most negative attitudes.

Young people also reported a significant increase in overall feelings of commonality with people from multiple social groups. The percentage of young people who reported increased feelings of commonality was relatively consistent across all categories, however statistically significantly greater feelings of commonality were only seen in 7 out of the 11 categories. Increased positivity in both attitudes and commonality was seen for some, but not all groups. Taken together with insights from the qualitative data, the results suggest that whilst there may be a relationship between feelings of commonality and willingness to spend time with people from other groups, they may constitute distinct components of prejudice reduction.

The anti-bullying workshop evaluation measured self-reported knowledge, confidence and empathy as well as opinions on stereotype use. Analysis demonstrated that there were significant increases, pre to post workshop in knowledge, confidence and empathy as well as an increase in the strength to which students felt it was not acceptable to use stereotypes about other ethnic groups. In terms of those with the most to gain almost two thirds made substantial gains in knowledge, over 40% became more confident to report bullying and more than a quarter reported stronger empathy with victims of discrimination.

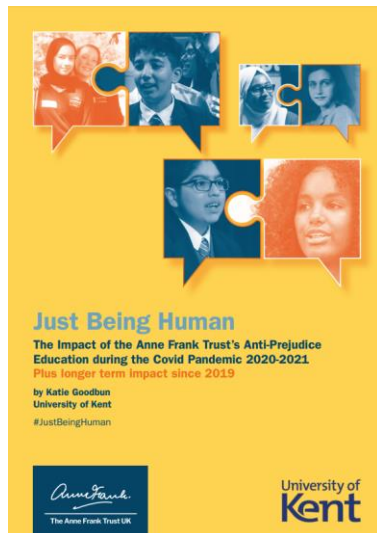
Part of the Contact Star evaluation provides space for the young people to report which group they gave their lowest and highest score to, and why. This data formed the basis of the qualitative analysis included in the 2019-2020 report. A number of overarching themes emerged from this analysis:

- Negative stereotypes – the most negative comments made by young people were against groups that are widely stereotyped in society. The stereotypes appeared to be pervasive and to influence the young people’s opinions of groups they may not have even met before.
- Commonality – Alongside stereotypes, having nothing in common with someone was cited as the main reason for giving a low score.
- Benign stereotypes – young people were influenced not only by negative stereotypes but also by benevolent ones (such as older people being kind/warm, and gay people being ‘chatty’).
- Familiarity – Highest scores were assigned to groups with whom the young people felt the most comfortable with or who they had the most in common with.
- Homogeneity – There was a sense that many young people saw other groups as homogeneous – those members of a group are similar to each other and different from people in other groups.
- Crossing group boundaries – The young people became more willing to learn about other groups but there remained a sense that definite boundaries still exist between groups.
- Increased value of equity – An increase in the number of young people assigning all groups an equal score on the contact star post programme suggested that the programme had successfully instilled or introduced the values intended by the AFT.

Finally, as part of the report, evaluation of anti-extremism workshops demonstrated that following the programme young people reported greater knowledge of prejudice and extremism, greater commitment to values of respect and equality, and increased readiness to take positive action.

### Report 3 – Just Being Human

<https://www.annefrank.org.uk/Handlers/Download.ashx?IDMF=58077735-ac6b-4936-95a5-8ac574644530>



Aim: The third annual report in the series aimed to evaluate data from the academic year 2020-2021 – a year badly affected by the Covid-19 pandemic and resulting lockdowns. It aimed to present a continuation of the robust evidence presented in the previous two reports, and provide powerful evidence of the continuing impact of the AFT educational programmes. In addition to impact data on attitudes and feelings of commonality, the report also aimed to include an evaluation of the revised KEC, and longitudinal analyses of both attitude and KEC measures. It was also the intention of this report to communicate the results of a qualitative analysis of data from focus groups which discussed the impact of the programme and young people’s views on prejudice in 2021.

Findings: In terms of attitudes, results once again demonstrated significant improvements in attitudes to Jewish people as well as towards multiple other groups on the Contact Star, with nearly a quarter of young people improving their attitudes towards at least eight of the 16 groups on the star. Young people with the most negative attitudes once again made the greatest progress, and in terms of longevity two thirds of the sample maintained their improved attitude up to 2 years after completing the programme.

‘Together Again’ was a new workshop launched by the AFT in mid-2020 to support young people as they resettled back into school after lockdown. Evaluation of this programme used the revised KEC measure to evaluate students’ knowledge, empathy and confidence. Results demonstrated that nearly 71% of young people made significant progress in knowledge about

prejudice and the harm it can cause. For those students with the most to gain nearly 40% of them increased in feelings of perspective taking empathy, and a similar proportion reported gains in terms of confidence. Notably, boys started at a lower base but made more progress than girls in knowledge and empathy, whilst girls started at a lower base but made more progress than boys in terms of confidence. This once again highlights that the programme has the greatest impact where it is needed most.

Qualitative analysis supported both impact data and anecdotal evidence that young people who have been trained as peer guides have more confidence to speak out against prejudice. They are acutely aware of prejudice within their communities, feel concerned about the negative effects of social media and argued powerfully for the need for anti-prejudice education and intervention. They strongly advocated for respect for diversity of individual viewpoints, whilst drawing a clear line when opinions cross over into discrimination or hatred.

#### **Report 4 – Effective Against Prejudice**

<https://www.annefrank.org.uk/Handlers/Download.ashx?IDMF=3ca0f2d9-3f66-41cf-88a9-0bd2fb384feb>

Aim: The fourth annual report in the series aimed to evaluate data from the academic year 2021-2022. For the first time the report aimed to provide details about the impact on primary school participants, and the wider impact of the programmes via data from the workshop questionnaire. With the educational programmes now fully re-instated back into schools and classrooms the AFT made a renewed effort to increase the numbers of students taking part in the programmes and workshops as well as the numbers completing impact evaluation measures. As a result, the sample size for data analysis was





larger than ever and the report aimed to disseminate the findings on equitability of impact by gender, ethnicity and religious identity.

Findings: The report presented strong evidence of the continuing positive impact of the AFT programmes on young people, and in particular on those whose attitudes to other groups, levels of knowledge about prejudice, and levels of empathy start out from a more negative position. Young people of different ethnic groups, genders and religions all made significant progress in their attitudes to multiple groups.

For the first time the impact of the educational programmes offered by the AFT was measured in primary aged students (9-11 years), and the data demonstrated that young people in both primary and secondary school made significant progress, with the impact of the programme generally greater in primary school than secondary school students. This is partly because primary school students started out with more negative attitudes or lower levels of knowledge about prejudice, but also supports evidence suggesting that attitudes are less fixed and more malleable in childhood and early adolescence, and that this is a crucial time period for attitude formation (e.g., Allport, 1954, Verkuyten & Thijs, 2001b)

The report also introduced the first wave of impact evidence from the AFT's newly developed Youth Empowerment Programme (YEP). Young people who have completed the Trust's peer education programme can apply to become an anti-prejudice ambassador, and the programme provides these students with sustained support, mentorship from an AFT worker, and the opportunity to take part in a range of workshops, speaking engagements and residential trips. Evidence from focus groups conducted with an initial set of ambassadors suggested that since becoming an ambassador, the students became increasingly passionate and confident to challenge prejudice in all its forms, and that the programme had provided a safe space and peer group support for discussing prejudice and related issues. Furthermore, being an Anne Frank Ambassador had

helped to empower them and step up to the challenge and responsibility to make a difference in their community.

### **Links between AFT evaluation and the PhD**

The mission of the AFT is to empower young people with the knowledge, skills and confidence to challenge all forms of prejudice. However, in order to inform this practice a clearer understanding of the individual differences of young people which impact prejudice and discrimination is required. The empirical work carried out to inform this thesis begins to provide that clearer understanding of what underpins young people's negative attitudes towards other groups and can be both built upon and used in a practical sense to inform the programmes led by the AFT. A more detailed discussion of how the empirical findings of the current thesis can impact the AFT programmes and evaluation moving forward is outlined in Chapter 7. Other areas of overlap between the work carried out as part the SeNSS CASE (1+3) studentship and the current thesis are outlined below.

### **Measuring attitudes towards multiple groups**

The vision of the AFT is to secure a society safe from prejudice and discrimination. Whilst the programmes use Anne Frank's story as a core factor in their education, the charity's mission is to empower young people to challenge all forms of prejudice and discrimination in society, and as such evaluating the impact of the programme requires a tool that measures attitudes to a myriad of groups. Typically, in the literature, the measurement of attitudes towards outgroups focuses on one or two specific groups however, and therefore in collaboration with the University of Kent, the AFT have developed the Contact Star in order to evaluate attitudes to multiple groups in society.

Generalised prejudice is a robust finding indicating that some people relative to others score higher in measures of prejudice to multiple out groups (Hodson & Dhont, 2015). Whilst this is thought to be due to both personality and social factors (Hodson & Dhont, 2015), a measure to

evaluate such widespread attitudes has been lacking in both adult and child populations. The Contact Star provides such a measure and has been consistently used by the AFT. In this PhD, I have also focused on measuring generalised prejudice, using the Contact Star with both adults and adolescents.

Given that generalised prejudice is robustly supported in the literature, more research on underlying factors – such as the perception of the malleability of groups – is essential, particularly in young people for whom childhood and adolescence are critical times in the formation of social and political attitudes (Alwin & Krosnick, 1991; Kinder & Sears, 1981; Krosnick & Alwin 1989; Raabe & Beelmann, 2011). The Contact Star has provided a tool to quickly and easily measure attitudes to multiple groups, and allows us to explore further mechanisms which may underpin generalised prejudiced thinking in young people and adults.

### **Empathy, perceived group malleability and generalised prejudice**

There is a strong emphasis in the AFT programmes on empathy with others who may have been victims of prejudice and discrimination. Seeing the world through the eyes of Anne Frank encourages an increase in perspective taking – one of the many factors related to empathy. Whilst the evaluation of the AFT data has not allowed for relationships between increased empathy and increased positive attitudes to multiple groups to be made thus far, increases in both are evident post programme and provide some interesting links to the current PhD. Notably one of the aims of the PhD is to explore the relationship of possible mechanisms underpinning generalised prejudice including empathy and implicit theories of groups.

In the final set of studies within the PhD, two versions of the contact star were used. The first measured attitudes to multiple groups and was virtually identical to the Contact Star described in this chapter. The other was adapted to measure willingness for contact via a more concrete scale.

This was based on the original Contact Star template but asked the young people how many days in the week they would be willing to share their lunchtimes with someone from another group.

Empathy was also measured, primarily for discriminant validity purposes – it was hypothesized that there would be a negative correlation between ‘fixed’ thinking about groups and empathy. Analyses of the data showed this to be the case. In the adolescent data (a similar age range to those involved in the AFT programmes), young people who had a more fixed mindset in terms of group malleability showed lower levels of empathy. In addition, perceived malleability of groups was negatively correlated to willingness for contact (the higher the young person’s level of entity thinking about groups, the lower their willingness for contact with other groups), and empathy was positively correlated to both attitudes and willingness for contact with other groups as measured by the Contact Stars.

This evidence suggests that there is a relationship in adolescence between fixed thinking about groups, lower levels of empathy and less willingness for contact with multiple groups in society, and provides further insights into the potential impact the AFT programmes have via increased empathy. Results from both the current PhD and the associated evaluation work with the AFT are invaluable to informing educational and intervention programmes aimed at reducing prejudice in young people, and the links between academic research and charities, such as the AFT, are vital for the continued vision of a society safe from prejudice and discrimination.

Understanding the mechanisms that may underpin generalised prejudice in children and adolescents is vital to our understanding of the development of intergroup attitudes and behaviours. As outlined in Chapters 1 and 2, and complementing the work carried out with the AFT as reported in this chapter, a greater understanding of how children and adults understand groups in terms of their perceived malleability, homogeneity, entitativity and essentialism is a necessary addition to the literature. The following chapter reports on the first phase of empirical work carried out as part of

these aims. More specifically it outlines the first steps in the development of a scale to measure perceived malleability and homogeneity in children, adolescents and adults.

#### **Chapter 4: The Perceived Malleability and Homogeneity of Groups as Factors of an Implicit Group Theory (IGT). Three Exploratory Studies.**

*This chapter presents three exploratory studies which investigate whether implicit group theories (IGT) relating to the perceived malleability and homogeneity of groups, previously neglected in intergroup relations literature, can be reliably measured in adults and children. As there is no existing scale available to measure IGT in adults or children both were piloted to explore whether implicit group theories can be reliably measured from childhood through to adulthood. The studies included three age groups. Study 1a was conducted on-line with adults, whilst studies 1b and 1c were conducted face-to-face with adolescents (12-14 years) and children (9-10 years). Two age ranges of children were included to account for developmental changes. Results for the adult and adolescent samples suggested that the items measured formed a two-factor structure: perceived malleability and perceived homogeneity of groups. Reliability of the overall scale was good across both age groups. Results from the 9–10-year-old sample were less consistent but did indicate that several factors were present. Limitations and next steps for the development of an IGT scale are discussed.*

#### **Introduction**

The literature outlined in the previous chapters highlighted the roles that implicit person and implicit group theories play in intergroup relations; more specifically their contribution to the endorsement and maintenance of stereotypes (e.g., Levy, 1998; Rydell et al., 2007), willingness for conflict resolution (e.g., Halperin et al., 2011) and motivation for contact (e.g., Halperin et al., 2012). What is also apparent from the literature is that whilst great strides have been made in understanding the social and cognitive bases in the development of prejudice in children, little attention has been paid to individual differences, such as an implicit group theory, and how they might underpin more generalized negative intergroup attitudes.

Despite the compelling evidence that exists regarding the impact of implicit theories on intergroup attitudes and behaviours, as well as the large body of evidence highlighting the considerable role individual difference variables have on generalized prejudice in adults, large gaps remain in this research area. Early work on implicit theories of individuals by Dweck and colleagues focused almost exclusively on children, but there are virtually no studies exploring implicit group theories in children and adolescents, nor any looking at the impact they may have on generalized prejudice. Furthermore, there is no research which addresses how implicit group theories develop in childhood and adolescence, and given its potential as an underpinning factor for intergroup attitudes this appears to be a missed opportunity.

The relatively small body of research that does exist on implicit group theories has followed the pattern initiated in the research on implicit person theories. These studies focus solely on perceived malleability of groups despite the fact that perceptions or judgements of groups are qualitatively different from those made of individuals (Rydell et al., 2007). Other group properties of interest include the perceived homogeneity of groups, essentialism and group entitativity, all of which have been largely ignored by implicit theory research, but each of which will be explored in the current work.

The role that implicit group theories, as an individual difference, play in the formation of attitudes towards multiple groups may be a crucial addition to our understanding of generalized prejudice and in turn prejudice reduction. At the current time there is no study known to the author which explores the development of implicit group theories from childhood to adulthood, and furthermore no measurement scale to do so. The current research aims to fill this gap by developing and testing a scale to measure implicit group theories and ultimately its relationship to attitudes to multiple groups. The aim of the first set of exploratory studies, described in this chapter, is to create and test items related to perceived malleability and homogeneity for inclusion in a measure of implicit group theories for use with adults, adolescents and children.

## Measuring Implicit Theories

As outlined in Chapter 2, the model of implicit theories refers specifically to the perceived malleability of personal attributes (such as intelligence, morality and personality), both of the self and of others. The model of implicit group theories is qualitatively different and refers to the malleability of groups; the perception that groups can change and develop, not via individuals, but rather through a coordinated group effort. Following on from the literature on the malleability of personal attributes two assumptions can be made about the malleability of groups; the first is that groups are fixed and cannot change (entity theory), whilst the other assumption is that groups are malleable and can therefore change and develop (incremental theory).

Measures of implicit theories assess items relating to entity or incremental thinking. Whilst the term 'implicit' implies that individuals are not aware that they hold such beliefs, it is generally held that although being subconscious and therefore 'implicit', these beliefs are not unreachable (Levy, Stroessner & Dweck, 1998). As such, individuals are able to access their implicit theories via agreement (or disagreement) to items relating to incremental and entity thinking.

### Current Measures of Implicit Theories

Measures of an implicit theory generally have a 'self' and an 'other' form. The 'self' form asks participants to respond to items about aspects of their self, such as personality and intelligence (e.g., "You are born with a certain amount of intelligence"). The 'other' form of the measure asks participants to respond to items about people in general (e.g., "Everyone is born with a certain amount of intelligence").

Measures of both types can be domain specific, referring to one attribute in particular, such as intelligence, or can be domain-general which attempt to measure a more 'kind of person' theory. The domain general measures are particularly useful when focusing on judgments or behaviors that



could cut across social domains (e.g., stereotypes). Young children, however, have been found to have trouble understanding the concept of 'kind of person' and an implicit theory of personality measure is more commonly used (Levy, 1998; Levy & Dweck, 1998). Examples of implicit person measures are shown in Table 1.

**Table 1**

*Examples of scales/items used in the measurement of Implicit Person Theories.*

Study	Scale	Type of scale <sup>a</sup>	Number of items	Example items
Dweck, Chiu & Hong (1995a)	Implicit Theory of intelligence	Domain specific - Self	3	You have a certain amount of intelligence and you really can't do much to change it Your intelligence is something about you that you can't change very much You can learn new things, but you can't really change your basic intelligence
Dweck, Chiu & Hong (1995a)	Implicit Theory of morality	Domain specific - Other	3	A person's moral character is something very basic about them and it can't be changed very much Whether a person is responsible and sincere or not is deeply ingrained in their personality. It cannot be changed very much There is not much that can be done to change a person's moral traits (e.g., conscientiousness, uprightness and honesty).

Study	Scale	Type of scale	Number of items	Example items
Chiu, Hong & Dweck (1997)	Implicit Person Theory (For use with adults)	Domain general - Other	3	<p>The kind of person someone is something very basic about them and it can't be changed very much</p> <p>People can do things differently, but the important parts of who they are can't really be changed Everyone is a certain kind of person and there is not much that can be done to really change that.</p>
Levy & Dweck (1997)	Revised Implicit Person Theory (For use with adults)	Domain general - Other	8 (included the three items from the measure above (Chiu et al, 1997) and the addition of 5 items.	<p>As much as I hate to admit it, you can't teach an old dog new tricks. People can't really change their deepest attributes. Everyone, no matter who they are, can significantly change their basic characteristics. People can substantially change the kind of person they are. No matter what kind of a person someone is, they can always change very much. People can change even their most basic qualities.</p>

Study	Scale	Type of scale	Number of items	Example items
Erdley et al. (1997)	Implicit Personality Theory Questionnaire (For use with children)	Domain General - Self	3	You have a certain personality, and it is something that you can't do much about. Your personality is something about you that you can't change very much. Either you have a good personality or you don't and there is really very little you can do about it.
Levy & Dweck (1999)	Implicit Personality Theory Questionnaire (For use with children)	Domain General - Other	4	People can't really change what kind of personality they have. Some people have a good personality and some people don't, and that can't change much. Someone's personality is a part of them that they can't change very much. No matter who somebody is and how they act, they can always change their ways. Anybody can change their personality a lot.

<sup>a</sup> All scales were measured using a 1 to 6 agreement scale (1 = strongly agree, 2 = agree, 3 = mostly agree, 4 = mostly disagree, 5 = disagree, 6 = strongly disagree).

More often than not, both entity and incremental items are included in such a measure (with the latter being reverse coded during analysis to enable an overall implicit theory score to be calculated). However, incremental items need to be carefully worded as they have a danger of holding too much appeal and being universally endorsed (Dweck, Chiu & Hong, 1995 b). In general, it

has been found that implicit theory measures are not correlated with other scales such as self-esteem, optimism, political ideology, religious preference or cognitive and motivational styles (Dweck, Chiu & Hong, 1995a; Levy Stroessner & Dweck, 1998). They have also been shown to be independent of social desirability measures (Levy & Dweck, 1997).

### **Current Measures of Implicit Group Theories**

Implicit theories, as described, assume that individuals make a judgment about themselves and others based on their implicit theories; the same arguments could be made when people make judgments about their own group and other groups in society. Whilst most research in this area has not looked at groups specifically it has demonstrated that those who hold an entity theory are more likely to form and maintain stereotypes (e.g., Levy, 1998; Levy & Dweck, 1998; Levy, Stroessner & Dweck, 1998). Research has also demonstrated that implicit theories can be manipulated and strongly advocate more incremental thinking as 'ideal' (Levy, 1998; Levy, Stroessner & Dweck, 1998). At face value this appears to be a sensible and practical option, however it ignores the idea that those with a more incremental mindset are not immune to judging others on the basis of little information nor immune to the formation and use of stereotypes. Furthermore, this application of the incremental theory to enable change follows the path of a 'bottom-up' strategy in prejudice reduction; by attempting to alter attitudes to one group at a time via a decrease in an entity mindset the work on implicit theories ignores more generalized underpinnings of prejudice and fails to impact on the most powerful of all tools – the prevention of negative attitudes.

To the author's best knowledge only a handful of studies have attempted to measure implicit group theories, and all using an adult sample. Nearly all of them originate from, or are based upon, the Implicit Person Measure (Chiu, Hong & Dweck, 1997). This is a 3-item measure of the malleability of human characteristics and takes a domain general form with items such as "People can substantially change the type of person they are". This was later revised and five additional items were added resulting in a longer 8-item version of the Implicit Person Measure (Levy & Dweck,

1997), including items such as “Everyone is a certain type of person, and there is not much that can really change that.” The 8 items were highly related ( $\alpha = .90$ ; Plaks et al., 2001).

More recently this 8-item scale has been re-worded to examine implicit theories about groups (e.g., “Every group is a certain type of collection of people, and there is not much that can be done to really change that”); one item showed that the re-wording made it extremely difficult for participants to answer and was dropped from the main study which examined the role of implicit theories and group entitativity in stereotyping. The resulting 7-item implicit group theory measure showed strong reliability ( $\alpha = .89$ ), and results demonstrated that holding an entity, as compared to an incremental theory, was significantly related to stereotyping and furthermore that perceptions of group entitativity significantly accounted for this relationship (Rydell et al., 2007).

Other studies which have measured implicit group theories have also used the adapted 7-item version by Rydell et al. (2007). The measure has been used to evaluate the role of implicit group theories in the promotion of the peace process in the Middle East (Halperin et al., 2011) and also its role as a moderator of anger and aggressive actions (Shuman et al., 2018). The latter study also included extra items such as “Social and political processes can make a difference on the moral and ethical level of companies and nations,” as well as adapting some of the scale devised by Rydell et al. (2007), (e.g., “Every group or nation has basic moral values and beliefs that can’t be significantly changed”). The seven-item scale they used had strong reliability ( $\alpha = .90$ ); a shortened 3-item scale showed reliability of  $\alpha = .70$ . The study demonstrated that implicit theories are not only important for the way people view groups but also play an important role as a secondary appraisal to anger and help determine the actions caused or motivated by anger.

### **Gaps in Implicit Group Theory Measures**

Whilst the literature clearly shows that incremental theories protect individuals from perceiving fixed-traits of groups and group members, and encourage people to see the variation

within a group, it could be argued that implicit theories about groups are qualitatively different to implicit theories about individuals. Measures of implicit group theories need to account for this difference. Whilst implicit theories about individuals explain whether people's perceived characteristics are malleable or fixed, they do not necessarily tap into people's understanding of groups or intergroup relations. This begs the question of whether fostering incremental thinking in terms of malleability is sufficient alone to encourage positive attitudes to multiple outgroups in society, or whether an implicit theory of groups needs to be broader in scope, including other group related factors such as homogeneity for example.

A top-down model of implicit group theories, one which aims to understand why negative attitudes to multiple outgroups form in the first place, rather than seeking to alter already formed judgments of others, needs to take into account not just the notion of malleability (i.e., incremental thinking) but also other complex aspects of groups. For example, perceived homogeneity, entitativity and essentialism. Whilst much of the earlier work exploring implicit theories of the self and others involved children and adolescents (e.g., Erdley et al., 1997; Henderson & Dweck, 1990; Heyman & Dweck, 1998; Zhao & Dweck, 1994) no such work has been carried out with this age group in terms of implicit theories of groups, and hence little is known about the changes in the understanding of groups across childhood and adolescence.

Furthermore, in approaching implicit theories as a driver of prejudiced or non-prejudiced attitudes, the role they play in forming attitudes to multiple groups may be crucial to the understanding of a more generalized notion of prejudice and prejudice reduction. No study known to the author explores implicit group theories and attitudes to multiple groups in society, and as such the current research aims to fill this gap by developing and testing a tool to measure implicit group theories and their relationship to attitudes to multiple groups.

## **A New Measure of Implicit Group Theories**

The first aim of the current research is to create a measurement tool that can reliably measure an Implicit Group Theory, both in terms of malleability and simultaneously tapping into other implicit group factors such as perceived homogeneity, in adults, adolescents and children. The three studies reported in this chapter were conducted at different times and locations, and using measures that differed in terms of number of items and wording/presentation of items. For this reason, they are presented separately here.

Given the exploratory nature of the studies reported in this chapter, and the intention of the researcher to use them solely for informing the development of an IGT measure in future studies, this series of studies (1a -1c) were not pre-registered.

### **Study 1a: An Exploratory Study Measuring Implicit Group Theories in Adults**

#### **Method**

##### **Measures: Implicit Group Theories**

All 7 items adapted by Rydell et al. (2007) were included for use in the current exploratory study with adults. In addition, 1 malleability item was included from the study by Shuman et al. (2018). 3 further items measuring malleability, and 5 measuring homogeneity, were created for use in the pilot study. A list of the items is outlined in Table 2.

**Table 2***Implicit Group Theory items used in Study 1a*

IGT item	Source	
Every group is a certain type of collection of people, and there is not much that can be done to really change that. (E) <sup>a</sup>	Rydell et al. (2007)	
Groups can change even their most basic qualities. (I) <sup>b</sup>		
No matter what kind of group you look at, the group members can always change very much. (I)		
As much as I hate to admit it, you can't teach an old dog new tricks.		
Groups can't really change their deepest attitudes. (E)		
Every group, no matter who they are, can significantly change their basic characteristics. (I)		
Groups can substantially change the kind of group they are (I)		
Groups can do things differently, but the important parts of who the group members are can't really be changed. (E)		
Every group or nation has basic moral values and beliefs that can't be changed significantly. (E)		Shuman et al. (2018)
The characteristics of a group can always change and adapt. (I)		Created for inclusion in study 1a.
The group someone belongs to is fixed and cannot be changed (E)		
People can always change the group to which they belong. (I)		
The groups people belong to tells us a lot about them as people (E)		
People within a group generally hold the same views about things. (E)		
A group is made up of all sorts of people; they do not have to all be similar or hold similar views on things. (I)		
It is fairly easy to tell what a group is like by observing some of their members once or twice. (E)		
Individual members are generally not reflective of what their group is like as a whole. (I)		

<sup>a</sup> E = worded as an Entity statement

<sup>b</sup> I = worded as an Incremental statement



## **Other Constructs Measured**

A number of other constructs were also measured in Study 1a. Other items were included to measure elements of Social Dominance Orientation (SDO), intergroup relations, loyalty and subjective group dynamics, beliefs in a just world (BJW), and trust. As the literature review has highlighted the relationship of an implicit theory of groups to prejudice and other variables is scarce, and therefore a number of variables were included in the initial exploratory studies. As the thesis progressed and a more definite direction emerged it became evident that some of these variables were not focal interest of the thesis and therefore, they are not included in later analyses. Others were more relevant and appear in this chapter or are included in analyses in later chapters.

SDO is of particular interest. At the time of the current study no measure of SDO existed for children, and therefore the development of a scale measuring SDO that could be used with adults and children ran alongside the current research. SDO is also a useful tool for assessing the validity of a new implicit group theory measure, and analyses are therefore reported in later chapters.

A total of 38 items were included as part of the exploratory implicit group theories measure for adults (see Appendix F); a mix of entity and incremental items were included. All items were measured using a 5-point Likert scale (1 – strongly disagree, 5 – strongly agree).

Attitudes and Behavioral intention to multiple groups were also measured using an adapted version of the Contact Star (Purewal, 2015). Results and analysis of these can be found in Chapter 6.

## **Demographic Measures**

Participants were asked a range of demographic questions but were not asked to identify themselves by name. Information required included: Date of birth, gender, UK citizenship, level of education, employment status, religion, sexual orientation, ethnicity and disability status.

## Design

The pilot questionnaire was created using Qualtrics and published using the online platform Prolific. Participants were restricted by age (18-60) and, as the questionnaire was published in stages, by previous completion of the task.

## Participants

Ideal sample sizes in exploratory factor analysis are subject to disagreement within the field. Two different approaches to calculating sample sizes have been put forward: a minimum total sample size versus an examination of the ratio of subjects to variables. Minimum sample sizes range in estimation from an N of 50 to 1000 or more (Comfrey & Lee, 1992) or an N of 50 (Barrett & Kline, 1981) to 400 (Aleamoni, 1976). Proponents of the alternative approach to calculating sample sizes suggest that there should be at least five observations per independent variable (Hair et al., 1998), and a widely cited 'rule of thumb' suggests that there should be at least double that, with the ratio for EFA being at least 10:1 (Nunnally, 1978). There is no consensus on which is the more effective strategy, but in general a large sample size and a high subject to variable ratio are recommended to allow generalizability whilst avoiding overfitting. Smaller sample sizes are permissible if there are strong inter-item correlations and few factors (de Winter et al., 2009; Tabachnick & Fidell, 2009).

Given the preference for sampling a wide range of adult participants, rather than university students, together with financial constraints, a participant pool of 250 was targeted. According to proponents of minimum total sample size this would be a fair-good sample size for the current study. A calculation subject to variable ratio indicates that around 140 (10 x 14 variables) would be sufficient.

In total 226 participants registered to complete the questionnaire. 25 were rejected for one, or a combination, of the following reasons: not entering the completion code and therefore not registering their data, failing two or more attention checks, completing the questionnaire in a time

believed to be too quick to fully understand the questions or for registering a very homogenous pattern of responses.

201 participants' data were accepted for use in the study. Of these 94 were female, 103 were male, 1 participant identified as 'other', and 3 participants chose 'prefer not to say'. The ages of the participants ranged from 20 to 60 years; mean age was 31 years.

### **Procedure**

All participants were recruited via the on-line platform Prolific. Participants were required to read the study information including a brief outline of the study, information regarding the time it would take, anonymity and confidentiality, ethics and GDPR information, their right to withdraw at any time and prior warning that attention checks that may appear in the questionnaire. All participants were required to consent to taking part in the study before moving on.

Following consent participants were required to complete demographic information as outlined above. Participants were then asked to complete the two Contact Star scenarios (detailed in Chapter 6) followed by implicit group theory items and implicit intergroup relations items. Before completing the implicit group, theory items participants were given the following information:

'Please indicate your agreement with the following statements about groups in society and across the world (e.g., Nationality, Religion, Class, Gender etc.) Choose only one response for each statement.'

The order of the blocks of items was fixed, however the items within the two implicit theory item sections were randomized. All questions had to be completed before the participant was allowed to move on. Attention checks were interspersed amongst the implicit group theory items; participants were made aware of the presence of these questions in the pre-study information and were told that incorrect completion of these items may lead to removal of their data and non-payment.

Participants were thanked and debriefed and followed the link to complete the study and trigger payment for their time. Once the quality of the data was assessed (i.e., correct completion of attention checks, time taken to complete the study etc.) the participants were either paid or their data was rejected; all participants whose data was rejected received a message from the researcher explaining the reasons for this.

## Results

### Exploratory Factor Analysis (EFA) of IGT items

The aim of the pilot study is to create and test items related to perceived malleability and homogeneity for inclusion in a measure of implicit theories for use with adults. As such only items relating to perceived malleability and homogeneity and are included in the following analysis.

16 implicit theory items were included in the original questionnaire. Of these 16 it was decided, after discussion with peers at a group processes lab at the University of Kent, that despite their initial inclusion, 2 items were ambiguous in their wording. These items were deemed to be evaluative or prescriptive in their wording rather than descriptive as would be desirable. For this reason, the 2 items were dropped and only 14 were included in the EFA. The two dropped items were as follows:

- Every group is a certain type of collection of people, and there is not much that can be done to really change that.
- Groups can do things differently, but the important parts of who the group members are can't really be changed.

An initial Principal Components Analysis (PCA) was conducted to check that the two constructs loaded separately and did not form part of the same factor. Analyses revealed that they loaded on to two factors – malleability and homogeneity.

Due to multiple inter-factor correlations an EFA with Oblimin was conducted. Three cross loading items were removed and a further EFA with Oblimin was conducted on the remaining 11 items. The

Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .782. The analysis produced 2 factors as having eigenvalues over Kaiser's criterion of 1, this was confirmed by the scree plot and together the factors explained 46.4% of the variance. These two factors have a clear structure and represent malleability (factor 1) and homogeneity (factor 2). Factor loadings for the EFA are shown in Table 3.

**Table 3**

*Summary of Exploratory Factor Analysis for Implicit Group Theories items (Adults)*

Item	Factor Loading	
	1	2
Factor 1: Malleability		
Groups can change even their most basic qualities.	<b>.74</b>	.12
Every group, whatever it is, can significantly change its basic characteristics.	<b>.74</b>	.23
Groups can substantially change the kind of group they are.	<b>.71</b>	.08
The characteristics of a group can always change and adapt.	<b>.66</b>	-.02
No matter what kind of group you look at, their members can always change very much.	<b>.40</b>	-.19
Every group has basic moral values and beliefs that can't be significantly changed.	<b>-.38</b>	.23
The groups that someone belongs to are fixed and cannot be changed.	<b>-.34</b>	.13
Factor 2: Homogeneity		
It is fairly easy to tell what a group is like by observing some of their members once or twice.	.04	<b>.71</b>
People who share the same group generally hold the same views as each other about things.	.01	<b>.55</b>
The groups someone belongs to tells us a lot about them as a person.	.07	<b>.51</b>
A group is made up of all sorts of people; they do not have to all be similar or hold similar views on things.	.22	<b>-.41</b>

*Note.* N = 201. The extraction method was Maximum Likelihood with an oblique (Oblimin with Kaiser normalization) rotation. Factor loadings above .30 are in bold.

From the EFA of implicit theory items for adults a clear two factor structure emerges. The two factors represent perceived group malleability and homogeneity.

### **Reliability Analysis of IGT items.**

Internal reliability analysis (Cronbach's Alpha) was conducted on all 11 items of the scale, as well as on each of the two sub-scales.

Initial analysis revealed good overall reliability of  $\alpha = .734$ . 4 items were removed to improve reliability resulting in  $\alpha = .768$ . The remaining 7 items all represented Factor 1 (malleability) and this final reliability statistic therefore represents reliability of the malleability sub scale. A further analysis was carried out on the 4 items removed – the homogeneity subscale. Analysis for this subscale revealed satisfactory reliability  $\alpha = .634$ . Results are displayed in Table 4.

**Table 4**

*Reliability of IGT scales (Adults)*

Scale	Reliability ( $\alpha$ )
Overall (11 items)	.734
Malleability (7 items)	.768
Homogeneity (4 items)	.634

### **Discussion**

Study 1a aimed to develop and test items related to malleability and homogeneity in an adult sample. The EFA of implicit theory items from the adult sample revealed a clear two factor structure. These two factors represented perceived malleability, and perceived homogeneity of groups.

Perceived malleability – Crucially the items in this factor relate to the perceived malleability of the group rather than individuals within a group. This represents a significant step forward in the development of a scale measuring implicit group theories rather than implicit person theories. 4 out of the 7 items indicated in the malleability factor are from work by Rydell et al (2007), 1 is from work by Shuman et al. (2018) and a further 1 was created for the current study. One further item, created for inclusion in the study, ‘The groups someone belongs to are fixed and cannot be changed’ does not appear to statistically fit easily into the factor, and may relate to permeability of the group rather than malleability. However, theoretically it may be that the malleability of a group involves the perception of whether groups can change and adapt as well as a change via group membership. Further exploration of permeability as an aspect of malleability is required.

Perceived homogeneity of groups – This factor refers to how similar group members are perceived as being to each other, and as a result of this how much inference can be made about an individual based on their group membership. Theoretically these items may overlap with elements of essentialism of social groups (Yzerbyt et al., 2004). Items related to essentialism are explored in studies 2 and 3 (Chapters 5 and 6).

It is encouraging that the items measured in this study fit a clear two factor structure, and this suggests that adults perceive these two factors as distinct concepts. While the two variables may be closely related and potentially affect decisions made about groups, they represent two distinct concepts and can be measured as such.

Furthermore, the scale has acceptable levels of reliability both as an overall measure and in terms of a malleability subscale. This is the first time that these variables have been studied together with the aim of developing a scale for use in an adult population. More work is need to refine these measures, to ensure the wording and scale function is correct and to increase the reliability of the homogeneity subscale.

**Study 1b: An Exploratory Study Measuring Implicit Group Theories among an Adolescent Sample.**

Study 1b aims to develop and test implicit group theory items related to perceived malleability and homogeneity in an adolescent sample.

**Method****Measures**

The items included in the current pilot study were adapted from the adult IGT measure described above (study 1a); simplified language was used to make it more accessible for younger participants. 21 items were included in the pilot study covering the same areas as in the adult version; 11 items measured perceived malleability and homogeneity, 2 measured intergroup trust, 2 measured group deviance and 6 measured intergroup relations and hierarchy/SDO (see Appendix G). Measures of beliefs in a just world were not included in the study with children and adolescents.

**Participants**

Two school year groups were sampled from a five-form entry secondary school; the target sample size was 320 participants. According to proponents of minimum total sample size this would be a good sample size for the current study. A calculation subject to variable ratio indicates that around 110 (10 x 11 variables) would be sufficient.

In total 268 students aged between 12 and 14 years took part in the study. Of those 120 were female (44.8%), 130 were male (48.5%), 4 participants indicated their gender as 'other' (1.5%) and 12 indicated that they would prefer not to indicate their gender (4.5%). 2 responses were missing.

The participants from studies 1b and 1c were from two different schools located in the same town in the South-East of England. The studies were conducted within a week of each other.



## **Procedure**

All questionnaires were paper based and completed by children in year 8 (12-13 years old) or year 9 (13 -14 years old) during morning registration on one school day. Following ethical guidance, head teachers were permitted to give consent (in loco parentis) for students to take part in the study. Parents were informed of the study (see Appendix H) and given 2 weeks to opt-out; opt out forms were available in hard copy or via email to the researcher. All questionnaires were administered at a time arranged by and convenient to the schools involved.

A unique code was generated for each individual, appearing at the top of each section of the questionnaire, ensuring that data could be withdrawn at any time but that no personal identifiable information was held. School names were also coded to ensure each school involved could not be identified.

Students were asked to complete the information sheet first; these were then collected and answer booklets handed out. The students were then asked to read quietly through the information before beginning the questionnaire. The students were then asked if they understood what they were being required to do, and any questions the students had about the procedure were answered at this point. The students were then given time to complete the questionnaire individually; they were told to indicate if they had a question whilst completing the questionnaire by putting their hand up. Following completion of the questionnaire all students were verbally debriefed and a letter was sent home to parents/carers explaining more about the study (see Appendix I).

## **Results**

### **Exploratory factor Analysis (EFA) of IGT items**

As with the adult pilot data, only IGT items measuring perceived malleability and homogeneity were used in the following EFA analysis. All 11 items were included in the analysis.

Initial results from a PCA indicated that two constructs loaded separately and did not form part of the same factor. Analyses revealed that they loaded on to three factors.

The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .805. Due to multiple inter-factor correlations an EFA with Oblimin was conducted; analysis revealed two eigenvalues greater than 1 accounting for 44.7% of the variance. 3 cross loaders were removed and the EFA re-run on the remaining 8 items.

The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .752. EFA with Oblimin revealed two factors with eigenvalues greater than 1, accounting for 48.5% of the variance. The factor loadings are displayed in Table 5.

**Table 5**

*Summary of Exploratory Factor Analysis for Implicit Group Theories items (Adolescents)*

Item	Factor Loadings	
	1	2
Factor 1: Homogeneity		
A group is made up of all sorts of people; they don't all have to think the same.	<b>.83</b>	<b>-.31</b>
Members in a group can all be described in the same way; there is not much difference between them.	-.26	.15
Even if groups act differently to usual the members of the group don't change who they are.	.12	.04
Factor 2: Malleability		
The group someone belongs to cannot be changed.	.19	<b>.72</b>
People can always change the group they belong to.	-.00	<b>-.62</b>
Any group can change and develop.	.25	<b>-.56</b>
Groups are usually made up of a certain type of person and there is not much that can be done to change this.	-.08	<b>.53</b>
Groups can change their most basic characteristics.	.01	<b>-.45</b>

*Note.* N = 268. The extraction method was Maximum Likelihood with an oblique (Oblimin with Kaiser normalization) rotation. Factor loadings above .30 are in bold.

Whilst only 1 item loads strongly onto factor 1 the presence of another similar item, albeit weakly loaded, within that factor suggests that the factor represents perceived homogeneity of the group. Meanwhile, 5 items load at  $-.447$  or above on factor 2; this factor appears to represent perceived malleability. The fourth highest loading item in this factor appears, at first glance, to refer to homogeneity of the group however it may appear in factor 2 because it deals with the ability of a group to change its 'type' of members and this refers back to issues of permeability.

### Reliability of IGT Items

Internal reliability analysis was conducted on all 8 items identified by the EFA (two-factor structure) Reverse coded items were used where necessary.

Reliability analysis with all 8 items indicated reliability  $\alpha = .665$ . Two items were subsequently removed to improve reliability,  $\alpha = .743$ . The two items removed both loaded weakly onto Factor 1 (see table 5). Of the remaining 6 items 1 loaded onto homogeneity whilst the remaining 5 loaded onto malleability. Further analyses were conducted to calculate the reliability of the 5 items which loaded onto factor 2 (malleability). Given that only 1 item remained from the homogeneity factor, reliability analysis on this subscale was not appropriate. Results are displayed in Table 6.

**Table 6**

*Reliability of IGT items (Adolescents)*

Scale	Reliability ( $\alpha$ )
Overall (6 items)	.743
Malleability (5 items)	.708
Homogeneity (1 item)	Not calculated

Given that the current study is explicitly exploratory in nature, reliability analyses were conducted on homogeneity subscale by including the items that were intended to measure the construct. These were conducted to enable a comparison of results with those from the adult and

child samples. It was considered important at this stage to assess whether the two constructs could be captured reliably regardless of whether they can be distinguished from each other.

Reliability analyses conducted on the three items measuring homogeneity revealed reliability  $\alpha = .549$ . This could not be further improved by removing any items.

### **Discussion**

The results of the EFA with 12–14-year-olds suggests that the items included in the measure represent two main factors: perceived malleability and perceived homogeneity of groups. Whilst not quite as clear cut as the factor structure seen in study 1a, it appears to resemble the factor structure to some degree from the adult data. This is the first study, to the best of the authors knowledge, to measure implicit theories of groups with an adolescent population, and the results suggest that by this age adolescents are beginning to form an implicit theory of groups that resembles that of adults.

One item of particular interest ‘Groups are usually made up of a certain type of person and there is not much that can be done to change this’, loaded with items forming the malleability factor rather than as part of the homogeneity factor, and as such deviated from the pattern shown in the adult data. However, it could be that the item refers to issues of group permeability in this age group, rather than homogeneity. As such the notion of ‘malleability’ in the Implicit Group Theory literature may be a wider concept than first thought; rather than simply referring to the potential of a group to change and adapt it may refer to change and adaptation through a change in ‘type’ of member.

These initial results are both interesting and encouraging, and together with good scale reliability suggest that an implicit theory of groups is, on the one hand, complex, but on the other a construct that can be reliably measured in this population. Given the similarity in structure to the EFA conducted with the adult data, further studies need to continue to develop this measure in term of breadth and reliability, and also make efforts to ensure items are worded identically and thereby increase the potential for comparison between the age groups.

## **Study 1c: An Exploratory Study Measuring Implicit Group Theories among a Child Sample**

### **Method**

#### **Measures**

An identical measure was used in both studies 1b (12 -14 years) and 1c (9-10 years). The same items, wording and response scales were used in study 1c as in study 1b. (See Appendix G for questionnaire items).

#### **Participants**

A number of primary schools were approached to take part in the current study, however only one agreed to be included in the research. The participating school was a two-form entry junior school; the target sample size was 64 children aged between 9 and 10 years. Whilst the sample size was not as numerous compared to either study 1a or 1b, these were the numbers available and considered acceptable given that the study is the first of its kind and exploratory in nature.

57 children from school year 5 (age range of 9-10 years) completed the study. Of those 57, 22 were female (40%) and 33 were male (60%), 2 responses on gender were missing.

#### **Procedure**

All questionnaires were paper based and completed by children in year 5 (9-10 years) during a morning lesson in the school day. Following ethical guidance, head teachers were permitted to give consent (in loco parentis) for students to take part in the study. Parents were informed of the study (see Appendix H) and given 2 weeks to opt-out; opt out forms were available in hard copy or via email to the researcher. All questionnaires were administered at a time arranged by and convenient to the schools involved.

A unique code was generated for each individual, appearing at the top of each section of the questionnaire, ensuring that data could be withdrawn at any time but that no personal identifiable

information was held. School names were also coded to ensure each school involved could not be identified.

Children were asked to complete the information sheet first; these were then collected and answer booklets handed out. The researcher read the information and instructions out loud to the children and checked that everyone understood what they were being asked to do, any questions the children had about the procedure were answered at this point. Children were then given time to complete the questionnaire individually; children indicated if they had a question during the questionnaire by putting their hand up. Following completion of the questionnaire all children were verbally debriefed and a letter was sent home to parents/carers explaining more about the study (see Appendix I).

## **Results**

### **Exploratory Factor Analysis (EFA) of IGT Items**

As with the adult and adolescent data from studies 1a and 1b, only items measuring perceived malleability and homogeneity of groups were used in the following EFA analysis. All 11 items were included in the analysis. The same 11 IGT items as in the analysis of Year 8 & 9 data were included in the following EFA.

Initial results from a PCA indicated that the two constructs loaded separately and did not form part of the same factor. Analyses revealed that they loaded on to three factors. The first principal component accounted for 24.4% of the variance, and only 7 out of the 11 items loaded on that component with factor loadings  $>.3$ .

The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis,  $KMO = .536$ . EFA with orthogonal rotation (Varimax) produced three factors with eigenvalues greater than 1 accounting for 52.5% of the variance; this was supported by the scree plot. Correlations between the

items fell below .32 (Tabachnick and Fidell, 2012) for the majority of items; only 4 of the inter-item correlation values were above this, the highest being .442. For this reason, and the fact that this is an exploratory factor analysis, it is suggested that an orthogonal rotation can be accepted. The factor loadings are displayed in Table 7.

As a precaution against inter-factor correlation affecting the analysis an oblique rotation was also run on the data. The initial EFA with Oblimin failed, however once the number of iterations was increased from 25 to 50 the analysis produced a three-factor structure (eigenvalues over 1) accounting for 52.5% of the variance. Whilst the loadings were slightly different the factor structure remained the same.

**Table 7***Summary of Exploratory Factor Analysis for Implicit Group Theories items (Children)*

Item	Rotated Factor Loadings		
	1	2	3
Factor 1:			
Groups are usually made up of certain type of person and there is not much that can be done to change this.	<b>.568</b>	.210	-.143
Members in a group can all be described in the same way; there is not much difference between them.	<b>.537</b>	-.033	.180
Groups can change even their most basic characteristics.	<b>-.486</b>	-.293	.089
Every group has basic beliefs and attitudes and that can't be changed significantly.	<b>.389</b>	.087	-.280
Factor 2:			
Groups can't really change the way they are.	.075	<b>.688</b>	.009
The important thing that people in a group have in common with each other do not change.	.228	<b>.630</b>	.171
Any group can change and develop.	<b>-.413</b>	<b>-.418<sup>a</sup></b>	.255
Factor 3:			
A group is made up of all sorts of people; they don't all have to think the same.	-.197	.198	<b>.632</b>
People can always change the group they belong to.	-.236	-.014	<b>.551</b>
The group someone belongs to cannot be changed.	-.001	.247	<b>-.413</b>
Even if groups act differently to usual the members of the group don't change who they are.	.111	.059	<b>.388</b>

*Note.* N = 57. The extraction method was maximum Likelihood with an orthogonal (Varimax with kaiser normalization) rotation. Factor loadings over .30 are in bold.

<sup>a</sup> Cross loading items

A three-factor structure emerged from the EFA of implicit theory items for children (9-10 years). There is no immediate or obvious indication of what each of these three factors represents.

### **Reliability of IGT items**

Internal reliability analysis was conducted on all 11 items included in the measure. Reverse coded items were used where necessary.



Reliability analysis with all 11 items indicated reliability  $\alpha = .623$ . The analysis suggested that this could be improved by removing the following two items:

- Members in a group can all be described in the same way; there is not much difference between them.
- Even if groups act differently to usual the members of the group don't change who they are.

Subsequent reliability analyses on the remaining 9 items revealed only a minor improvement in reliability:  $\alpha = .669$ .

Given that the current study is explicitly exploratory in nature, reliability analyses were conducted on the two subscales. The two subscales (malleability and homogeneity) were made up of items that were intended to measure each construct in order that results could be compared with those from the adult and adolescent samples. It was considered important at this stage to assess whether the two constructs could be captured reliably regardless of whether they can be distinguished from each other.

Reliability analyses of the eight items making up malleability revealed reliability  $\alpha = .543$ . this could be improved to  $\alpha = .612$  by removing the following item:

- Even if groups act differently to usual the members of the group don't change who they are.

Reliability analyses of the three items making up homogeneity revealed reliability  $\alpha = .359$ . this could be improved to  $\alpha = .433$  by removing the following item:

- A group is made up of all sorts of people; they don't all have to think the same.

Results of the reliability analyses are displayed in Table 8.

**Table 8***Reliability of IGT items (Children)*

Scale	Reliability ( $\alpha$ )
Overall (9 items)	.669
Malleability (7 items)	.612
Homogeneity (2 items)	.433

**Discussion**

Contrary to the results from adult and adolescent data samples, the results from the EFA conducted on the data from 9–10-year-olds suggests that despite being presented with the same questionnaire items as adolescents, there is no clear distinction between the factors in terms of what they represent. It could be argued that Factor 1 centres around the ‘type’ of person in a group, factor 2 is about the ability of a group to change, and factor three is about permeability and the individuals within a group.

These results could suggest a number of things. Either, the lack of a coherent factor structure suggests that children between the ages of 9 and 10 years have little concrete or fixed understanding of the properties of groups, or that the items on the questionnaire are not tapping in to the constructs of interest. Alternatively, the lack of a coherent structure may be due to the fact that the sample size was much lower than in studies 1a and 1b, and the analysis was therefore underpowered.

Initial results are relatively positive: the EFA suggests that there is some distinction between the two constructs and reliability of the overall scale is approaching an acceptable level. Further and larger studies with this age group are needed however to explore whether an implicit theory of groups, in terms of malleability and homogeneity is present in 9–10-year-olds, and whether these theories can be reliably measured.

## General Discussion

The three exploratory studies reported in this chapter aimed to develop and test items related to perceived malleability and homogeneity of groups, for inclusion in a measure of Implicit Group Theory. Three age groups were included in the studies to explore possible developmental changes or trends in implicit group theories from childhood to adulthood. Results from the three studies suggested that a similar factor structure exists in adults and adolescents, but is less well developed in younger children.

Little research has focused on measuring the implicit theories people hold about groups, particularly in childhood and adolescence. However, gaining a better understanding of this is important because it will further our knowledge about how prejudice develops through childhood and adolescence, provide more insight into the underpinnings of generalized prejudice and ultimately enhance efforts to reduce prejudice. This first set of studies aimed to explore whether perceived malleability and perceived homogeneity of groups represented different factors in terms of implicit theories about groups, and whether they could be reliably measured in childhood, adolescence and adulthood.

The results of the EFAs suggest that perceived malleability and homogeneity of groups represent separate factors for adults and for adolescents, and the factor structure which emerged for adolescents (12-14 years) more closely resembled that of adults than of younger children. The results of the EFA for ages 9-10 were less conclusive. Despite the adult and adolescent versions of the questionnaire containing slightly different items the two-factor structure which emerged for both adolescents and adults showed many similarities, including the structure differentiating malleability and homogeneity.

The results suggests that either younger children do not have a clear theory of group properties by the age of 9-10 years, or the measurement of IGT in this age group needs further refinement. In contrast, adolescents' theories about perceived malleability and homogeneity are

more developed and resemble those of adults more closely. The developmental trend of implicit theories from childhood through adolescence and beyond warrants further research. Promising results from the reliability analyses also suggest that implicit theories can be reliably measured in both adults and adolescence, but further confirmation of this is needed together with more data with younger participants.

### **Limitations and Next Steps**

One drawback to the current study was the relatively small sample size in study 1c (9–10-year-olds) and this may provide an alternative explanation for the inconclusive structure of perceived malleability and homogeneity in this age group. Recruiting children via schools is a difficult population to reach; the sample size was too small, and therefore the analysis may have been underpowered. In future studies larger sample sizes, particularly in this age range need to be recruited.

Another potential issue is the comparability of the items between groups. The adult version of the questionnaire contained more items related to perceived malleability and homogeneity, than seen in the version for younger participants, and the latter were worded more simply. In the next series of studies ensuring that a consistent number of items, and very similarly worded items, appear in all versions of the questionnaire will enable a more thorough comparison of the factor structures. Given the similarity in factor structure seen in studies 1a and 1b, this may be particularly achievable for the questionnaires administered to adults and adolescents. However, it will also be important to ensure that any items re-worded for use with the younger sample still capture the same essence of what the item represents.

Further work is needed to develop and improve on the scales from this chapter. Next steps include:

- Refinement of the items measuring perceived malleability and homogeneity.

- Inclusion of items related to essentialism and entitativity.
- Further work to ensure the comparability of items in the measure across all three age groups.
- Recruitment of larger sample sizes, particularly in the 9–10-year age group, to ensure the studies are well powered.

The next chapter includes information from three further studies which aim to refine and develop the current items for an Implicit Group Theory scale which can be used across multiple age groups. Additionally, it reports the results from the inclusion of entitativity and essentialism items in terms of the factor structure of an Implicit Group Theory across age groups, as well as detailing the development of a measure of SDO and its association with IGT.

## **Chapter 5: Measuring an Implicit Group Theory (IGT) in Adults, Adolescents and Children.**

*This chapter presents three further studies which build on studies 1a, 1b and 1c reported in Chapter 4. The main aim of this second set of studies is to refine and test items which can be included in a measure of Implicit Group Theory (IGT), for both adults, adolescents and children. A secondary aim is to develop and test a scale of Social Dominance Orientation that can also be used with adults, adolescents and children. Study 2a (adults) was conducted on line with first year undergraduate psychology students at the University of Kent. Studies 2b and 2c were conducted face to face with adolescents (12-14 years) and Year 5 children (9-10 years). Two age ranges of children were included to explore developmental changes in group understanding and to test the viability of the scale with those age groups. Results across all age groups suggested that the IGT items represented a two-factor structure, with factors representing perceived malleability and perceived groupness. These results were confirmed using confirmatory factor analysis. Whilst the factor structure was identical for adults and adolescents, perceived malleability was less coherent in 9–10-year-olds. The reliability of the IGT and SDO scales varied across age groups and issues with counter intuitive items were highlighted. Correlational analyses revealed that IGT was positively correlated with levels of SDO, and negatively correlated with intergroup trust across the three age groups. Limitations and next steps for the development of the IGT scale are discussed.*

### **Introduction**

The results of the three exploratory studies reported in the previous chapter indicated that the perceived malleability and homogeneity of groups represent separate factors for both adults and adolescents. Furthermore, the factor structure which emerged for adolescents more closely resembled that of adults than of the younger age group (9-10 years) involved in the study. Results from the reliability analyses were good ( $\alpha >.7$ ), and these encouraging results suggest that implicit

group theories (IGT) can be reliably measured in adults and adolescents. The results from study 1c revealed that the factor structure of an IGT was not so clear cut in the 9–10-year-old sample. Despite these results this remains an important area of research in terms of understanding the development of IGT from childhood into adolescence.

Given that the measurement and development of implicit group theories are relatively understudied in children and adolescents, the results of study 1b and 1c, which suggested that adolescents' structure of IGT more closely resembles that of adults than of younger children, are of particular interest. It reinforces the argument that this is an important construct to measure in young people and highlights the need for the development of a reliable measure.

In this second set of studies the same design and methodology will be used with the same three age groups. This time however, the questionnaire will include refined items of homogeneity and malleability, and the measure will be broader in scope to include items related to entitativity and essentialism. The same items will be included for each of the three groups to increase direct comparability, and the number of 9–10-year-olds included in the study will be increased. This increase in participant numbers, and more power for analysis, will help to illuminate the factor structure for this age group. At the very least it may confirm the results from Study 1c; that younger children have no clear structure in terms of an IGT.

### **Refinement of the IGT Scale**

Following EFA and reliability analysis on the items from studies 1a, 1b, and 1c, ten items were selected for inclusion as a measure of IGT in studies 2a, 2b and 2c. In order to make the measure of IGT applicable across ages, the questionnaire in this next phase of development included the same items for both adults, adolescents and children. The questionnaire was identical for adults and adolescents and although the same items were included for 9–10-year-olds, very minor changes in language were made to improve comprehension.

### **Selection of IGT Items (Perceived Malleability and Homogeneity)**

Following EFA and reliability analysis a number of the highest loading items from studies 1a and 1b were selected for inclusion in studies 2a, 2b and 2c. Where possible matching items from the studies with adults and adolescents were selected (i.e., a similar item loaded highly in the EFA for adolescents and adults), to ensure that the most relevant items from the previous studies were included.

Some of the selected items were re-worded to ensure simplicity and clarity, and also to ensure that the measure included a balance of entity and incremental items. Simplifying the language used in measures for use with children is common practice within developmental research and enables items that have the same meaning to be used across different age ranges (e.g., Duncan et al., 2006). Previous research also indicates that incremental items can sometimes be too appealing or easy to endorse and therefore the inclusion of both incremental and entity items is preferential (Chiu, Hong & Dweck, 1997). The IGT items selected for studies 2a, and 2b are shown in Table 9, and for 2c in Table 10.



**Table 9***Implicit Group Theory items for inclusion in Studies 2a and 2b*

Item	Malleability (M) or Homogeneity (H) item	Direction of item Incremental (I) or Entity (E)
Groups can change even their most basic qualities	M	I
Groups cannot significantly change their basic characteristics	M <sup>a</sup>	E
Groups cannot substantially change the kind of group they are	M	E
Any group can change and develop	M	I
The characteristics of a group can always change and adapt	M <sup>b</sup>	I
The group someone belongs to cannot be changed	M	E
People can always change the group they belong to	M	I
The groups someone belongs to tells us a lot about them as a person	H	E
People who share the same group generally hold the same views as each other	H	E
A group is made up of all sorts of different people; they don't have to think the same	H	I
Every group is a collection of a certain type of person	H	E

<sup>a b</sup> Following this initial selection these two items were dropped due to their similarity to other items

and to keep the measure of a practical length. 9 IGT items were left in total.

**Table 10***Implicit Group Theory items for inclusion in Study 2c*

Item	Malleability (M) or Homogeneity (H) item	Direction of item Incremental (I) or Entity (E)
Groups can change even their most basic qualities	M	I
Groups can't really change the kind of group they are	M	E
Any group can change and develop	M	I
The groups someone belongs to cannot be changed	M	E
People can always change the group they belong to	M	I
The groups someone belongs to tells us a lot about what they are like as a person	H	E
People who belong to the same group usually think the same as each other	H	E
A group is made up of all sorts of people; they don't all have to think the same	H	I
Groups are made up of people who are very similar to each other	H	E

As in studies 1a – 1c, a number of other constructs were measured in studies 2a, 2b and 2c. These together with newer entitativity and essentialism items are detailed on the following pages.

### **Intergroup Relations**

Given the unexplored nature of implicit group theory items and their potential association with intergroup factors such as stereotyping (e.g., Rydell et al., 2007), a number of intergroup relations items were included to ensure that the IGT scale was measuring implicit theories about the properties of groups rather than ideas around intergroup relations.

Higher loading and intuitive items have been taken from studies 1a, 1b and 1c. These items were re-written to enhance clarity and to ensure that they were accessible to both adults and adolescents. Items can be found in Table 11.

## **Intergroup Trust**

Intergroup trust is another construct that is closely related to intergroup relations. Whilst trust may be considered as an emotion or affective state (Brewer & Alexander, 2002) it may also be driven by cognitive components such as categorization and stereotypes (Foddy et al., 2009). Trust is therefore an area of interest, particularly as entity theorists have been shown to rely on categorization and endorsement of stereotypes when compared to incremental theorists (e.g., Levy, Stroessner & Dweck, 1998). Intragroup trust, and in particular loyalty, are also key components in Developmental Subjective Group Dynamics (DSGD; e.g., Abrams & Rutland, 2010; Abrams et al., 2007). DSGD attempts to understand the concept of 'group nous' - the implicit understanding of the ground rules of group membership and in particular the value of group consensus. The two items measuring inter and intra group trust in the current study were developed with my supervisor as part of his programme of work on DSGD and children's understanding of groups. The two items were taken from studies 1a, 1b and 1c, but refined for extra clarity. They were identical for adults, adolescents and children and can be seen in Table 11.

## **Social Dominance Orientation (SDO)**

Another construct of interest in the current study is Social Dominance Orientation (SDO); the preference for group-based hierarchies and inequality among social groups (Pratto et al., 1994). SDO is an individual difference variable that is a strong and robust predictor of generalised prejudice in studies with adult samples, and together with Right Wing Authoritarianism (RWA) typically accounts for around 50% of the variance in prejudice. (e.g., Altemeyer, 1998, Hodson & Dhont, 2015; Son Hing & Zanna, 2010; Van Hiel & Mervielde, 2005).

Including a measure of SDO in the current studies was important for a number of reasons. Firstly, from a theoretical perspective evidence suggests that SDO mediates the relationship between implicit theories of groups and political identity in adults (Kahn et al., 2018). The assumption

underlying this relationship is that the more an individual holds an entity theory about groups, the greater they accept inequality between groups which in turn affects their political identity. In their study, Kahn et al. demonstrated that whilst this mediation relationship is present with regards to social and economic issues, SDO does not necessarily mediate the relationship between implicit theories of groups and political identity in situations of intergroup conflict (e.g., the Israeli-Palestinian conflict). Given that political identity (e.g., Chambers et al., 2013; Hartley et al., 2018; Prusaczyk & Hodson, 2020) and SDO are both predictors of prejudice (e.g., Altemeyer, 1998, Hodson & Dhont, 2015; Son Hing & Zanna, 2010; Van Hiel & Mervielde, 2005) and SDO mediates the relationship between implicit theories of groups and political identity, it is reasonable to assume that higher entity beliefs of groups may well be associated with higher endorsement of social dominance orientation, and that together these constructs may play a role in predicting generalised prejudice. Therefore, the inclusion of SDO in the current studies is important theoretically, both for its association with implicit group theories and potential as a mediator for the relationship of IGT and intergroup prejudice, and also in terms of its value in determining validity of the IGT scale.

Secondly at the time of writing no SDO scale for use with children existed. Therefore, a secondary aim of including SDO in the current study is the development of an SDO scale suitable for use with children (and adolescents) as well as adults.

### **Measurement of SDO in adults**

The most commonly used measures of SDO in the literature are those developed by Pratto et al. (1994). Whilst widely used, the 14-item scale, refers more to 'people' or 'groups of people' rather than groups themselves. The alternative 16-item version (Pratto et al., 1994) was modified to refer to the generic concept of groups and is therefore more useful in the current study. This scale is commonly used with adolescents (e.g., Mayeux, 2014) and shows strong reliability despite being developed for use with adults. To the best of the authors knowledge, it has not yet been used with younger children.

Pratto et al. (1994) also developed a shortened 8-item measure of SDO based on the items from the 16-item version. This abbreviated version demonstrated comparable reliability ( $\alpha = .86$ ) and given the time constraints of the adolescent sample in the current study in particular, six items were selected from the 16-item SDO Scale (Pratto et al., 1994) for inclusion in studies 2a and 2b. Three of these items had been included in studies 1a, b or c, and together with the other three items included elements of equality, hierarchy and domination over other groups. The six items were deemed to be a representative spread of the areas covered by the original SDO-16 whilst also omitting items that may be too easy for participants to endorse in today's climate (e.g., 'Inferior groups should stay in their place'). Despite being used with adolescents the scale was originally designed for use with adults, and therefore given the younger age of some of the adolescents in the current sample (e.g., 12 years) some items have been slightly re-worded to ensure that they are accessible to both adolescents and adults. The SDO items selected for inclusion are listed in Table 11.

### **Measurement of SDO in children**

Measurement of SDO in children younger than adolescence has been less common. Some of the only studies to have measured it do so through an indirect route measuring sensitivity to intergroup inequality via resource allocation tasks in fair/unfair ingroup and outgroup scenarios (Tagar et al., 2017) or using a very simplified version of the Sidanius & Pratto (1999) SDO scale.

In 2018 Vezzali et al. (2018), adapted two items from the Sidanius & Pratto (1999) scale following consultations with teachers for use with primary school children (age approx. 9 years). The two items they used (Measured on 5-point scale 1= not at all, 5= very much) were:

- All children should be allowed the opportunity to do similar things
- All children should be treated in the same way.

However, in their discussion they highlight the issues of having only two items as a measure of SDO and they highlight the importance of designing and validating measures of SDO for children.

More recently, and building on the recognition of SDO as an important construct to measure in children, a scale measuring SDO has been validated for use with children (Cadamuro et al., 2022). A long and short version of the scale based on the original 16 item scale (SDO<sub>6</sub>; Pratto et al., 1994) was tested for use with Italian children aged 8-10 years old. Reliability for the longer version was  $\alpha = .71$  and  $.83$  for the SDO Dominance and SDO egalitarianism dimensions respectively. Whilst based on the original 16 item version used with adults, the items were all reworded as questions. For example, 'Should inferior groups stay in their place?', and 'Should all groups be able to do the same things?'. All questions were measured on a 5-point scale response scale (1 = not at all, 5 = very much), rather than a negative to positive scale as in the original study. It could be argued that making the statements to questions this makes it easier for participants to endorse equality and eschew any notion of preference for hierarchy.

In the current study the same six items SDO items, chosen for inclusion in studies 2a and 2b (adults and adolescents) were included for use with children aged 9-10 years. Whilst there is some overlap with the study by Cadamuro et al. (2022) all items in the current study were included as statements, rather than questions as per the original scale for use with adults. The language used in the items was slightly modified for use with this age group. A copy of the items can be found in Table 11.

### **Essentialism**

Building on the work of previous researchers in this area who argue that an implicit theory of groups, more specifically the malleability of groups, affects an individual's perception or attitudes towards groups, the current work argues that these implicit theories are not simply about malleability but are in fact multi-faceted.

As demonstrated in studies 1a, 1b and 1c, two main factors of IGT emerged: Malleability and Homogeneity. Closely linked to homogeneity and well established as a component in lay theories of groups is essentialism (e.g., Demoulin et al., 2006; Haslam, Bastian et al., 2006), which refers to the

implicit belief that members of a group share underlying features which differentiate them from other groups over and above their similarity in superficial or surface features. (Demoulin et al., 2006; Haslam, Rothschild & Ernst, 2002; Rothbart & Taylor, 1992; Yzerbyt et al., 1997). These characteristics of the group are assumed to be common to all members and make up the 'essence' of the group.

As outlined in Chapter 2 the essence associated with belonging to a group does not depend on whether membership to that group is forced (e.g., gender, race) or chosen (e.g., career type, political orientation), and just because a group is viewed as a choice does not mean it cannot be perceived as having an 'essence'. Even categories such as 'sociologists' or 'teachers' can be associated with an underlying reality; an essence that differentiates them from members of other social groups. (Demoulin et al., 2006). Demoulin and colleagues take this notion further by arguing that essentialism is not an isolated concept but is closely related to entitativity and natural kind-ness; they argue that all three elements (subjective essentialism, entitativity and natural kind-ness) are components of a lay theory of group essentialism. Natural kind-ness is a type of classification which groups 'objects' together that always share particular qualities regardless of whether or not humans know either the objects or the qualities, whilst entitativity refers to the degree to which a group is perceived as a coherent unit or as having the properties of an entity (Campbell, 1958). Furthermore, they argue that whilst all groups, whether forced or chosen, can be essentialized, it is the content or extent of these three components that may vary with type of group.

In their study exploring the essentialism, entitativity and natural kind-ness in both forced and chosen social categories Demoulin et al. (2006) found that all social categories are essentialized, viewed as entitative and that chosen social categories, as well as forced chosen categories, tend to be naturalized. A question raised from this research is why people develop these implicit essentialist theories about groups? Demoulin and colleagues suggest that by organizing people into distinct categories it is a way for people to reduce the complexity and uncertainty of their social environment and a way of explaining perceived differences between groups.

Given the links to implicit theories of groups and their overlap with aspects of group homogeneity the current study has taken an aspect of each of three concepts making up a lay theory of essentialism (subjective essentialism, entitativity and natural kind-ness) to include in studies 2a, 2b and 2c. The three items have been taken from the study by Demoulin et al. (2006) and adapted to refer to groups in general rather than applying to a specific group. The items can be seen in Table 11.



**Table 11***Other items/constructs measured in Studies 2a, 2b and 2c.*

Construct	Item used in Study 2a (adults) and 2b (adolescents)	Item used in Study 2c (Children)
Intergroup Relations	<p>Different groups of people who interact can learn from each other</p> <p>No matter which groups people belong to they can all learn from each other</p> <p>Groups generally keep separate from each other because they don't get on</p> <p>In general groups don't want to interact with each other</p> <p>Relationships between groups in society can't be changed</p>	<p>Different groups of people who mix can learn from each other</p> <p>It doesn't matter which groups people belong to, they can all learn from each other.</p> <p>Groups generally keep separate from each other because they don't get on</p> <p>In general groups don't want to mix with each other</p> <p>The way groups behave towards each other can't be changed.</p>
Inter/Intragroup trust	<p>People can trust members of other groups less than members of their own group.</p> <p>Groups can trust their own members more than anyone else.</p>	<p>People can trust members of other groups less than members of their own group.</p> <p>Groups can trust their own members more than anyone else.</p>
Social Dominance Orientation (SDO)	<p>To be successful in life it is sometimes necessary to step on other groups of people.</p> <p>Some groups of people are more important than other groups of people</p> <p>It's OK if some groups have more of a chance in life than other groups</p> <p>All groups should be given an equal chance in life</p>	<p>To do well in life groups sometimes have to be selfish and not worry about the feelings or needs of other people.</p> <p>Some groups of people are more important than other groups of people</p> <p>It's OK if some groups of people have more chance to do better in life than other groups of people.</p> <p>All groups should be given the same opportunities as each other.</p>

Construct	Item used in study 2a (adults) and 2b (adolescents)	Item used in study 2c (Children)
	It's a good thing that in society some groups are at the top and other groups are at the bottom. No one group should dominate in society.	It's a good thing if some groups do well and other groups don't One group of people shouldn't have better chances to do well than every other group of people.
Entitativity	All members of a group generally share common group goals	All members of a group generally want to achieve the same things
Natural kindness	The characteristics of a group tend to be stable over time and context	The characteristics of a group are the same at difference times and in different places
Subjective essentialism	In terms of what defines them, all members of a given group are largely the same underneath the surface	Even if people appear different from each other on the outside, people who all belong to the same group are actually very similar to each other

Ensuring that items are not unidirectional is common practice in studies using self-report measures (e.g., Chiu, Hong & Dweck, 1997), and therefore many of the items in all three studies (2a, 2b and 2c) needed to be reverse coded before data analysis to ensure that all items were coded in the same direction.

All items were measured on a 5-point Likert agreement scale (1 = strongly disagree, 5 = strongly agree) but a high score of each measure does not necessarily indicate a high endorsement or presence of that construct. An outline of the direction of scoring for each of the constructs measured in studies 2a, b and c are outlined below:

IGT: Low Score = Incremental thinking, High Score = Entity thinking.

IR: Low Score = More positive towards intergroup relations, High Score = Less positive towards intergroup relations.

SDO: Low Score = Low SDO, High Score = High SDO

Trust: Low score = high intergroup trust, high score = low intergroup trust.

Essentialism: Low Score = Low essentialism (incremental), high score = high essentialism (entity)

### **Study 2a – Testing the Factor Structure of an IGT in Adults**

Study 2a was pre-registered with the Open Science Framework (OSF). The pre-registration can be found here <https://osf.io/q4fvd>. In addition to the method and exploratory factor analyses presented below a number of hypotheses related to correlational associations were stated in the pre-registration. These were as follows:

1. A higher level of entity (as opposed to incremental thinking) as measured by IGT items will be positively correlated with higher levels of SDO.
2. A higher level of entity thinking as measured by IGT items will be negatively correlated with intergroup trust.
3. A higher level of entity thinking as measured by IGT items will be positively correlated with higher levels of essentialism.

### **Method**

#### **Design**

The questionnaire was created using Qualtrics and situated amongst a number of other items within an on-line Qualtrics questionnaire for use with a first-year undergraduate group at the

University of Kent as part of a practical session. The questionnaire was a within groups design with all participants completing all parts of the questionnaire. Only the 25-item measure outlined above was included in the following analyses.

### **Measures**

A total of 25 items were included in the current study. All items were measured using a 5-point Likert scale (1 – strongly disagree, 5 strongly agree). The items were discussed earlier in the chapter and a full list of items for Study 2a can be found in Appendix J. Before responding to the statements participants were given the following information:

‘Below is a list of statements which relate to groups in society (this can include, but is not limited to, nationality, religion, class, culture, gender, sports teams, clubs etc.). Please read them carefully and indicate how strongly you agree or disagree with each statement’

### **Participants**

A total of 286 undergraduates completed the on-line questionnaire; 225 females, 60 males and 1 individual who identified as ‘other’. No participant data was excluded from the analyses. Mean age of participants was 18.73 years.

### **Procedure**

The questionnaire was administered to first year undergraduates at the University of Kent during a statistics class in semester one. The questionnaire was described to students as a ‘psychology practical researching social cognition and social perception’, and full consent was obtained before the students began the questionnaire. Students were informed of their right to withdraw at any time without having to give a reason and without being penalised. Demographic information including gender, degree registration, country of birth, ethnic origin, age, and religion was also collected as part of the questionnaire.

The 'psychology practical' included 12 blocks of questions (including blocks on attitudes to environmental issues, leadership styles and IGT) and a 'practical' decision making task in groups. The sequence of measures in the 'psychology practical' was as follows:

- Consent
- Demographics
- Introduction
- Post practical attitudes to Asylum Seekers
- Psychology Practical – Social Perception
- 9 blocks of questions related to practical – blocks presented randomly. Blocks included questions on prototypicality, favorability, charisma and influence.
- 2 blocks presented randomly (IGT and attitudes to environment).
- Post practical – attitudes to asylum seekers
- Debrief

The IGT measure appeared in a block towards the end of the practical, and presentation was randomized with the measure of environmental attitudes. Before answering the items from the IGT measure all participants were presented with the following instructions:

'Below is a list of statements which relate to groups in society (this can include, but is not limited to, nationality, religion, class, culture, gender, sports teams, clubs etc.). Please read them carefully and indicate how strongly you agree or disagree with each statement.'

The 25 items in the questionnaire were randomized. No attention checks were included in the 25-item measure; however, a number of attention checks were included as part of the practical element of the survey.

## **Results**

### **Implicit Group Theories - Exploratory Factor Analysis**

Two rounds of Factor Analysis were conducted; the first to determine the factor structure of IGT items and the second to confirm that the IGT items loaded separately from the 5 intergroup relations items (IR).

### **Factor Analysis – Implicit Group Theory Items**

A factor analysis was conducted on all items making up Implicit Group Theories. The items included in the analysis can be seen in Table 12; this included 5 malleability items, 4 homogeneity items and 3 essentialism items.

**Table 12***Implicit Group Theory items included in the Exploratory Factor Analysis*

Item	Construct	Expected to measure
Groups can change even their most basic qualities	Malleability	Malleability
Groups cannot substantially change the kind of group they are	Malleability	Malleability
Any group can change and develop	Malleability	Malleability
The group someone belongs to cannot be changed	Malleability	Malleability
People can always change the group they belong to	Malleability	Malleability
The groups someone belongs to tells is a lot about them as a person	Homogeneity	Another group factor
People who share the same group generally hold the same views as each other	Homogeneity	Another group factor
A group is made up of all sorts of different people; they don't have to think the same	Homogeneity	Another group factor
Every group is a collection of a certain type of person	Homogeneity	Another group factor
All members of a group generally share common group goals	Entitativity	Another group factor
The characteristics of a group tend to be stable over time and context	Natural kindness	Another group factor
In terms of what defines them, all members of a given group are largely the same underneath the surface	Subjective essentialism	Another group factor

A varimax factor analysis with orthogonal rotation was conducted on all 12 items and produced 3 factors with eigenvalues over 1 accounting for 46.5% of the variance. KMO = .705.

Despite 3 factors emerging, only 2 factors were predicted, and this hypothesis was confirmed by the scree plot. The analysis was re-run with Varimax extracting two fixed factors. The 2 factors accounted for 37.7% of the variance. The factors were as follows:

Factor 1 - Groupness— 3 homogeneity items and all 3 essentialism items.

Factor 2 – Malleability – 5 malleability items.

One item measuring perceived homogeneity - 'A group is made up of all sorts of different people, they don't have to think the same' - cross loaded poorly on both factors and was therefore removed from further analysis. The analysis was re-run using Varimax without this item and a two-factor structure was confirmed. The 2 factors accounted for 39.5% of the total variance, KMO = .685. The factor loadings are displayed in Table 13.

**Table 13**

*Summary of Exploratory Factor Analysis for IGT items (Study 2a - Adults)*

Item	Factor Loading	
	1	2
<b>Factor 1: Malleability</b>		
People who share the same group generally hold the same views as each other.	<b>.58</b>	-.12
Every group is a collection of a certain type of person.	<b>.58</b>	.12
The group someone belongs to tells us a lot about them as a person.	<b>.54</b>	-.07
In general, all members of a group share common goals.	<b>.48</b>	.03
In terms of what defines them, all members of a given group are largely the same underneath the surface.	<b>.39</b>	.08
The characteristics of a group tend to be stable over time and context.	<b>.314</b>	.10
<b>Factor 2: Groupness</b>		
People can always change the group they belong to.	-.00	<b>.63</b>
Any group can change and develop	-.06	<b>.57</b>
Groups can change even their most basic qualities.	-.01	<b>.55</b>
The groups someone belongs to cannot be changed.	.10	<b>.50</b>
Groups cannot substantially change the kind of group they are.	.10	<b>.38</b>

*Note.* N = 286. The extraction method was Maximum Likelihood with an orthogonal (Varimax with kaiser normalization) rotation. Factor loadings above .30 are shown in bold.



### Reliability of IGT scale

Reliability analysis (Cronbach's Alpha) was conducted on the overall 11 item scale, as well as on the two subscales (Groupness and Malleability). The reliability results can be seen in Table 14.

**Table 14**

*Reliability of IGT measure (Study 2a - Adults)*

Scale	Reliability ( $\alpha$ )
Overall (11 items)	.613
Groupness (6 items)	.633
Malleability (5 items)	.643

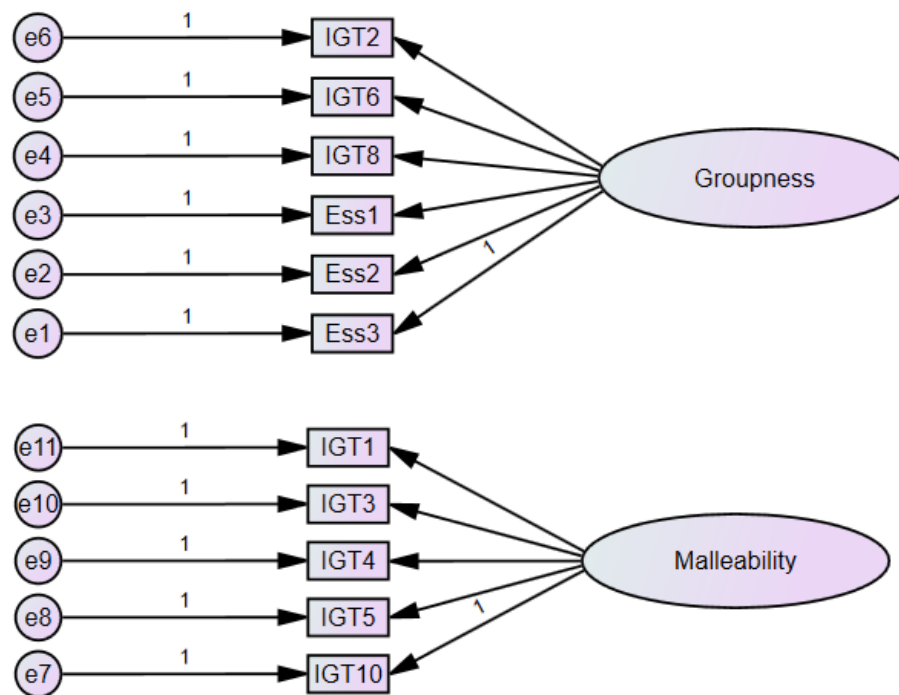
### Confirmatory Factor Analysis (CFA) – Implicit Group Theory Items

It should be noted that a one-factor model (whereby all items were included as the factor IGT) was tested for all three age groups. Whilst a good fit could be achieved using a one factor model for adults, adolescents and children, the models were less parsimonious compared to the two-factor model. In the one factor model, many more additional parameters (correlations between errors) needed to be added to achieve a good model fit, in each case this was at the expense of the significance of the regression weights. For these reasons a two-factor model was accepted for each of the age groups in the current study.

The EFA, as outlined above, suggested a two- factor solution, therefore a CFA model was specified with two latent factors (Malleability and Groupness). Since the items showed acceptable skewness and kurtosis (Brown, 2006) the estimation model used was maximum likelihood. Standardised coefficients were used and observations with missing values were excluded. The attempted model can be seen in Figure 2.

**Figure 3**

*Confirmatory Factor Analysis of IGT items (Study 2a - Adults)*



After estimating the model, goodness-of-fit statistics were obtained. The results are displayed in Table 15 and indicate adequate fit. The CFI is just above the recommended value of 0.95 (Hooper et al., 2008) and the RMSEA is .038, below the generally recommended value of 0.05. All regression weights were significant.

**Table 15**

*Goodness-of-fit-statistics for the 2-factor model (Study 2a - Adults)*

Fit statistic	Two factor model
Chi2 (df)	56.645 (40)
RMSEA	.038
CFI	.954
TLI	.937

The CFA reported above confirms that malleability and groupness represent separate factors of implicit group theories. This is important to the current research as it suggests that implicit group theories may comprise of more than perceived malleability of groups, and that the independent factors may have different effects on attitudes and behaviours towards social groups.

### **Factor Analysis – Implicit Group Theory and Intergroup Relations Items**

An initial PCA was run with the 5 IR items. Results suggested that IR items loaded onto two factors, with the two items which reference learning from other groups loading separately from the other three items.

Exploratory Factor analysis was subsequently conducted using the 11 remaining IGT items and the 5 IR items to confirm that IGT and IR items load on separate factors. A varimax factor analysis with orthogonal rotation was conducted on all 16 items and produced 5 factors with eigenvalues over 1 accounting for 56% of the total variance. KMO = .731

Despite 5 factors emerging only 3 factors were predicted ('Malleability' 'Groupness' and 'Intergroup Relations'); the scree plot also suggested three main factors. A varimax factor analysis with orthogonal rotation was subsequently conducted on all 16 items extracting 3 fixed factors. The factors accounted for 42.7% of the total variance. The two intergroup relations items which loaded separately from the other three items in the initial PCA reported above, cross loaded weakly across two factors. These two items did not fit the predicted three factor structure and were therefore removed from any further analyses.

A varimax factor analysis with orthogonal rotation was conducted on the 14 remaining items extracting 3 fixed factors. The factors accounted for 44.4% of the total variance. KMO = .702. The factor structure is displayed in Table 16.

**Table 16***Summary of Exploratory Factor Analysis of IGT and IR items (Study 2a - Adults)*

Item	Factor loading		
	1	2	3
<b>Factor 1: Malleability</b>			
People can always change the group they belong to.	<b>.63</b>	.00	.00
Groups can change even their most basic qualities.	<b>.57</b>	.04	-.12
Any group can change and develop.	<b>.55</b>	-.08	.13
The groups someone belongs to cannot be changed.	<b>.50</b>	.06	.26
Groups cannot substantially change the kind of group they are.	<b>.37</b>	.07	.13
<b>Factor 2: Groupness</b>			
People who share the same group generally hold the same views as each other.	-.10	<b>.65</b>	.01
In general, all members of a group share common goals.	.05	<b>.53</b>	-.01
Every group is a collection of a certain type of person.	.08	<b>.49</b>	.21
The group someone belongs to tells us a lot about them as a person.	-.09	<b>.49</b>	.18
In terms of what defines them, all members of a given group are largely the same underneath.	.04	<b>.33</b>	.26
The characteristics of a group tend to be stable over time and context.	.10	<b>.32</b>	.05
<b>Factor 3: Intergroup Relations</b>			
Groups generally keep separate from each other because they don't get on.	.01	.07	<b>.64</b>
In general groups don't want to interact with each other.	.11	.15	<b>.60</b>
Relationships between groups in society can't be changed.	.27	.17	<b>.43</b>

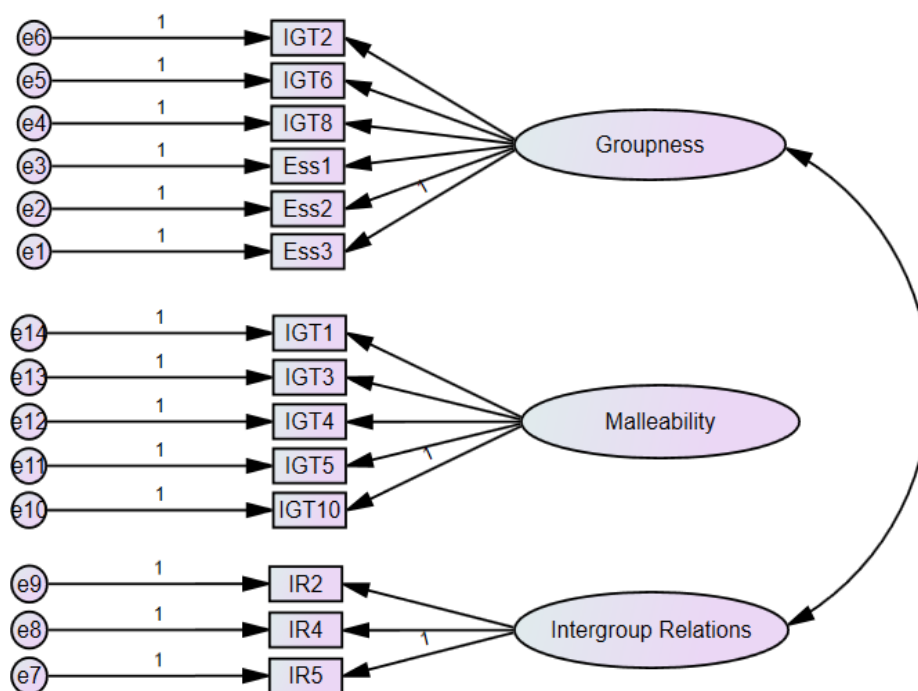
Note. N = 286. The extraction method was Maximum Likelihood with an orthogonal (Varimax with kaiser normalization) rotation. Factor loadings above .30 are shown in bold.

### Confirmatory Factor Analysis (CFA) – Implicit Group Theory and Intergroup relations Items

The EFA, as outlined above, suggested a three - factor solution, therefore a CFA model was specified with three latent factors (Malleability, Groupness and Intergroup relations). Since the items showed acceptable skewness and kurtosis (Brown, 2006) the estimation model used was maximum likelihood. Standardised coefficients were used and observations with missing values were excluded. The attempted model can be seen in Figure 3.

**Figure 4**

*Confirmatory Factor Analysis of IGT and IR items (Study 2a - Adults)*



After estimating the model, goodness -of-fit statistics were obtained. The results are displayed in Table 17 and indicate adequate fit. The CFI should preferably be above 0.95 (Hooper et

al., 2008) however the RMSEA is .045, below the generally recommended value of 0.05. All regression weights were significant.

**Table 17**

*Goodness -of fit- statistics for the 3-factor model (Study 2a -Adults)*

Fit statistic	Two factor model
Chi2 (df)	109.53 (69)
RMSEA	.045
CFI	.923
TLI	.898

The CFA confirms that groupness and malleability represent separate factors of implicit group theories. Whilst groupness needed to be allowed to co-vary with Intergroup relations in order to obtain a better fit, malleability did not. This suggests that some elements of groupness may have some association with perceptions of intergroup relations in adults.

A three-factor structure for implicit group theory and intergroup relations items, is suggested by the EFA and confirmed by the CFA. The results of the CFA are interesting for two main reasons. Firstly, it confirms the results of earlier factor analyses reported in this chapter that malleability and groupness represent separate factors of an implicit group theory. And secondly, it confirms that the implicit group theory items, in particular malleability, are tapping into the perceived properties of a group rather than elements of intergroup relations. In this way we can be confident that the items used to measure malleability and groupness are not measuring intergroup relations.

### **Reliability Results (Other Constructs)**

#### **Social Dominance Orientation**

A reliability analysis of the SDO scale with all 6 items was conducted  $\alpha = .731$ . Results suggested reliability may be improved if the item 'No single group should dominate society' was removed. This item was removed and the analysis re-run revealing a reliability of  $\alpha = .738$ . However,

as reliability was not substantially increase by removing this item the scale was kept as six items rather than reducing down to five.

### **Intergroup Relations (IR)**

A reliability analysis of the 3 IR items was conducted. Results revealed reliability for the 3-item scale to be  $\alpha = .604$

### **Possible Floor/Ceiling Effects**

Frequencies of response, distribution and standard deviations were explored to check for floor and ceiling effects on each subscale (IGT, IR, SDO, Trust and essentialism) and each individual item. The only scale which suggested a possible skewed distribution was the six item SDO scale. However, the skewness and kurtosis statistics for the SDO scale fell within acceptable ranges (.421 and -.168 respectively). And were therefore not deemed to present a threat to the analyses. The distribution of mean scores for the SDO scale can be seen in Appendix K.

Other patterns to note were that reverse coded item responses tend to skew towards the lower end of the scale (1 or 2) which indicated incremental thinking. One explanation may be that these items are worded in a way that makes them easy to endorse (or difficult to disagree with). For example, one of the SDO items presented the statement 'All groups should be given an equal chance in life'. These items may need to be re-worded in future studies to make them less easy or attractive to endorse, or alternatively all items may need to lean towards entity style thinking.

### **Correlational Analysis**

The review of the implicit group theory literature presented in Chapter 2 demonstrated its association with higher levels of stereotyping but also how undervalued it has been as a construct within intergroup relations research. Given its potential relationships with constructs such as SDO,

intergroup trust and the nature of intergroup relations correlations were conducted to test for relationships between IGT score and SDO, intergroup trust, and IR.

Significant positive correlations were found between IGT score and all other constructs. The higher the IGT score (higher entity thinking) the higher the levels of SDO, the more hostile the beliefs on intergroup relations and the lower score on intergroup trust.

Correlational analyses were also conducted on each of the sub-scales of IGT (Malleability, Groupness) and the other constructs measured. These were conducted to explore whether either factor of IGT is related to other group variables. Significant positive correlations were found between both subscales of IGT and each of the other constructs, demonstrating that higher levels of fixed thinking in terms the perceived groupness and malleability of groups are associated with more negative beliefs about intergroup relations, lower intergroup trust and higher levels of SDO beliefs.

No significant correlation is seen between the two subscales; a higher score on perceived malleability was not correlated with a higher score on perceived groupness. The results of the correlational analyses can be found in Table 18.

**Table 18**

*Descriptive statistics and Correlations for study variables (Study 2a - Adults)*

Variable	N	M	SD	1	2	3	4	5	6
1. IGT	286	2.79	0.42	-	-				
2. Malleability	286	2.14	0.55	-	-	-			
3. Groupness	286	3.33	0.58	-	-	-			
4. IR	286	2.41	0.69	.35***	.23***	.28***	-		
5. SDO	286	2.12	0.71	.26***	.16**	.22***	.31***	-	
6. Trust	286	3.14	0.83	.32***	.12*	.33***	.26***	.20**	-

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

Z tests were conducted to examine whether the differences between correlations for malleability and homogeneity with the other constructs were significant. Results revealed that the



difference in correlation value for trust with homogeneity and malleability was statistically significant ( $p < .05$ ). Differences in correlation coefficients of malleability and homogeneity with SDO and IR were not statistically significant.<sup>1</sup>

## Discussion

The EFA of implicit theory items from the adult sample built on the findings from Study 1a once again revealing a clear two factor structure. The two factors that emerged represented perceived malleability, and perceived groupness, as in study 1a. This result was confirmed by the CFA, in which a two-factor structure accounted for the items more parsimoniously than a one factor structure and with a good model fit.

As in study 1a malleability referred to the perceived malleability of the group and included five items. Study 2a introduced items related to essentialism and these were found to load with items from study 1a which measured perceived homogeneity. The resulting factor was labelled as 'groupness' and included 6 items (3 measuring perceived homogeneity and 3 measuring essentialism and related concepts). Further results from EFA and CFA analysis confirmed that these two factors loaded separately to items related to intergroup relations, although aspects of groupness may be associated with intergroup relations.

The reliability for both perceived malleability and groupness were lower than in study 1a and this is an issue which needs addressing. The sample included in the current study was made up of university students who were completing the study as part of their undergraduate practical requirements, and therefore items may not have been answered with as much reliability compared to study 1a which used a sample from the general population. Given that students were responding

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<sup>1</sup> Given the relatively even split of males and females in the sample an exploratory analysis of IGT by gender was conducted for all three age groups. No significant differences were seen between males and females in adolescents or children. A marginally significant difference was seen in adults with females scoring higher than males, but this was thought to be largely driven by differences in perceived homogeneity rather than malleability of groups. Given that the main aim of the current thesis was to establish whether an IGT is an individual difference which impacts generalised prejudice, and when this might develop no further analyses by gender were conducted. However, this may provide an avenue for further studies.

to the study as part of their practical assignments, there were less consequences for them in terms of poor responses compared to study 1a, when participants were recruited via the on-line platform Prolific. Here respondents are incentivised by monetary gain and there were harsher penalties (i.e., not being paid) in the event of failing attention checks or homogenous response patterns. Questions around using student populations are raised in this study.

In addition to confirming a two factor structure a number of pre-registered hypotheses were also confirmed. As expected, a higher score on IGT items, representing a more fixed way of thinking, was positively correlated with levels of SDO and negatively correlated with intergroup trust. This suggests that a fixed mindset in terms of IGT may be a negative influence on other factors related to intergroup relations and attitudes to social groups. However, the two factors of IGTs, perceived malleability and groupness, were not significantly correlated, and the null hypothesis for the third pre-registered hypothesis was not rejected. The revelation that these factors were uncorrelated however, does suggest that they have the potential to influence or predict other variables independently of each other.

The reliability of the SDO scale was good, however item response distribution also suggested that some items were possibly too easy to endorse. This is an issue that needs to be addressed in the next study of the series.

## **Study 2b: Testing the Factor Structure of an IGT in Adolescents**

### **Method**

#### **Design**

The current study was a correlational design. All items were assessed via a self-report questionnaire.

## Measures

A total of 25 items were included in the current study. All items were measured using a 5-point Likert scale (1 – strongly disagree, 5 strongly agree). Items were identical to those included in Study 2a which sampled adults. A full list of items for study 2b can be found in Appendix J. Before responding to the statements participants were given the following information:

‘This study aims to explore the way in which children and young people understand group membership. Groups can take lots of different forms, for example gender, nationality, ethnicity, culture etc.’

Participants were also asked to complete demographic information on gender and date of birth. A copy of the information sheet and answer booklet can be found in Appendix L.

## Participants

A total of 506 participants completed the questionnaire. The breakdown by year group and gender is shown in the Table 19.

**Table 19**

*Gender of participants by year group (Study 2b - Adolescents)*

Gender category	Year 8 <sup>a</sup>	Year 9 <sup>b</sup>
	n	n
Male	100	111
Female	144	120
Other	4	3
Prefer not to say	7	8
Missing Data	4	5

<sup>a</sup> N= 259, <sup>b</sup> N = 247

## Procedure

Following ethical guidance, head teachers were permitted to give consent (in loco parentis) for students to take part in the study. A unique code, which appeared at the top of each section of the questionnaire, was generated for each participant. The use of a unique code ensured that no individual was identifiable whilst at the same time enabling a participant's data to be withdrawn at a later date. School names were also coded to ensure that no school involved in the study could not be identified.

Parents/carers were informed of the study via an email from the school and given reasonable time to opt-out; opt out forms were available in hard copy or via email to the researcher (see Appendix H for information sent to parents/carers). All pen and paper questionnaires were administered at a time arranged by and convenient to the schools involved. At the request of the schools, form tutors administered the questionnaires to students during form time; instructions for form teachers were provided by the researcher. A copy of these instructions can be found in Appendix M.

Whilst parents had been given the opportunity to opt out of the study on their child's behalf no student was made to complete the questionnaire if they did not wish to do so; this was made clear to them before the study began. All those willing to take part were asked by form tutors to complete the information sheet; these were then collected and answer booklets were handed out.

Two versions of the questionnaire were designed to minimize the impact of any possible item order effects. The two versions of the questionnaire (version A and version B) differed only with respect to the order of the items, all other elements of the questionnaire remained constant. Version A presented the items in order of blocks (malleability, homogeneity, intergroup relations, SDO, trust and essentialism). The items in version B were randomized by the researcher and were not formatted by blocks. Analyses for order effects of item presentation are presented later in the chapter.

Packs of questionnaires delivered to form tutors were compiled of half version A and half version B questionnaires. Versions A or B of the questionnaire were handed out randomly to the students. Students were then given an opportunity to read the information through and ask any questions before beginning the questionnaire. Following completion of the questionnaire the answer booklets were collected and each child was given a de-brief letter to read and take home to parents/carers (see Appendix I).

Two schools were involved in the research project and completed the study on different days.

## **Results**

### **Implicit Group Theories - Exploratory Factor Analysis**

Two rounds of Factor Analysis were run; the first to determine the factor structure of IGT items and the second to confirm that IGT items load separately from Intergroup relations items (IR).

### **Factor Analysis – Implicit Group Theory Items**

Exploratory factor analysis was conducted on all items making up Implicit Group Theories; this included 5 malleability items, 4 homogeneity items and 3 essentialism items. These items were identical to those in study 2a and can be seen in Table 12.

A varimax factor analysis with orthogonal rotation was conducted on all 12 items and produced 4 factors with eigenvalues over 1 accounting for 53.1% of the variance. KMO =.659.

Despite 4 factors emerging only 2 factors were predicted; this was confirmed by the scree plot. A further varimax factor analysis with orthogonal rotation was conducted extracting two fixed factors. The two factors accounted for 34.5% of the total variance. The two-factor structure was identical to that seen in the Study 2a with adults.

One item measuring homogeneity 'A group is made up of all sorts of different people, they don't have to think the same' cross loaded on both factors mirroring the findings from the adult data. This item was removed and a further, final, analysis was conducted.

A Varimax factor analysis with orthogonal rotation was conducted on 11 items; the two factors accounted for 35.9% of the total variance. KMO = .647. The factor order and items are identical to those found in the adult data. The factor loadings for the adolescent data are displayed Table 20.

**Table 20**

*Summary of Exploratory Factor Analysis IGT items (Study 2b - Adolescents)*

Item	Factor Loading	
	1	2
Factor 1: Groupness		
All members of a group generally share common group goals	<b>.60</b>	.00
People who share the same group generally hold the same views as each other.	<b>.51</b>	.03
The characteristics of a group tend to be stable over time and context.	<b>.46</b>	.02
In terms of what defines them, all members of a given group are largely the same underneath the surface.	<b>.42</b>	-.01
The group someone belongs to tells us a lot about them as a person.	<b>.36</b>	.02
Every group is a collection of a certain type of person.	<b>.30</b>	.16
Factor 2: Malleability		
The groups someone belongs to cannot be changed.	.11	<b>.69</b>
People can always change the group they belong to.	-.01	<b>.61</b>
Any group can change and develop	-.05	<b>.40</b>
Groups can change even their most basic qualities.	.01	<b>.37</b>
Groups cannot substantially change the kind of group they are.	.10	.26

Note. N = 506. The extraction method was maximum Likelihood with an orthogonal (Varimax with kaiser normalization) rotation. Factor loadings above .30 are shown in bold.

### Reliability of IGT Scale (11 items)

Reliability analyses (Cronbach's alpha) were run on the overall scale (11 items) as well as on malleability (5 items) and groupness (6 items). The reliability results can be seen in Table 21.

**Table 21:**

*Reliability of IGT measure (Study 2b - Adolescents)*

Scale	Reliability ( $\alpha$ )
Overall (11 items)	.573
Groupness (6 items)	.585
Malleability (5 items)	.579 <sup>a</sup>

<sup>a</sup> Analysis revealed that the reliability of the malleability scale could be improved to .580 if one item was removed – 'Groups cannot substantially change the kind of group they are'. However, only improved the reliability by .001., and therefore the decision was made to keep the item in the scale to retain comparability with the adult sample in the analyses.

### Confirmatory Factor Analysis (CFA) – Implicit Group Theory Items

The EFA, as outlined above, suggested a two- factor solution, therefore a CFA model was specified with two latent factors (Malleability and Groupness). Since the items showed acceptable skewness and kurtosis (Brown, 2006) the estimation model used was maximum likelihood. Standardised coefficients were used and observations with missing values were excluded. The attempted model was the same as for Study 2a and can be seen in Figure 2.

After estimating the model, goodness -of-fit statistics were obtained. The results are displayed in Table 22 and indicate a good model fit. The CFI is .969 (above the recommended value of 0.95, Hooper et al., 2008) and the RMSEA is .029, below the generally recommended value of 0.05.

**Table 22***Goodness-of-fit- statistics for the 2-factor model (Study 2b - Adolescents)*

Fit statistic	Two factor model
Chi2 (df)	51.838 (37)
RMSEA	.029
CFI	.969
TLI	.953

The results of the CFA confirm the 2-factor model for IGT items with 12–14-year-olds. It confirms that malleability and groupness represent separate factors of implicit group theories in this age group, and results suggest that this model is a slightly better fit for this age group compared to the adult sample reported above.

### **Factor Analysis – Implicit Group Theory and Intergroup Relations items**

An initial PCA was run with the 5 IR items. Results were similar to those found in the adult data with the IR items loading on two main factors. The two items which reference learning from other groups loaded separately, but one further item (Relationships between groups in society can't be changed) loaded weakly on both factors. A subsequent exploratory factor analysis was run on IGT and IR items with the adolescent data to check that IGT items load separately from IR items.

A varimax factor analysis with orthogonal rotation was conducted on all 16 items and produced 6 factors with eigenvalues over 1 accounting for 58.8% of the total variance. KMO = .688

Despite 6 factors emerging only 3 factors were predicted (malleability, groupness and intergroup relations); the scree plot also suggested three main factors. A varimax factor analysis with orthogonal rotation was conducted on all 16 items extracting 3 fixed factors. The factors accounted for 38.5% of the total variance.



Three cross loading IR items were removed, leaving 13 items. A varimax factor analysis with orthogonal rotation was conducted on the remaining 13 items extracting 3 fixed factors. The factors accounted for 42.9% of the total variance. KMO = .658. The factor loadings can be seen in Table 23.

**Table 23**

*Summary of Exploratory Factor Analysis for IGT and IR items (Study 2b - Adolescents)*

Item	Factor loading		
	1	2	3
<b>Factor 1: Malleability</b>			
The groups someone belongs to cannot be changed.	<b>.77</b>	.10	-.02
People can always change the group they belong to	<b>.56</b>	-.01	.14
Any group can change and develop	<b>.35</b>	-.14	.33
Groups can change even their most basic qualities	<b>.31</b>	.02	.15
Groups cannot substantially change the kind of group they are.	.24	.10	.11
<b>Factor 2: Groupness</b>			
All members of a group generally share common group goals.	-.001	<b>.61</b>	-.004
People who share the same group generally hold the same views as each other.	.02	<b>.51</b>	.02
The characteristics of a group tend to be stable over time and context	.04	<b>.45</b>	-.08
In terms of what defines them, all members of a given group are largely the same underneath.	.01	<b>.41</b>	-.02
The group someone belongs to tells us a lot about them as a person.	.01	<b>.37</b>	.06
Every group is a collection of a certain type of person.	.17	.29	.01
<b>Factor 3: Intergroup Relations</b>			
No matter which groups people belong to they can all learn from each other.	.19	.000	<b>.74</b>
Different groups of people who interact can learn from each other.	.17	.004	<b>.70</b>

Note. N = 506. The extraction method was maximum Likelihood with an orthogonal (Varimax with kaiser normalization) rotation. Factor loadings above .30 are shown in bold.

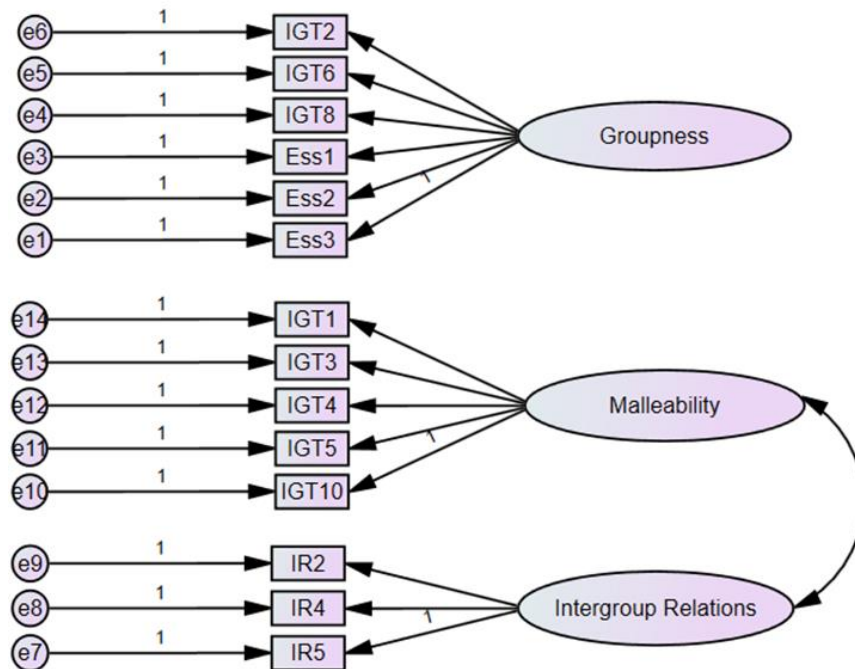
The factor structure for malleability and groupness remains the same, and mirror the results found in study 2a. In terms of intergroup relations items, different items are retained here compared to the analyses with adults in study 2a. However, the results indicate that the three constructs load on separate factors in the adolescent sample and this suggests that the items in the IGT measure are tapping into perceptions of group properties rather than intergroup relations.

### **Confirmatory Factor analysis – Implicit Group Theory and Intergroup Relations items**

The EFA, as outlined above, suggested a three-factor solution, therefore a CFA model was specified with three latent factors (Malleability, Groupness and Intergroup relations). Since the items showed acceptable skewness and kurtosis (Brown, 2006) the estimation model used was maximum likelihood. Standardised coefficients were used and observations with missing values were excluded. The attempted model can be seen in Figure 4.

Figure 5

Confirmatory Factor Analysis of IGT and IR items (Study 2b - Adolescents)



After estimating the model, goodness-of-fit statistics were obtained. The results are displayed in Table 24 and indicate adequate fit. The CFI is .953, slightly above the recommended value of 0.95 (Hooper et al., 2008) and the RMSEA is .036, below the generally recommended value of 0.05.

Table 24

Goodness-of-fit-statistics for the 3-factor model (Study 2b - Adolescents)

Fit statistic	Two factor model
Chi2 (df)	89.768 (56)
RMSEA	.036
CFI	.953
TLI	.934

The CFA confirms that groupness and malleability represent separate factors of implicit group theories. Whilst malleability needed to be allowed to co-vary with Intergroup relations in order to obtain a better fit, groupness did not. This is in contrast to the model conducted with the data from the adult sample, which needed groupness to co-vary with intergroup relations in order to achieve a better fit. The reasons why these differences occurred between the samples are unclear.

A three-factor structure for implicit group theory and intergroup relations items, is suggested by the EFA and confirmed by the CFA. Although malleability needed to be co-varied with intergroup relations in order to achieve a better model fit, and this suggests there are some associations between the factors in this age group, more importantly at this stage, the two constructs, groupness and malleability, were confirmed as separate factors of and IGT. Future studies need to continue the refinement of these factors, to improve model fit, and also explore whether an entity or incremental mindset in either perceived malleability and homogeneity predict attitudes to social groups.

### **Year Groups Differences**

The main focus of interest in the current study in terms of the development of IGTs was focused on the results from the discrete samples of children, adolescents and adults. However, given that the adolescent sample was comprised of both year 8 and 9 students, their ages ranged from 12-14, and the sample size for each year group was relatively large, the opportunity to analyse IGT score by year group was taken.

Multivariate analyses were run to explore year group (i.e., age) differences in IGT, SDO, IR and intergroup trust scores.

Results revealed that Year 9 students scored significantly higher on the IGT scale (malleability and groupness) than Year 8 students, suggesting a developmental shift to more entity thinking. Further analyses revealed that this significant difference between year groups is seen in scores for

malleability but not for groupness suggesting that there may be a shift in the implicit theory about the perceived malleability of groups between years 8 and 9 (ages 12 to 14 years). Results can be seen in Table 25.

**Table 25**

*Multivariate Analysis of IGT scores by year group (Study 2b - Adolescents)*

Measure	Year 8		Year 9		F (1, 501)	$\eta^2$	Cohen's d
	M	SD	M	SD			
IGT	2.61	0.36	2.69	0.38	5.60*	.011	0.22
Groupness	3.04	0.51	3.08	0.52	0.87	-	-
Malleability	2.10	0.45	2.21	0.48	7.10*	.014	0.23

\*  $p < .05$

No significant differences were found between year groups for scores on SDO, Trust or intergroup relations measures.

### **Analysis by questionnaire version**

Two versions of the questionnaire were used in the current study. Whilst all information and example questions remained the same between the versions, the order of the items presented was altered to control for any order effects. Version A and B of the questionnaire were distributed equally, and randomly, for each class that took part in the study. A one-way Anova was run with questionnaire version as the independent variable and mean IGT score as the dependent variable.

No significant differences were found for IGT score between versions A and B of the questionnaire and it was concluded that the order of the items presented in the questionnaire had no or minimal effect on the results of the study.

### **Reliability Analysis of Other Constructs**

Social Dominance Orientation (SDO)

A reliability analysis of the 6 item SDO scale was conducted revealing  $\alpha = .718$ . No improvement to reliability could be made by removing items.

Intergroup Relations Items (IR)

Split half reliability analysis of the two IR items remaining after EFA revealed reliability to be .713

### **Possible Floor and Ceiling Effects**

Frequencies of response, distribution and standard deviations were explored to check for floor and ceiling effects on each subscale (IGT, IR, SDO and Trust) as well as each individual item.

All sub scales showed normal distribution patterns, with skewness and kurtosis statistics falling within acceptable ranges. No items showed significantly skewed response patterns, however as in the adult data reverse coded items showed a response pattern that skewed towards the lower end of the scale (1 or 2). This may be because these items are worded in a way that makes them easier to endorse or agree with (and then score 1 or 2 once reverse coded); these items show higher levels of incremental thinking. The direction of wording for these items is something that needs to be considered carefully in future studies to ensure items are not too easy to endorse.

### **Correlational Analysis**

Correlations were run to test for relationships between IGT, Malleability, Groupness, SDO, Intergroup Trust and Intergroup Relations.

Significant positive correlations were found between IGT scores and all other constructs. The higher the IGT Score (higher fixed or entity thinking) the higher the levels of SDO, the more negative beliefs on intergroup relations were and the lower the score on intergroup trust. Significant positive

correlations can be seen between malleability and IR and SDO, but not with trust. Significant positive correlations can also be seen between groupness and SDO and Trust, but not with IR. As seen in the adult data there was no significant correlation between the two subscales. Results can be seen in Table 26.

**Table 26:**

*Descriptive statistics and Correlations for study variables (Study 2b - Adolescents)*

Variable	N	M	SD	1	2	3	4	5	6
1. IGT	504	2.65	0.37	-					
2. Malleability	502	2.16	0.48	-	-				
3. Groupness	503	3.06	0.51	-	-	-			
4. IR	500	1.80	0.59	.20***	.33***	.02	-		
5. SDO	499	2.25	0.65	.31***	.24***	.23***	.36***	-	
6. Trust	494	3.07	0.68	.18***	.000	.24***	.11*	.22***	-

*Note.* \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

Z tests were conducted to examine whether the differences between correlations for malleability and homogeneity with the other constructs were significant. Results revealed that the difference in correlation value for trust with groupness and malleability was statistically significant ( $p < .001$ ), the differences between correlation coefficients for IR and malleability and homogeneity was also significant ( $p < .001$ ). Differences in correlation coefficients of malleability and groupness with SDO were not statistically significant.

## Discussion

The results of the EFA with 12–14-year-olds suggest that the items represent two main factors: perceived malleability and perceived groupness. The factor structure is confirmed by the CFA and is demonstrated to be a better fit than a one factor model. These results mirror those seen in study 2a – the items and emergent factors are identical, however the model fit for adolescents is slightly better than that seen in adults. Ensuring that the same wording was used for both adults and adolescents has allowed a greater ease of comparison between the samples. These results build on



that in study 1b, and suggest that by the age of 12-14 years adolescents have formed an implicit theory of groups that is similar to that seen in adults.

The reliability of the scales measuring both factors however are lower than those seen in adults, or in study 1b. This suggests that there is some issue with the wording of the items, and this is supported by the item distribution response results. As in the adult questionnaire some of the items appear to be too easy to endorse (Dweck, Chiu & Hong, 1995a), and therefore may not be tapping into the construct of interest in a reliable way. Further work needs to be undertaken in Study 3 to resolve this issue whilst keeping items comparable with those used with other age groups.

As seen in the previous analysis, the data suggest that scoring higher in terms of an implicit theory of groups is positively correlated with SDO levels, and negatively correlated with intergroup trust. This suggests that by early adolescence implicit groups theories may be developing alongside SDO and are related to perceptions of intergroup trust. These relationships, as well as the relationship between IGT and intergroup attitudes, warrant further exploration in the next study. As in study 2a, no significant correlation emerged between perceived malleability and groupness, suggesting that they may develop independently of each other.

### **Study 2c – Testing the Factor Structure of an IGT in Children**

#### **Method**

##### **Design**

The current study is a correlational design. All items are measured in a self-report questionnaire format.

## Measures

A total of 25 items were included in the current study. All items were measured using a 5-point Likert scale (1 – strongly disagree, 5 strongly agree). Items were comparable to those included in studies 2a (Adults) and 2b (Adolescents); the wording of some items was altered to make them easier to understand for 9-10-year-olds. A full list of items for study 2c can be found in Appendix N. Before responding to the statements, participants were given the following information:

‘This study aims to explore the way in which children and young people understand group membership. Groups can take lots of different forms, for example gender, nationality, ethnicity, culture etc.’

Participants were also asked to complete demographic information on gender and date of birth. Two versions of the questionnaire were designed to minimize the impact of any possible item order effects – see study 2b for details on questionnaire versions.

A copy of the information sheet and answer booklet (version A) can be found in Appendix O.

## Participants

A total of 78 participants completed the questionnaire. All participants were pupils in year 5 (9-10 years old). The breakdown by gender can be seen in Table 27.

**Table 27**

*Gender of participants (Study 2c - Children)*

Gender	n	%
Male	32	41
Female	36	46.2
Other	0	0
Prefer not to say	10	12.8

53 participants (67.9%) completed version A of the questionnaire and 25 participants (32.1%) completed version B.

Despite the best of intentions to increase the sample size for study 2c, following small number in study 1c, unfortunately the target sample size was not reached and only 78 participants were sampled.

The data analysis for study 2c was delayed by the onset of the Covid-19 pandemic and resulting lockdown in March 2020. Data collection with this age group was reliant on access via schools, and data collection resumed in the summer term of 2021 when schools returned to face-to-face teaching on a permanent basis. Despite the return to school, the ongoing pandemic meant that schools were reluctant to take part in research projects and data collection with this age group was problematic. The data collection for 2c was possible due to good previous connections made by the researcher with the schools who took part.

## **Procedure**

Following ethical guidance, head teachers were permitted to give consent (in loco parentis) for students to take part in the study. A unique code was generated for each individual, ensuring that data could be withdrawn at any time but that no individual involved in the research was identifiable. School names were also coded to ensure each school involved could not be identified.

Parents were informed of the study via a letter taken home by children and were given reasonable time to opt-out of the study; opt out forms were available as a hard copy for return to the school or via emailing the researcher. (See Appendix H for a copy of information given to parents/carers). All pen and paper questionnaires were administered at a time arranged by and convenient to the schools involved. During the 2020 Covid19 pandemic the researcher was unable to enter the schools involved in the reach study and the questionnaire was therefore administered to each class of Year 5 pupils by their form teacher or teaching assistant; instructions for form teachers were provided by the researcher (see Appendix M).

Whilst parents had been given the opportunity to opt out of the study on their child's behalf no child was made to complete the questionnaire if they did not wish to do so; this was made clear to the participants before the study began. Teachers read through the information sheet with the children to ensure they all understood the instructions and the children then completed the demographic information. Information sheets were collected and answer booklets were handed out (unique codes were paired for each child, to ensure answer booklets and demographic information could be matched). Due to the researcher not being present, and to simplify the data collection processes for schools, two of the classes completed version A and one class completed version B. Children were then given an opportunity to read the information through and ask any questions before beginning the questionnaire. Following completion of the questionnaire by all children the answer booklets were collected and each child was given a de-brief letter to read and take home to parents/carers (see Appendix I).

## **Results**

### **Implicit Group Theories - Exploratory Factor Analysis**

The target sample size for Study 2c was not reached due to the covid-19 pandemic and resulting lockdowns. As the researcher I am aware that the sample size is too small for robust analyses to be carried out and the next section therefore reports results that are highly exploratory in nature. The purpose of the analyses is to detect any substantial anomalies or deviations from the patterns established with the adult and adolescent samples in Studies 2a and 2b, rather than to draw any firm conclusions.

Two rounds of Factor Analysis were run; the first to determine the factor structure of IGT items and the second to confirm that IGT items load separately from Intergroup relations items (IR).

### **Factor Analysis – Implicit Group Theory Items**

Exploratory Factor analysis was conducted using all items making up Implicit Group Theories; this included 5 malleability items, 4 homogeneity items and 3 essentialism items. Items included in the IGT measure for children can be seen in Table 10.

A varimax factor analysis with orthogonal rotation was conducted on all 12 items and produced 4 factors with eigenvalues over 1 accounting for 58.8% of the variance. KMO = .610.

Despite 4 factors emerging only 2 factors were predicted; this was confirmed by the scree plot. A second varimax factor analysis with orthogonal rotation was conducted on all 12 items extracting 2 factors; the two factors accounted for 39.3% of the total variance. Following several more rounds of analysis three cross loading or poorly loading items were removed.

A varimax factor analysis with orthogonal rotation was conducted on the remaining 9 items extracting 2 fixed factors. The 2 factors accounted for 48.6% of the total variance and the factors were confirmed by the scree plot (KMO = .668). The factor loadings can be found in Table 28.

**Table 28***Summary of Exploratory Factor Analysis IGT items (Study 2c - Children)*

Item	Factor Loading	
	1	2
<b>Factor 1: Groupness</b>		
People who belong to the same group usually think the same as each other.	<b>.648</b>	-.124
The characteristics of a group are the same at different times and in different places.	<b>.626</b>	-.100
The groups someone belongs to tells us a lot about what they are like as a person.	<b>.571</b>	-.054
Groups are made up of people who are very similar to each other.	<b>.504</b>	.106
All members of a group generally want to achieve the same things.	<b>.470</b>	.121
Even if they appear different from each other on the outside, people who all belong to the same group are actually very similar to each other.	<b>.438</b>	-.135
<b>Factor 2: Malleability</b>		
People can always change the group they belong to.	-.139	<b>.872</b>
A group is made up of all sorts of people; they don't all have to think the same.	.200	<b>.545</b>
Any group can change and develop.	-.133	<b>.456</b>

*Note.* N = 78. The extraction method was maximum Likelihood with an orthogonal (Varimax with kaiser normalization) rotation. Factor loadings above .30 are shown in bold

These results suggest that 9-10-year-olds may have developed clear theories of groupness, and the items loading on this factor are identical to those found studies 2a and 2b, with adults and adolescents, respectively. The results of the EFA also suggest that their understanding of the perceived malleability of groups may be less well formed. Whilst 2 of the items are the same as those representing malleability in studies 2a and b, three other items that make up the factor in adult and adolescent studies were removed from the analyses. One further item 'A group is made up of all sorts of different people, they don't have to think the same' was removed from the EFA in studies 2a and 2b for cross loading but appears as part of the malleability factor in the current EFA. This

suggests that whilst malleability and groupness are already understood as separate factors by the age of 9-10 years, malleability may be less well formed and therefore differs to that seen in the adolescent and adult samples.

### Reliability of IGT items

Reliability analyses were conducted on the overall 9 item scale. The reliability of the overall scale was  $\alpha = .592$ , however this was improved by removing the two malleability items to leave the seven (predicted) groupness items (4 homogeneity, and 3 essentialism items) with an  $\alpha = .686$ .

Reliability analysis was also conducted on the 6 items making up factor 1 (groupness) and the three items making up factor 2 (malleability). Results can be seen in Table 29.

**Table 29**

*Reliability of IGT measure (Study 2c - Children)*

Scale	Reliability ( $\alpha$ )
Overall (9 items)	.592
Groupness (6 items)	.711
Malleability (3 items)	.637

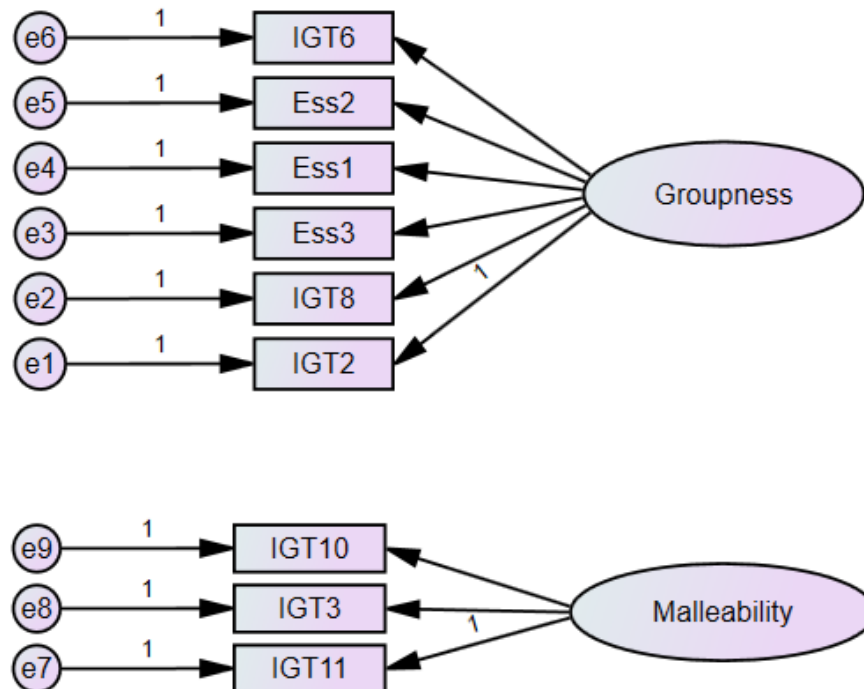
Despite the low numbers in the sample for study 2c, the reliability of the groupness scale is higher than that seen in either studies 2a or 2b.

### Confirmatory Factor Analysis – IGT items

Whilst less clear than for the adult and adolescent samples, the EFA described above for 9–10-year-olds suggested a two- factor solution, therefore a CFA model was specified with two latent factors (Malleability and Groupness). Since the items showed acceptable skewness and kurtosis (Brown, 2006) the estimation model used was maximum likelihood. Standardised coefficients were used and observations with missing values were excluded. The attempted model can be seen in Figure 5.

**Figure 6**

*Confirmatory Factor Analysis of IGT items (Study 2c - Children)*



After estimating the model, goodness -of-fit statistics were obtained. The results are displayed in Table 30 and indicate an excellent model fit. The CFI is 1.00 (above the recommended value of 0.95, Hooper et al., 2008) and the RMSEA is .00, below the generally recommended value of 0.05.

**Table 30**

*Goodness -of fit- statistics for the 2-factor model (Study 2c - Children)*

Fit statistic	Two factor model
Chi2 (df)	25.982(26)
RMSEA	.00
CFI	1.00
TLI	1.002



The results of the CFA confirm the 2-factor model for IGT items with 9-10-year-olds. It confirms that malleability and groupness represent separate factors of implicit group theories in this age group, and results suggest that this model is an excellent fit, and better than that seen in either of the previous analyses with adults or adolescents.

### **Factor Analysis – IGT items and IR items**

An initial PCA was run with the 5 IR items. Results were similar to those found in the adult data with the IR items loading on two main factors. The two items which reference learning from other groups loaded separately, but one further item ('In general, different groups don't want to mix with each other') cross loaded on both factors. Subsequently, exploratory factor analysis was run on IGT and IR items for year 5 data to check that IGT items load separately from IR items.

A varimax factor analysis with orthogonal rotation was conducted on all 14 items and produced 4 factors with eigenvalues over 1 accounting for 56.9% of the total variance. KMO = .688.

Despite 4 factors emerging only 3 factors were originally predicted (Malleability, Homogeneity, and Intergroup Relations). Two cross loading items were removed and a varimax factor analysis with orthogonal rotation was conducted on 12 items; extracting 3 fixed factors. The factors accounted for 52.8% of the total variance (KMO = .689).

This is identical to the factor structure seen in the previous EFA with IGT items, with the addition of one extra factor (two IR items), and 1 IR item being added to factor 1 (Groupness). Aside from this one IR item IR appears to load on a separate factor. The factor loadings are displayed in Table 31.

**Table 31**

*Summary of Exploratory Factor Analysis for IGT and IR items (Study 2c - Children)*

Item	Factor loading		
	1	2	3
<b>Factor 1: Groupness</b>			
People who belong to the same group usually think the same as each other	<b>.64</b>	.18	-.01
The characteristics of a group are the same at different times and in different places.	<b>.64</b>	.07	.23
The groups someone belongs to tells us a lot about what they are like as a person.	<b>.54</b>	.12	-.15
In general, different groups don't want to mix with each other.	<b>.54</b>	.05	.18
Groups are made up of people who are very similar to each other.	<b>.52</b>	-.09	-.09
All members of a group generally want to achieve the same things.	<b>.49</b>	-.09	.12
Even if they appear different from each other on the outside, people who all belong to the same group are actually very similar to each other.	<b>.44</b>	.14	.23
<b>Factor 2: Malleability</b>			
People can always change the group they belong to.	.09	<b>.99</b>	.84
A group is made up of all sorts of people; they don't all have to think the same.	-.25	<b>.44</b>	.38
Any group can change and develop.	.13	<b>.38</b>	.14
<b>Factor 3: Intergroup Relations</b>			
It doesn't matter which groups people belong to; they can all learn from each other.	.06	.12	<b>.61</b>
Different groups of people who mix can learn from each other.	.13	.13	<b>.56</b>

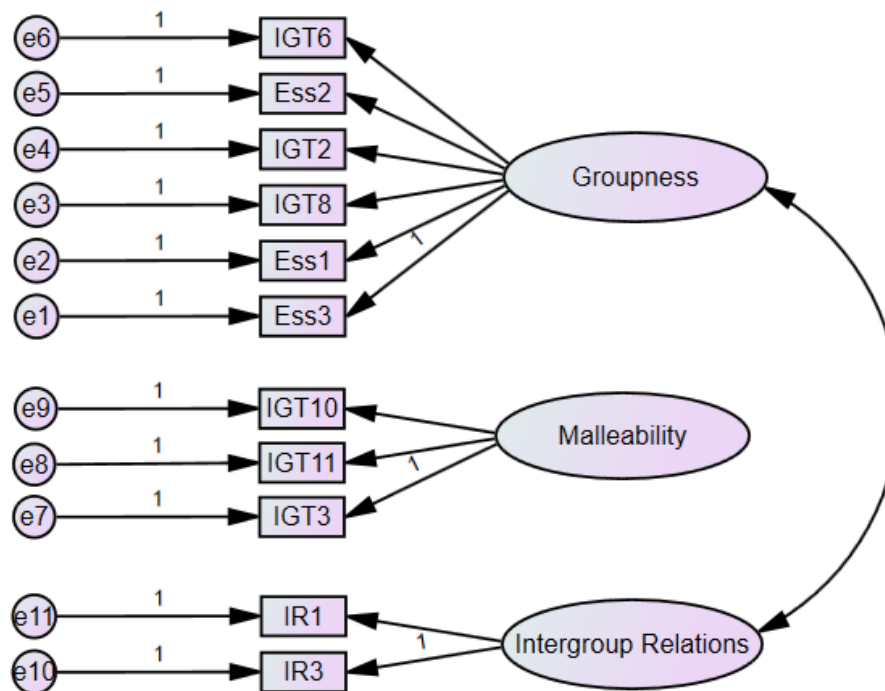
*Note.* N = 78. The extraction method was maximum Likelihood with an orthogonal (Varimax with kaiser normalization) rotation. Factor loadings above .30 are shown in bold.

### Confirmatory Factor analysis – Implicit Group Theory and Intergroup Relations items

The EFA, as outlined above, suggested a three - factor solution, therefore a CFA model was specified with three latent factors (Malleability, Groupness and Intergroup relations). Since the items showed acceptable skewness and kurtosis (Brown, 2006) the estimation model used was maximum likelihood. Standardised coefficients were used and observations with missing values were excluded. The attempted model can be seen in Figure 6

**Figure 7**

*Confirmatory Factor Analysis of IGT and IR items (Study 2c – Children)*



After estimating the model, goodness -of-fit statistics were obtained. The results are displayed in Table 32 and indicate a good model fit. The CFI is .978 (above the recommended value of 0.95, Hooper et al., 2008) and the RMSEA is .027, below the generally recommended value of 0.05.

**Table 32***Goodness-of-fit statistics for the 3-factor model (Study 2c - Children)*

Fit statistic	Two factor model
Chi2 (df)	54.81 (52)
RMSEA	.027
CFI	.978
TLI	.973

The CFA confirms that groupness and malleability represent separate factors of implicit group theories. As in the CFA using data from the adult sample, groupness was allowed to co-vary with intergroup relations in order to obtain a better fit.

A three-factor structure for implicit group theory and intergroup relations items, is suggested by the EFA and confirmed by the CFA. Of particular significance is that the two constructs of particular interest, groupness and malleability, were confirmed as separate factors of and IGT. Interestingly the model fit was better for children than that from the studies with adult or adolescent participants. Future studies need to continue the refinement of these factors to improve reliability and model fit, as well as explore whether an incremental or entity mindset in either, or both, of these factors predict attitudes to other social groups.

#### **Analysis by questionnaire version.**

Two versions of the questionnaire were used in the current study. Whilst all information and example questions remained the same between the versions, the order of the items presented was altered to control for any order effects. Due to Covid restrictions the researcher was unable to be present at the schools at the time the questionnaire was administered and therefore, to ease the procedure for teaching staff two of the classes completed version A and one class completed version B. A one-way Anova was run with questionnaire version as the independent variable and mean IGT score as the dependent variable.

No significant differences were found for IGT score between versions A and B of the questionnaire and it was concluded that the order of the items presented in the questionnaire had no or minimal effect on the results of the study.

### **Reliability Analysis of Other Constructs**

#### Social Dominance Orientation (SDO)

A reliability analysis of the 6 item SDO scale was conducted revealing  $\alpha = .398$ . The reliability of the scale was improved to  $\alpha = .653$  by removing the following items:

- One group of people shouldn't have better chances to do well than every other group of people
- It's ok if some groups of people have more chance to do better in life than other groups of people
- All groups should be given the same opportunities as each other

The reliability of the SDO scale with children is lower than that seen for either adults ( $\alpha = .731$ ) or adolescents ( $\alpha = .718$ ). The SDO measure used with adults and adolescents both retained all 6 items and showed acceptable reliability, whereas 3 items had to be removed for the scale reliability to improve for children. It is worth noting that both reverse coded SDO items were removed in the current analysis in order to improve reliability. This may suggest that these counter intuitive items are more difficult for children aged 9-10 to understand and respond to accurately. A unidirectional scale to measure SDO in children may improve reliability.

### **Possible Floor and Ceiling Effects**

Frequencies of response, distribution and standard deviations were explored to check for floor and ceiling effects on each subscale and each individual item.

All sub scales showed normal distribution patterns, with skewness and kurtosis statistics falling within acceptable ranges, and no items showed significantly skewed response patterns. However, two SDO items showed responses slightly skewed towards the lower end of the scale (indicating lower levels of SDO). As in the adult/adolescent data a number of reverse coded items showed a response pattern that skewed towards the lower end of the scale. This may be because these items are worded in a way that makes them easier to endorse or agree with, for example, 'All groups should be given the same opportunities as each other'.

### Correlational Analysis

Correlational analyses were conducted to test for relationships between IGT, Malleability, Groupness, SDO (3 items), Intergroup trust and Intergroup Relations (2 items). Significant positive correlations were found between IGT scores and SDO, and between IGT and Trust. The higher the IGT Score (higher fixed or entity thinking) the higher the levels of SDO and the lower the intergroup trust.

Significant positive correlations can be seen for malleability with IR and SDO, but not with trust. Significant positive correlations can also be seen between groupness and SDO and Trust, but not with IR. The results of the correlation analysis of the sub scales with other constructs mirrors that from the adolescent data. As seen in the adult and adolescent data there was no significant correlation between the two subscales. Results can be seen in Table 33.

**Table 33**

*Descriptive Statistics and Correlations for Study Variables (Study 2c - Children)*

Variable	N	M	SD	1	2	3	4	5	6
1. IGT	78	2.55	0.58	-					
2. Malleability	78	2.62	0.60	-	-				
3. Groupness	78	2.88	0.78	-	-	-			
4. IR	78	1.75	0.75	-.03	.24*	-.18	-		
5. SDO	78	2.14	0.95	.46***	.33**	.45***	.07	-	
6. Trust	78	2.94	0.86	.40***	-.01	.48***	.03	.22*	-

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

Z tests were conducted to examine whether the differences between correlations for malleability and homogeneity with the other constructs were significant. Results revealed that the difference in correlation value for trust with groupness and malleability was statistically significant ( $p < .05$ ), the differences between correlation coefficients for IR with malleability and homogeneity was also significant ( $p < .005$ ). Differences in correlation coefficients of malleability and groupness with SDO were not statistically significant

### **Discussion**

Building on the limitations from Study 1c, in Study 2c items related to perceived malleability and homogeneity were refined, items related to essentialism and entitativity were added, and a larger sample size of children was included in study 2c. As in the analyses with both adult and adolescent samples, the results of the EFA suggested a two-factor structure for IGT items – perceived malleability and groupness. Whilst the factor perceived groupness mirrored that seen with the other age groups, the factor perceived malleability varied in its structure for children compared to the other age groups. The CFA confirmed the two-factor structure for children, and the fit of the model was excellent, however the items within the factor ‘perceived malleability’ varies from that seen in adults and adolescents. This may be because children between the ages of 9-10 years do not yet have such a fully formed theory of the malleability of groups, or it may be because the items were worded differently and were not intuitively understood by the children participating in the study.

These potential limitations with the wording of items are in part supported by the reliability analyses. Whilst the reliability of the scale measuring perceived groupness is adequate to good, the reliability for malleability is less so. Furthermore, the reliability of the SDO scale was poor in this age group, and may be because children of 9-10 years have difficulty answering counter-intuitive items (e.g., Benson & Hocevar, 1985; Marsh, 1986). A revision of the items in both scales, and a switch to

unidirectional items, needs to be considered in the next set of studies in order to focus the response of participants on content rather than phrasing, and thereby increase the reliability of the scale.

In line with the results from studies 2a and 2b, correlational analyses revealed that even by the age of 9-10 years a positive correlation is seen between IGT and SDO, and a negative correlation is seen between IGT and intergroup trust. This suggests that even by this early age, ideas around the perceived properties of groups may already be playing a role in levels of trust between groups. As in the other age groups these relationships, and the potential relationship between IGT and intergroup attitudes, need to be explored further.

### **General Discussion**

The three studies reported in this chapter aimed to refine and test items related to an implicit theory of groups. This included perceived malleability, perceived homogeneity and items related to essentialism. Three age groups were included in the studies to explore whether an implicit group theory is structured similarly in adults, adolescents and children and to explore possible developmental changes or trends in the data. Results from the three studies suggests that an identical factor structure exists for adults and adolescents, and a similar factor structure is present in children aged 9-10 years.

One of the aims of the current set of studies was not only to refine the malleability and homogeneity items but also to broaden an implicit theory of groups to include elements of essentialism and entitativity. Three items were added to the measure, and the results indicated that these items loaded alongside perceived homogeneity across all three age groups – a factor that was subsequently labelled ‘groupness’. The consistency with which the three perceived homogeneity items and the three essentialism items loaded onto the ‘groupness’ factor suggests that this is a factor that is developed relatively early in life, and furthermore one which correlates with higher levels of social dominance orientation (SDO) and lower levels of intergroup trust.



The structure of perceived malleability by contrast, was identical in adults and adolescents, but less similar for children. There are a number of reasons why this may be the case. For example, it may be that an implicit theory of the perceived malleability of groups may be less well developed in children, or it may be that the wording of the items was not immediately clear to this age group and therefore the construct is not being reliably tested. Given the clear two-factor structure for Implicit Group Theories, as suggested by the EFA and confirmed by the CFA across groups, the latter explanation for the variation in items making up the factor of perceived malleability is more likely.

Perceived groupness was not the only variable to correlate significantly with levels of SDO and intergroup trust. Mean IGT and perceived malleability were also significantly correlated with both SDO and intergroup trust across all age groups. Higher IGT scores, indicating a more fixed way of thinking about groups, was associated with higher levels of SDO and lower levels of intergroup trust. This is interesting for two main reasons. Firstly, this suggests that a more fixed mindset is associated with high levels of SDO as early as 9-10 years of age; given the paucity of research in to the development of SDO through childhood and adolescence this is noteworthy because it suggests that ideologies about the properties of groups and acceptance of a hierarchical structure for groups in society may be related, and develop before adolescence. Secondly, given the wealth of research into the links between higher SDO and prejudice to multiple social groups (e.g., Hodson & Dhont, 2015), the association of higher IGT score with higher SDO score suggests that there may to scope to explore whether IGT also predicts intergroup attitudes.

A secondary aim of the current study is to develop a SDO scale that can be used across age groups. Whilst the 6-item scale used in studies 2a, b and c, provided adequate reliability in the adult and adolescent samples, it was less reliable with children. Reliability did increase once the reverse coded items were removed, and it is argued that the children may have failed to understand, or found it difficult to interpret the counter intuitive items. Study 3 (Chapter 6) will address this by trialling a unidirectional scale.

## Limitations and Next Steps

In addition to the reverse coded SDO items, a number of items within the IGT scale were also measured using counter intuitive items. Although previous research has suggested that a mix of positively and negatively worded items is optimal for measuring implicit group theories (Dweck, Chiu & Hong, 1995a), the studies presented in this chapter suggest that this might not always be the case. Making the incremental items less easy to endorse should improve the reliability of the scales and this would help to highlight whether the differences in structure of IGT across age groups are likely due to measurement issues or developmental trends.

Further work is need to both develop and improve on the IGT and SDO scales from this chapter, and explore the relationship of an IGT with variables such as intergroup attitudes. Next steps include:

- Trialling unidirectional SDO and IGT scales in all age groups.
- Simplifying the language of the SDO scale across age groups to increase potential for comparisons.
- Measurement of variables such as Right-Wing Authoritarianism (RWA) and empathy to test the convergent and divergent validity of the newly develop IGT scale.
- Measurement of attitudes to multiple groups in order to test the power of IGT as a predictor of generalised prejudice.

The next chapter outlines studies 3a (adults) and 3b (adolescents) which aim to finalise the IGT scale for use across these age groups, and explore the association of IGT with generalised prejudice.

## Chapter 6: The Association of an IGT with Generalised Prejudice

*This chapter presents two further studies which build on the six studies reported in chapters 4 and 5. The two main aims of this third set of studies are firstly, to test the reliability and validity of the revised measure of IGT in adults and adolescents, and secondly to test the correlational relationship of an IGT with attitudes towards, and willingness for contact with, multiple groups in society. Building on study 2, a further aim is to test a 6-item scale measuring Social Dominance Orientation for use with adults and adolescents. Study 3a (adults) was conducted on line with participants from the general population and Study 3b was conducted face-to-face with adolescents (12-14 years). Results from exploratory and confirmatory factor analyses confirmed that perceived malleability and groupness represent two separate factors of an Implicit Group Theory. The factor structure was identical for both adults and adolescents. An improvement on the reliability of the IGT scale compared to the previous set of studies was seen, with good levels of reliability in Study 3a (adults) and acceptable levels in Study 3b (adolescents). Good levels of reliability were seen for the revised SDO scale in both adults and adolescents. Correlational analyses revealed that perceived malleability, but not groupness, was significantly associated with both measures of generalised prejudice in adults. Perceived malleability was correlated with willingness for contact, but not attitudes, in adolescents. SDO was significantly correlated to generalised prejudice in both age groups. Limitations and implications for the development of prejudice and social ideologies are discussed.*

### Introduction

The results of the three studies reported in the previous chapter confirmed that the perceived malleability and groupness represent two distinct factors of an implicit group theory across three age groups: adults, adolescents (12-14 years) and children (9-10 years). The factor structure was identical for adults and adolescents, and similar for children, suggesting a

developmental progression in the nature of these factors and something which warrants further exploration. Whilst results from studies 1a, b and c suggested good reliability of the IGT scale, this level of reliability was not seen in the results of the second set of studies with adults and adolescents. The IGT scale showed better reliability with 9–10-year-olds, however all age groups appeared to struggle with counter intuitive items, and item distribution analysis suggested that participants found positively worded items too easy to endorse.

The internal consistency of the SDO items was good ( $>.7$ ) in the adult and adolescent samples but poor with children aged 9-10 years. Again, issues with counter intuitive items may be one reason for this lower level of reliability and the next set of studies aims to not only address these issues, but improve reliability for the SDO scale across age groups.

One further result of interest from studies 2a, b and c, was the correlation between a higher IGT score (i.e., fixed thinking about groups) with higher levels of SDO, and higher IGT scores with lower intergroup trust. SDO, in particular, is well supported in the literature as a predictor of generalised prejudice, and the association of a fixed mindset about groups with higher levels of SDO, together with the association of implicit theories and stereotyping (e.g., Levy, 1998) suggests there may be scope to explore whether a fixed implicit group theory is also associated with negative intergroup attitudes. The correlation between IGT and SDO across all age groups in the previous set of studies also indicates that this relationship may exist by late childhood, and given the lack of research into both the development of SDO and ideologies about groups more generally in children and adolescents, this certainly warrants further exploration.

In this third set of studies the same design and methodology will be used with adults and adolescents (12–14-year-olds). However, this time, due to the Covid-19 pandemic and resulting lockdowns, no sample of 9–10-year-olds could be recruited for inclusion. The questionnaire will include refined items of groupness, malleability and SDO, as well as additional items such as Right-Wing Authoritarianism (RWA) and empathy. The latter items are included in order to help establish

convergent and discriminant validity for the measure of IGT. Two additional measures exploring attitudes towards, and willingness for contact with, multiple groups in society will also be included to establish any relationship between IGT and generalised prejudice.

The chapter also reports brief results of two interim studies which took place between study sets 2 and 3. These were designed to improve and test items for inclusion in the IGT and SDO scales. It also reports additional results from study 1a, which tested the utility of the Contact Star (Purewal, 2015) with adults. The contact star is a measure of attitudes to multiple groups which until this point has only been used with children and adolescents.

The main aims of studies 3a and 3b are therefore to finalise items for inclusion in a measure of IGT by refining the wording of items and trialling a unidirectional measure in adult and adolescents. The studies aim to establish convergent and discriminant validity of the IGT scale, and explore association between IGT and attitudes to, and willingness for contact with, multiple groups. A further aim is to test the reliability of a 6 item SDO measure for use with adults and adolescents.

### **IGT and Generalised Prejudice**

The shift of emphasis favouring person-based, versus situation-based, explanations of prejudice can be seen throughout the intergroup and prejudice literature, with the two positions often being depicted as diametrically opposed. In the 1950s the notion of personality as an influence on prejudice was widely held and supported by work by Adorno et al (1950) and Allport (1954). These explanations were based around the authoritarian personality and dominated the field until the early 1960s. At this point, emphasis shifted to the role of social and intergroup influences on prejudice, partly due to methodological and theoretical problems with Adorno et al's approach and partly due to work by Pettigrew (1959), which demonstrated that the personality approach could not account for all differences in prejudice.

For around three decades, from the 1960s onwards, the emphasis swung towards a 'social' account as an explanation of the underpinnings of prejudice. Research in individual differences subsided substantially during this time and the social account became the dominant theory (Choma & Hodson, 2008). A social account was greatly needed in explaining intergroup prejudice, and whilst Tajfel (1978) was particularly successful at inspiring this, his successors and advocates regaled the role of individual differences, despite Tajfel's belief that individual differences still persisted in a group/social identity setting or interaction.

Individuals differ in their cognitive styles, ideologies and beliefs, and it therefore makes intuitive sense that these impact intergroup attitudes and relations just as they predict other major life outcomes such as mortality, occupational achievement and divorce (e.g., Deary et al., 2010; Roberts et al., 2007). It is unsurprising therefore that over recent years a better balance has been seen in the literature with individual differences re-emerging to play a greater role in prejudice research.

This post 2000 balance of interest in both personality and situational factors in the prejudice research is well-justified for two key reasons. Firstly, the effect sizes observed in social and personality related data are comparable. Both average an effect size of around  $r = .20$  (Richard et al., 2003), with many individual difference predictors of prejudice reaching the  $r = .50$  effect size range. Secondly, and arguably more pertinent to the current study, individual differences have predicted patterns of generalised prejudice across cultures, in multiple studies and with multiple types of outgroups (e.g., Akrami et al., 2011; Altemeyer, 1998; Ekehammar et al., 2004; MacInnis & Hodson, 2012; McFarland, 2010). That is, someone who is higher in prejudice towards one group is typically more likely to be higher in prejudice towards other groups. Indeed, this is a relatively robust finding within the individual differences and prejudice literature with adults (Hodson & Dhont, 2015) and has important implications for prejudice reduction efforts.

## **Individual Differences and Generalised Prejudice**

A number of individual differences have been highlighted as influencing generalised prejudice in adults. For example, genetic influences (e.g., Lewis & Bates, 2010, Lewis et al., 2014); religiosity (e.g., Batson & Stocks, 2005; Hunsberger & Jackson, 2005); and the protestant work belief system (e.g., Katz & Hass, 1988; Swim et al., 1995). Broad personality factors have also been highlighted as important in understanding generalised prejudice. Studies using the Big Five measure of personality (Fiske, 1949; McCrae & Costa, 1987) suggest that low agreeableness and low openness generally predict higher levels of prejudice (e.g., Akrami et al., 2011; Ekehammar et al., 2004; Graziano et al., 2007; Hodson, Hogg & MacInnis, 2009). Studies using the Hexaco model of personality (Ashton et al., 2004), which is better able to capture personality more fully, suggest that low openness and low honesty-humility are associated with higher levels of generalised prejudice (Sibley et al., 2010). However, this latter study demonstrated that personality factors were not uniformly predictive of outgroup attitudes but rather associated with the type of target group (e.g., high honesty-humility was associated with prejudice towards 'dangerous' groups such as drug dealers and immoral people). As such, it may be that individual differences are associated with 'generalised' prejudice towards sub-types of groups rather than all outgroups.

## **Right Wing Authoritarianism (RWA), Social Dominance Orientation (SDO) and Generalised Prejudice**

Two of the most widely studied individual differences in the generalised prejudice literature are Right Wing Authoritarianism (RWA; Altemeyer, 1996; 1998) and Social Dominance Orientation (SDO; Pratto et al., 1994; Sidanius & Pratto, 1999). RWA refers to an uncritical acceptance and adherence to an established ingroup authority, an aggression towards deviants and outgroups and high levels of conventionalism. It is thought to develop through social learning processes, particularly in adolescence, and is a robust predictor of generalised prejudice ( $r = .49$ ) (Sibley & Duckitt, 2008). SDO, on the other hand, is characterized by a preference for hierarchy and inequality between

groups and has also been found to robustly predict generalised prejudice ( $r=.44$ ) (Hodson & Costello, 2007). Together the two factors account for around 50% of the variance in prejudice (Altemeyer, 1998; Son Hing & Zanna, 2010; Van Hiel & Mervielde, 2005), however it is important to note that they are unique and complementary predictors of prejudice, each accounting for different aspects.

Despite being individual differences, RWA and SDO are not considered to be personality factors. Both are highly reactive to situational manipulation (e.g., Duckitt & Fisher 2003; Schmitt et al., 2003) and can be altered by group or social influences (e.g., Guimond et al., 2003; Poteat et al, 2007). As such these two factors should be thought of as social or ideological attitudes which can themselves be influenced by personality factors. Indeed, the Dual Process Model of Prejudice (DPM) suggests that RWA and SDO are mediators through which personality indirectly influences generalised prejudice (Duckitt, 2001; Sibley & Duckitt, 2008).

### **Need for Closure (NFC) and Generalised Prejudice**

In addition to broad personality factors and ideological attitudes, individual differences in the form of cognitive factors also influence generalised prejudice. As far back as 1954, Allport focused considerable time on the cognitive underpinnings of prejudice. In his seminal work "The nature of Prejudice", he noted that "A person's prejudice is unlikely to be merely a specific attitude to a specific group; it is more likely to be a reflection of his whole habit of thinking about the world" (p.175). He theorised that people who are prone to prejudice are more likely to prefer structure, order, familiar and predictable situations and ideas, and to dislike ambiguity. More recently, these ideas have been demonstrated to fit conceptually with the concept of Need for Closure (NFC) (Dhont, Roets & Van Hiel, 2011; Roets & Van Hiel, 2011). NFC has been shown to be characterized by the desire for order, definite answers, predictability and a dislike for ambiguity, and both concepts, result in closed or narrow mindedness (Roets & Van Hiel, 2007; Webster & Kruglanski, 1994). Of particular importance are findings demonstrating that people higher in NFC also show higher levels of racial and ethnic



prejudice (e.g., Dhont, Roets & Van Hiel, 2013; Roets & Van Hiel, 2011; Van Hiel et al., 2004) and higher generalised implicit and explicit prejudice (Cunningham et al., 2004).

In a similar manner to the preference of entity theorists to avoid challenge and choose performance-based tasks over learning goals tasks (e.g., Bandura & Dweck, 1985; Dweck & Legget, 1988), NFC is negatively correlated with the motive or inclination to engage in critical thinking (Webster & Kruglanski, 1994). Furthermore, the need for order and predictability, has been shown to be the facet of NFC that best predicts racism (Cornelis & Van Hiel, 2006). This finding may be related to ideas in the entity theory literature which suggest that entity theorists are overly reliant on stereotypes, attend to stereotype consistent information and ignore counterstereotypical information making judgements about others (Plaks et al., 2001). These strategies enable entity theorists to predict the behaviour of others and provide them with stability and order.

### **Generalised Prejudice in Children**

Studies related to individual differences and generalised prejudice are almost exclusively carried out with adults. Whilst some studies have explored the relationship of RWA and SDO with prejudice in adolescents, they have generally measured prejudice to specific groups (e.g., immigrants) and from a developmental perspective (e.g., Crocetti et al., 2021; Poteat & Anderson, 2012; Van Zalk & Kerr, 2014). To the author's best knowledge, one of the only studies which has explored generalised prejudice in young people was by Powlishta et al. (1994). This study measured three types of prejudice in pre-adolescent children: gender (male, female), ethnicity-language (French Canadian, English Canadian) and body type (overweight, normal weight). Results indicated that both ingroup bias and rejection of the outgroup were displayed, attitudes became more flexible and prejudice declined with age, and that there was no evidence for generalised prejudice as a characteristic in children. However, there was little predictive power across domains within the study with only a small percentage of the variance being accounted for by age. Furthermore, this is just one study measuring three types of prejudice with a relatively small sample across a wide range of

ages. It is possible, that individual difference factors, beyond cognitive ability, are associated with a generalised predisposition for prejudice to many, but not necessarily, all out groups.

Studies with adolescents indicate that individual differences such as SDO, RWA and callous-unemotional traits are associated with prejudice to specific groups (e.g., Crocetti et al., 2021; Potat & Anderson, 2012; Van Zalk & Kerr, 2014), and that these differences are well-established and become increasingly strong with age (Crocetti et al., 2021). What we do not know, is whether these individual differences are associated with a wider and more generalised form of prejudice in children and adolescence, in a similar manner to patterns seen in adults.

### **Implicit Theories (Perceived Malleability) and Stereotyping**

Correlational and experimental research in the area of implicit theories and stereotyping, has consistently demonstrated that beliefs about the malleability of individuals and groups are linked to stereotyping (e.g., Levy & Dweck, 1999; Levy, Stroessner & Dweck, 1998; Plaks et al., 2001). This body of research has demonstrated, in both children and adults, that higher levels of entity thinking, or believing that individuals and groups are ‘fixed’ and not malleable, are associated with a higher endorsement, maintenance and over-reliance on societal stereotypes. Yet, this research has not been thoroughly developed; outcome measures have not progressed far beyond stereotyping despite its relationship to prejudice and discrimination (Fiske, 1998), and nor has it been included in the body of work on individual differences and generalised prejudice. More research is therefore needed to understand whether implicit theories about groups – in particular whether people believe groups have the capacity for change and development – influence generalised prejudice across age groups.

### **Hypotheses**

Study 3a and 3b were pre-registered with the Open Science Framework (OSF). The pre-registration can be found here <https://osf.io/nvgy9>. In addition to the aims of the current study to

finalise measures of IGT and SDO across age groups, a number of other hypotheses were stated in the pre-registration. These were as follows:

*Hypothesis 1.* Higher levels of entity or 'fixed' thinking about groups (higher score on IGT items) will predict more negative attitudes to multiple groups.

*Hypothesis 2.* Higher levels of entity or 'fixed' thinking about groups (higher score on IGT items) will predict less willingness for contact with multiple groups.

*Hypothesis 3.* Higher levels of entity or 'fixed' thinking about groups will be positively associated with higher levels of Social Dominance Orientation (SDO).

*Hypothesis 4.* Higher levels of entity or 'fixed' thinking about groups will be positively associated with higher levels of Right-Wing Authoritarianism (RWA). \*

*Hypothesis 5.* Higher levels of entity or 'fixed' thinking about groups will be negatively associated with empathy.

*Hypothesis 6.* Higher levels of entity or 'fixed' thinking about groups will be positively associated with the NFC facets of order and predictability. \*

*Hypothesis 7.* Higher levels of entity or 'fixed' thinking about groups will be negatively associated with beliefs about the benefits of intergroup relations.

*Hypothesis 8.* Higher levels of entity or fixed thinking (IGT) will predict more negative attitudes/willingness for contact over and above (controlling for) SDO and RWA.

*Hypothesis 9.* The proportion of participants with entity beliefs about groups will increase with age. The implication of this hypothesis is that Implicit Group Theory mean score will increase with age and/or the percentage of participants over the threshold IGT score of 2.5 will increase with age.

\* RWA and NFC items are only included in the questionnaire for adults- these hypotheses are only applicable to adults.

### **Development of Measures for Inclusion in Studies 3a and 3b**

#### **Implicit Group Theory items**

The EFA from study 2a (see Chapter 5) suggests a clear factor structure for 11 out of the 12 IGT items in adults and adolescents. One groupness item ('A group is made up of all sorts of people; they don't have to think the same') cross loaded poorly on both factors and has been dropped from the measure.

It was considered that the incremental items from Study 2a were too easy to endorse and whilst reliability was adequate at  $\alpha = .613$ , a Prolific study (Study 2d) was conducted with a sample of adults between studies 2a and 3a to improve the reliability of the items in the measure (N = 100). All 11 IGT items (5 malleability, 6 groupness) were worded in an 'entity' style to form a unidirectional scale - incremental thinking would be indicated by disagreeing with the item statement. Results confirmed the two-factor structure seen in Study 2a, KMO was increased to .746, and the two factors accounted for 46.5%. Reliability of the scale also increased to  $\alpha = .759$ .

The 11 IGT items therefore remain in the measure for studies 3a and 3b and will be worded to form a unidirectional scale. All 11 items are measured using a 5-point Likert scale (1 – strongly disagree, 5 strongly agree). The 11 items are as follows:

- Groups cannot change their most basic qualities.
- The group someone belongs to tells us a lot about them as a person
- Groups cannot change and develop
- The groups someone belongs to cannot be changed.
- Groups cannot substantially change the kind of group they are.

- People who share the same group generally hold the same views as each other
- Every group is a collection of a certain type of person.
- People cannot change the group they belong to.
- In general, all members of a group share common goals
- The characteristics of a group tend to be stable over time and context.
- In terms of what defines them, all members of a given group are largely the same underneath the surface.

## **SDO**

Two versions of the SDO scale were used in Studies 2a/b and 2c, with simplified language being used for the youngest age category (9–10-year-olds). In an attempt to improve reliability for the upcoming studies, an online study (Study 2e) was conducted with a sample of adults via Prolific (N = 100) to check the effect of simplified language for SDO items. Reliability of the scale increased from .731 to .793 by using the simplified language for SDO items in the adult sample. The simplified language version will therefore be used for SDO items across all age groups in this third set of studies.

In addition, the factor analyses suggested that for some age groups the reverse coded items were loading on a separate factor. For this reason, and to simplify the scale for younger participants, the scale was revised to form unidirectional items as in the IGT measure.

The 6 SDO items (for all age groups) will be measured using a 5-point Likert scale (1 – strongly disagree, 5 strongly agree). The items are as follows:

- To do well in life groups sometimes have to be selfish and not worry about the feelings or needs of other groups.

- Some groups of people are more important than other groups of people.
- It's OK if some groups of people have more chance to do better in life than other groups of people.
- It's OK if some groups are not given the same opportunities as each other.
- It's a good thing if some groups do well and other groups don't
- It's OK if one group of people have better chances to do well than every other group of people.

SDO is a robust predictor of higher levels of generalised prejudice and it is hypothesised that it will correlate with higher levels of group entity beliefs. SDO data will be used to help establish convergent validity for the IGT measure.

### **Intergroup Relations**

The EFA of the 5 IR items from the previous analyses show that, across the age groups, the items generally load onto two factors. In each case the two reverse coded items are concerned with learning from other groups, and load onto a separate factor. One of the reverse coded items ('Different groups of people who interact can learn from each other') loaded higher in all age groups and will therefore be retained. The other reverse coded item will be dropped from the measure.

In order to rule out the effects of reverse coded items being too easy to endorse, and to keep the scale consistent with IGT and SDO items, all items will be worded to make the scale uni-directional.

The 5 items are measured using a 5-point Likert scale (1 – strongly disagree, 5 strongly agree).

The items are as follows:

- Different groups of people who interact do not learn from each other
- Groups generally keep separate from each other because they don't get on
- In general groups don't want to interact with each other

- Relationships between groups in society can't be changed
- If a member of a group shares the norms and values of another group more strongly than those of their own group they should be punished

## Empathy

Empathy is a robust predictor of lower prejudice and more positive intergroup relations within the intergroup literature (e.g., Álvarez-Castillo et al., 2018; Bäckstrom & Björkman, 2007; Batson et al., 1997; Stephan & Finlay, 1999; Todd et al., 2011). Higher levels of empathy are hypothesised to negatively correlate with higher levels of entity belief. It is included in this set of studies to establish discriminant validity for the IGT measure.

To ensure consistency in the items used across age groups items from the basic empathy scale (BES; Jolliffe & Farrington, 2006) will be included. The scale includes items relating to both cognitive and affective empathy and although originally developed for use with adolescents, the scale has also been validated for use with adults (e.g., Carré et al., 2013), and children (e.g., Sánchez-Pérez et al., 2014).

The adult version will include all 20 items from the original BES; the scale is multidirectional with 10 positive and 10 negative statements. Due to time constraints and in order not to overwhelm younger participants, the shortened version of the BES (Zych et al., 2020) will be used with 12–14-year-olds. Evidence for the 12-item version suggests that the model is a better fit when the 8 negatively worded items are removed from the scale, leaving 12 positively worded items – six related to cognitive empathy and six to affective empathy (Zych et al., 2020).

A full list of empathy items can be found below (\* indicates items included in the 12-item version):

- My friends' emotions don't affect me much.
- After being with a friend who is sad about something, I usually feel sad. \*

- I can understand my friend's happiness when she/he does well at something. \*
- I get frightened when I watch characters in a good scary movie. \*
- I get caught up in other people's feelings easily. \*
- I find it hard to know when my friends are frightened.
- I don't become sad when I see other people crying.
- Other people's feeling don't bother me at all.
- When someone is feeling 'down' I can usually understand how they feel. \*
- I can usually work out when my friends are scared. \*
- I often become sad when watching sad things on TV or in films. \*
- I can often understand how people are feeling even before they tell me. \*
- Seeing a person who has been angered has no effect on my feelings.
- I can usually work out when people are cheerful. \*
- I tend to feel scared when I am with friends who are afraid. \*
- I can usually realize quickly when a friend is angry. \*
- I often get swept up in my friends' feelings. \*
- My friend's unhappiness doesn't make me feel anything.
- I am not usually aware of my friends' feelings.
- I have trouble figuring out when my friends are happy.

## **RWA**

As outlined above RWA is a robust predictor of generalised prejudice (Sibley & Duckitt, 2008); it is hypothesised to correlate with higher levels of entity beliefs about groups. The very short RWA scale (Bizumic & Duckitt, 2018) is being included in the current study in order to establish convergent validity. The scale includes six items that equally represent the three content subdimensions (authoritarianism, conservatism, and traditionalism), bi-directional wording as used



in Altemeyer's original RWA scale (1981), and demonstrates good reliability ( $\alpha = .71$  and  $.78$  in USA and UK samples respectively).

Due to time constraints and in an attempt to keep the child/adolescent versions as short as possible the measure of RWA is only being included in the adult version of the study. The RWA items from the Very Short RWA scale are outlined below:

- It's great that many young people today are prepared to defy authority.
- What our country needs most is discipline, with everyone following our leaders in unity
- God's laws about abortion, pornography, and marriage must be strictly followed before it is too late.
- There is nothing wrong with premarital sexual intercourse.
- Our society does NOT need tougher government and stricter laws.
- The facts on crime and the recent public disorders show we have to crack down harder on troublemakers, if we are going preserve law and order.

### **Need for Closure (NFC)**

When considering individual differences research, cognitive factors may also influence intergroup attitudes. Hodson & Dhont (2015) identify the need for cognitive closure (NFC) as a factor related to generalised prejudice, with two of the five facets of NFC predicting racism – order and predictability. These facets are consistent with entity style thinking – in particular the suppression of counter stereotypic information, the need for individuals to make sense of their worlds and the need to predict the behaviour of others around them. For these reasons only items related to the facets of order and predictability are included in the current study (with adults only).

The original NFC measure contained 42 items (Webster & Kruglanski, 1994) revised to 41 items (Roets & Van Hiel, 2007), covering all 5 facets of NFC. However, a shorter 15 item scale – which

includes 3 items related to each facet - is also available (Roets & Van Hiel, 2011). The shortened version has comparable psychometric properties to the unabridged version. Six items, relating to the facets of order and predictability, from the abridged version will be included in the current study with adults. The items are as follows:

Order:

- I find that a well-ordered life with regular hours suits my temperament.
- I find that establishing a consistent routine enables me to enjoy life more.
- I enjoy having a clear and structured mode of life.

Predictability:

- I don't like to be with people who are capable of unexpected actions.
- I don't like to go into a situation without knowing what I can expect from it.
- I dislike unpredictable situations.

These items will be measured using the same 5-point agreement scale as per the other items in the questionnaire. A higher score indicates a higher need for closure. It is predicted that higher NFC score will be positively correlated with higher IGT score.

### **Attitudes and Behavioral Intentions (The Contact Star)**

The contact star (Purewal, 2015) is a measure designed to evaluate attitudes to multiple groups in society. It was originally designed for use by the Anne Frank Trust UK (AFT) to measure the attitudes of young people to multiple groups before and after participation in an anti-prejudice intervention programme; tracking changes in attitudes to Jewish people as well as other groups in society (see Chapter 3). The measure reliably demonstrates the positive impact of the AFT

intervention programmes on intergroup attitudes, with a consistent increase in positivity seen towards Jewish people as well as to other groups such as Muslims, Gypsy Travelers and Overweight people (Goodbun, 2019; 2020; 2021; 2022). It has been completed by thousands of young people as part of the AFT programmes but has not before been used with an adult population. To the researcher's knowledge, no such general measure of intergroup attitudes exists for use with adults. The following information outlines the testing of this measure with adults as a part of Study 1a (see Chapter 4).

### **Testing the Contact Star with Adults (Study 1a)**

A pilot study was conducted to ensure the contact star was an appropriate measure of intergroup attitudes for use with adults. This study was conducted as part of study 1a (see Chapter 4). The contact star is a tried and tested measure of attitude to multiple groups in young people (Goodbun, 2019; 2020; 2021; 2022; Purewal, 2015) and was therefore not included in the first set of studies with adolescents and children (Studies 1b and 1c).

## **Method**

### **Design**

The pilot questionnaire was created using Qualtrics and published using the online platform Prolific academic. Participants were restricted by age (18-60) and, as the questionnaire was published in stages, by previous completion of the task.

### **Measures**

The original Contact Star was designed for use with secondary aged students and uses a scenario in which participants have to imagine that they would spend lunch time for a week with another student they do not know from each of thirteen social groups. They are asked to rate how much they would like to do this on a scale of 1-7 (not at all – very much), marking their answers on the Contact Star (a copy of the Contact Star can be found in Appendix P). In order to use the Contact

Star with adults both the scenario and groups were adapted (see Appendix Q for a copy of the revised contact stars). Three groups were removed from the original Contact Star and replaced by 2 alternative groups. The adult version to be used in Study 1a therefore has 12 points.

Two versions of the Contact Star were included in study 1a. One adapted the original AFT version to measure attitude, however expressions of attitudes are often open to social desirability pressures and therefore a second version was also included. This second Contact Star measured behavioral intention; consistency between the two measures will be tested. The two adapted scenarios included are as follows:

#### Contact Star - Attitude (CSA)

‘Imagine that you have started a new job some distance from where you live. In your first week you discover that you and one other person that you have not yet met will have to share transport for an hour every day. This arrangement will last for several weeks. The star below shows the different types of people this might be. For each type of person please choose a number to show how you would feel about having to travel for an hour each way every day with that person.

Using the drop-down box for each person, please choose any number from 1 to 7 (1=Not at all enthusiastic, 4= Neither enthusiastic nor unenthusiastic, 7=Very enthusiastic).’

#### Contact Star - Willingness for Contact (CSC):

‘Imagine that you have started a new job an hour away from where you live. In your first week you are asked if you can share transport for a minimum of one day and a maximum of five days to help out a person whom you have never met before.

How many days in the week would you be willing to spend your journey with someone who is.....

Using the drop-down boxes for each person please choose a number from 1 to 5 to indicate the number of days you would be willing to share transport with that person.’

## **Participants**

In total 226 participants registered to complete the questionnaire. 25 were rejected for at least one of the following reasons: not entering the completion code and therefore not registering their data, failing two or more attention checks, completing the questionnaire in a time believed to be too quick to fully understand the questions, a very homogenous pattern of responses or a combination of these reasons.

In total the data of 201 participants were accepted for use in the study. Of these 94 were female, 103 were male, 1 participant identified as 'other', and 3 participants chose 'prefer not to say'. The ages of the participants ranged from 20 to 60 years; mean age was 31 years.

## **Procedure**

All participants were recruited via the on-line platform Prolific. Participants were required to read the study information including a brief outline of the study, information regarding the time it would take, anonymity and confidentiality, their right to withdraw at any time and attention checks that may appear in the questionnaire. All participants were required to consent to taking part in the study before moving on.

Following consent participants were required to complete demographic information. Participants were then asked to complete the two contact star scenarios followed by implicit group theory items and implicit intergroup relations items (a description of these measures can be found in Chapter 4). The order of these blocks was fixed, however the sequence of items within the two implicit theory item sections were randomized. Participants were then thanked and debriefed, and followed the link to complete the study and trigger payment for their time.

## Results

Mean scores for both contact stars are displayed in Table 34

**Table 34**

*Mean Contact Star Scores (Study 1a - Adults)*

Group	CSA - Attitude (Scale 1-7)	CSC – Behavioral Intention (Scale 1-5)
Gypsy Traveler	3.57	3.12
LGBT	4.60	3.96
Muslim	4.14	3.73
Homeless	3.36	3.13
Over 70	4.35	4.03
Immigrant	4.45	3.88
Someone with a Mental Health issue (e.g., Depression)	3.90	3.50
Overweight	4.17	3.80
Jewish	4.64	4.12
Physically Disabled	4.26	3.90
Refugee	4.17	3.73
German	4.72	4.15

The highest mean score is towards German people in both CSA and CSC; the lowest mean score is towards homeless people in both CSA and CSC. Whilst the scales for the two contact stars vary, and participants generally show higher endorsement of positive behavioral intention rather than attitudes there is a similarity in the pattern of results between the two stars suggesting the participants are answering in a consistent manner. Higher endorsement of behavioral intention however may be subject to social desirability effects. The overall patterns of responses in the two contact stars are shown in Figure R1 and Figure R2 which can be found in Appendix R.

Standardized z scores were calculated for both Contact Stars and correlational analysis of the mean z scores carried out. Pearson's correlation revealed a significant positive relationship between Contact Star A and C,  $r = 0.545$ ,  $p < .001$ .

### **Exploratory Factor Analysis – The Contact Star**

A principal components analysis was conducted on the 12 groups of Contact Star A (attitude) with orthogonal rotation (Varimax). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis,  $KMO = .903$ . An analysis was run to obtain eigenvalues for each factor in the data. Two factors were extracted; however, one main factor was indicated by the scree plot and accounted for 53.1% of the total variance. The factor loadings suggest that 10 out of the 12 groups loaded significantly on the first factor. A description of the factor loadings can be found in Table S1 (see Appendix S). Reliability analyses for the 12 items on the CSA revealed  $\alpha = .917$ .

A second principal components analysis was conducted on the 12 groups of Contact Star C (contact) with orthogonal rotation (Varimax). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis,  $KMO = .931$ . An analysis was run to obtain eigenvalues for each factor in the data. Two factors were extracted; however, one main factor was indicated by the scree plot and accounted for 57.9% of the total variance. The factor loadings suggest that 11 out of the 12 groups load significantly on the first factor. A description of the factor loadings can be found in Table S2 (see Appendix S). Reliability analyses for the 12 items on the CSC revealed  $\alpha = .931$ .

These results support the use of the Contact Star as a measure of generalized attitudes and willingness for contact with other groups in adults. They were further supported as measures of generalized prejudice by a parallel analysis conducted with the data from study 3a. A principal components analysis of the contact star data (CSA and CSC) from study 3a revealed a similar pattern of results. A full outline of factor loadings can be found in Table S3 and Table S4 (see Appendix S).

Reliability was also revealed to be high for the contact star measures in study 3a. A full outline of the reliability of the contact star is shown in Table 35.

**Table 35**

*Reliability of the Contact Star (Study 1a and Study 3a - Adults)*

Study	Number of Groups on the Star	Contact Star Measure	Reliability ( $\alpha$ )
1a	12	CSA - Attitudes	.917
	12	CSC - Contact	.931
3a	13	CSA – Attitudes	.965
	13	CSC – Contact	.949

### **Study 3a: An Implicit Group Theory and Generalised Prejudice in Adults**

Following on from the pilot study of the contact star with adults (study 1a) and the development of a measure of Implicit Group Theories in studies 1a and 2a, the current study aimed to finalise the measure for Implicit Group Theories and explore the relationship between an implicit group theory and generalised prejudice.

#### **Method**

##### **Design**

The questionnaire was a within groups correlational design. All participants were required to answer all sections of the questionnaire. The questionnaire was created using Qualtrics and published using the online platform Prolific academic. Participants were restricted by age (18-65) and by previous completion of previous tasks in the study series.



## Measures

A total of 54 items were included in the following study (see appendix T for a full list of items). In addition, two Contact Stars were included to measure attitudes to, and willingness for contact with, 13 social groups. Measures are detailed below and full details of items are discussed earlier in the chapter.

*Implicit Group Theories* - 11 unidirectional IGT items measuring malleability and groupness of groups.

*Intergroup relations* – 5 unidirectional items.

*SDO* – 6 unidirectional items were included to measure SDO.

*Empathy* – 20 items from the Basic Empathy Scale (Jolliffe et al., 2006) were included as part of the process of validating the IGT measure. Empathy was included to assess discriminant validity.

*RWA* – 6 items from the Very Short Authoritarianism Scale (Bizumic & Duckitt, 2018) will be included to test for convergent validity.

*NFC*- 6 items from the abridged NFC measure (Roets & Van Hiel, 2011) were included to measure the NFC facets order and predictability.

*Attitudes and Willingness for contact (Contact Stars)* - Following on from the Contact Star pilot study with adults (Study 1a), and given the time lapse between the studies, some subtle changes were made to the measure (see Appendix U for revised Contact Star measures). The changes made to the stars were as follows:

- An extra point was added to the star (13 points rather than 12 points on the star). This point was added to include 'Black' as a social category. This was included to reflect the relevance of Black as social group, particularly in light of the 'Black Lives Matter' movement of 2020.

- ‘LGBT’ – renamed ‘LGBTQ e.g., Gay’ – changed to a more current and widely accepted term and to be easily understood by all age groups (children, adolescents and adults).
- ‘Physically disabled’ – renamed ‘Disabled’ – not all disabilities are visible and therefore the term ‘disabled’ was considered more inclusive than the previously used ‘physical disability’.
- German – replaced with Chinese – German is more relevant to work conducted with the Anne Frank Trust, and Chinese was considered more relevant in the current global climate and in light of an increase seen in hostility towards Asian people following the Covid-19 pandemic in 2020.
- ‘An immigrant’ – renamed ‘A migrant’
- ‘Someone with a mental health issue e.g., depression, - renamed ‘Living with a mental health issue e.g., depression.’
- The question in the attitudes version of the contact star (CSA) was changed from ‘How enthusiastic would you be...’ to ‘How much would you like it if this person was.....’ This change was made to resemble the question in the child/adolescent version and ensure the measures are as comparable across age groups as possible.

The two measures vary in terms of the number of points included in the scale (attitudes is measured on a 7-point scale, and willingness for contact on a 5-point scale). The decision to keep this variation was twofold. The scenario in the willingness for contact star makes more sense on a 5-point scale with 5 days in the average working week, and 7 points remained on the attitudes star in order to be able to compare this data with that from original work using the contact star conducted in collaboration with the Anne Frank Trust. In addition, having the two measures on scales of different lengths decreases the risk of measurement effects.

## Participants

Following the rejection of a number of participants for failing two or more attention checks, an extremely homogenous pattern of responses, a very quick completion time or a combination of these reasons, the data of 322 participants were data retained for inclusion in the analyses.

Of these participants 49.7% identified as Male, 48.1% as female. 88.2% identified as White or White British. The age range of participants was 18-65 years, with a mean age of 31.71 years.

## Procedure

All participants were recruited via the on-line platform Prolific. Participants were required to read the study information including a brief outline of the study, the anticipated time it would take to complete, information about anonymity and confidentiality, their right to withdraw at any time and attention checks. All participants were required to consent to taking part in the study before moving on. Participants were also informed that they may be contacted following the completion of the study to take part in a brief follow up survey and that they would be remunerated for this follow-up separately.

Following consent, participants were required to complete demographic information before moving on to the other items. Participants were then asked to complete all the questionnaire items, as outlined above. Each 'set' of items (IGT, SDO, RWA etc) were included in individual blocks; the order of the items within the blocks and presentation order of the blocks were both randomised. The contact stars were also presented randomly, however the items within the contact star (i.e., groups) were not randomised.

Participants were thanked and debriefed and were instructed to follow the link to complete the study and trigger payment for their time. Any participant whose data was rejected received a message from the researcher explaining the reasons for this.

## Results

Two rounds of Factor Analysis were run; the first to finalise the factor structure of IGT items and the second to check that IGT items loaded separately from Intergroup relations items (IR).

### **Factor Analysis – Implicit Group Theory Items**

Exploratory factor analysis was conducted on all items making up Implicit Group Theories; this included 5 items related to perceived malleability of groups, and 6 related to groupness.

A varimax factor analysis with orthogonal rotation was conducted on all 11 items and produced 2 factors with eigenvalues over 1 accounting for 47.6% of the variance. KMO = .800. This was confirmed by the scree plot. The factor loadings are displayed in Table 36.

**Table 36**

*Summary of Exploratory Factor analysis for IGT items (Study 3a - Adults)*

Item	Factor Loading	
	1	2
<b>Factor 1: Groupness</b>		
People who share the same group generally hold the same views as each other.	<b>.643</b>	.038
In general, all members of a group share common goals.	<b>.583</b>	.033
The group someone belongs to tells us a lot about them as a person.	<b>.558</b>	.026
The characteristics of a group tend to be stable over time and context.	<b>.537</b>	.180
In terms of what defines them, all members of a given group are largely the same underneath the surface.	<b>.534</b>	.217
Every group is a collection of a certain type of person.	<b>.523</b>	.196
<b>Factor 2: Malleability</b>		
People cannot change the group they belong to.	.002	<b>.785</b>
The groups someone belongs to cannot be changed.	.048	<b>.767</b>
Groups cannot change and develop.	.083	<b>.535</b>
Groups cannot substantially change the kind of group they are.	.210	<b>.458</b>
Groups cannot change their most basic qualities.	.247	<b>.424</b>

*Note.* N = 322. The extraction method was Maximum Likelihood with an orthogonal (Varimax with Kaiser normalization) rotation. Factor loadings above .30 are in bold.

### **Reliability of IGT scale**

Reliability analysis (Cronbach's Alpha) was conducted on the 11-item scale, as well as on the two subscales (groupness and malleability). The results of the reliability analyses are displayed in Table 37. Neither scale could be improved by removing any items.

**Table 37***Reliability of IGT measure (Study 3a - Adults)*

Scale	Reliability ( $\alpha$ )
IGT (11 items)	.764
Groupness (6 items)	.747
Malleability (5 items)	.741

Test re-test reliability was also conducted for IGT items. The participants who took part in the current study were invited to return for a follow-up study 5 weeks after they completed the original questionnaire. In total 58 participants completed the follow up study; 4 were rejected for failing attention checks and the data of 54 participants were retained for inclusion in the reliability analyses.

All participants in the follow up study were asked to complete the 11 IGT items only. Two attention checks were also included in the study (see Appendix V for information given to participants in the follow up study). Following completion of the study participants were thanked and debriefed and were instructed to follow the link to complete the study and trigger payment for their time. Any participant whose data was rejected received a message from the researcher explaining the reasons for this.

Correlation analyses were conducted to check for test re-test reliability on the overall IGT scale, as well as the two sub scales – malleability and groupness. The results are displayed in Table 38. Means and standard deviations (SD) for both time points are shown in Table 39.

**Table 38***IGT Test Re-Test Correlation Coefficients (Study 3a - Adults)*

Scale	Test re-test correlation coefficient
IGT (11 items)	.413**
Malleability (5 items)	.489***
Groupness (6 items)	.560***

Note. N=54, \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

**Table 39***Means and Standard Deviations for IGT, Malleability and Groupness across time (Study 3a Adults)*

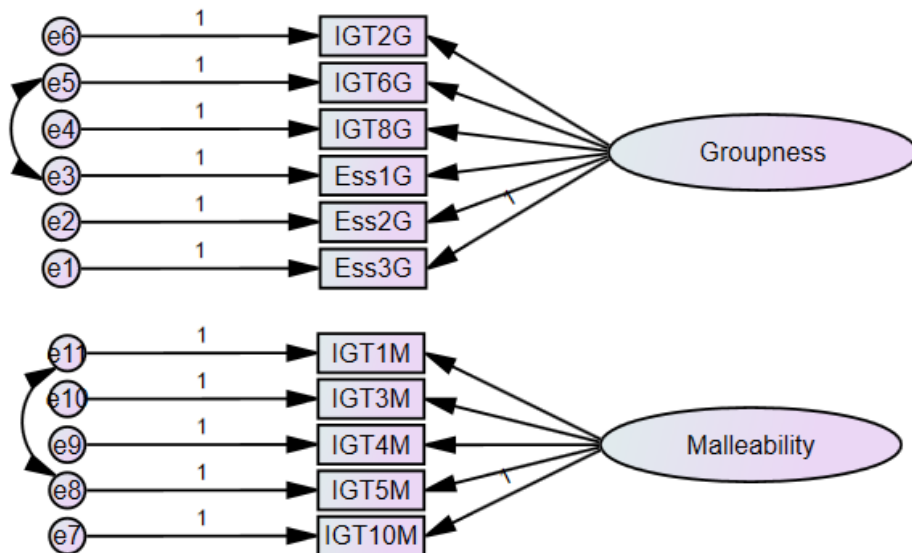
Scale	Time Point 1		Time Point 2 (+5weeks)	
	M	SD	M	SD
IGT	2.46	.545	2.70	.473
Malleability	1.95	.508	2.06	.608
Groupness	2.82	.698	3.23	.580

### Confirmatory factor Analysis (CFA) – Implicit group Theory items

The EFA outlined above shows a clear two factor solution for IGT. To confirm this, a CFA was specified with two latent factors (Malleability and Groupness). The estimation model used was maximum likelihood. Standardised coefficients were used and observations with missing values excluded. The attempted model can be seen in Figure 7.

**Figure 8**

*Confirmatory Factor Analysis of IGT items (Study 3a - Adults)*



After estimating the model, goodness-of-fit statistics were obtained. The results are displayed in Table 40 and indicate good fit. The CFI is above the recommended value of 0.95 (Hooper et al., 2008) and the RMSEA is below the generally recommended value of 0.05. All regression weights are significant ( $p > .05$ ). The two-factor model demonstrates a better, and more parsimonious fit, than a one factor model.

**Table 40**

*Goodness-of-fit statistics for the 2-factor model (Study 3a - Adults)*

Fit statistic	Two Factor model
Chi2 (df)	70.218 (42)
RMSEA	.046
CFI	.962
TLI	.950

The CFA reported above confirms that malleability and groupness represent separate factors of implicit group theories in an adult sample.



### **Factor analysis – Implicit Group Theory and Intergroup Relations items**

A second EFA was conducted to ensure that the factors related to an IGT loaded separately from those intended to measure intergroup relations.

Initial analysis revealed that the new item related to subjective group dynamics - 'If a member of a group shares the norms and values of another group more strongly than those of their own group, they should not expect to be able to stay in that group' – cross loaded poorly across all 3 factors and was subsequently removed from further analyses.

A varimax factor analysis with orthogonal rotation was conducted on the 15 remaining items. Results revealed 3 factors accounting for 49.2% of the variance, KMO = .803. The factors and factor loadings are displayed in Table 41.

**Table 41**

*Summary of Exploratory Factor Analysis for IGT and IR items (Study 3a - Adults)*

Item	Factor Loading		
	1	2	3
<b>Factor 1: Malleability</b>			
People cannot change the group they belong to.	<b>.78</b>	.01	.02
The groups someone belongs to cannot be changed.	<b>.76</b>	.04	.15
Groups cannot be changed and developed.	<b>.52</b>	.06	.22
Groups cannot substantially change the kind of group they are.	<b>.46</b>	.21	.04
Groups cannot change their most basic qualities.	<b>.42</b>	.25	.07
<b>Factor 2: Groupness</b>			
People who share the same group generally hold the same views as each other.	.02	<b>.63</b>	.11
In general, all members of a group share common goals.	.03	<b>.58</b>	.06
The group someone belongs to tells us a lot about them as a person.	.03	<b>.57</b>	.02
The characteristics of a group tend to be stable over time and context.	.16	<b>.52</b>	.15
In terms of what defines them, all members of a given group are largely the same underneath.	.21	<b>.52</b>	.14
Every group is a collection of a certain type of person.	.18	<b>.51</b>	.17
<b>Factor 3: Intergroup Relations</b>			
Groups generally keep separate from each other because they don't get on.	.02	.11	<b>.75</b>
In general, groups don't want to interact with each other.	.05	.09	<b>.67</b>
Different groups of people who interact do not learn from each other.	.18	.16	<b>.43</b>
Relationships between groups in society can't be changed.	.28	.12	<b>.40</b>

Note. N = 322. The extraction method was Maximum Likelihood with an orthogonal (Varimax with Kaiser normalization) rotation. Factor loadings above .30 are in bold.

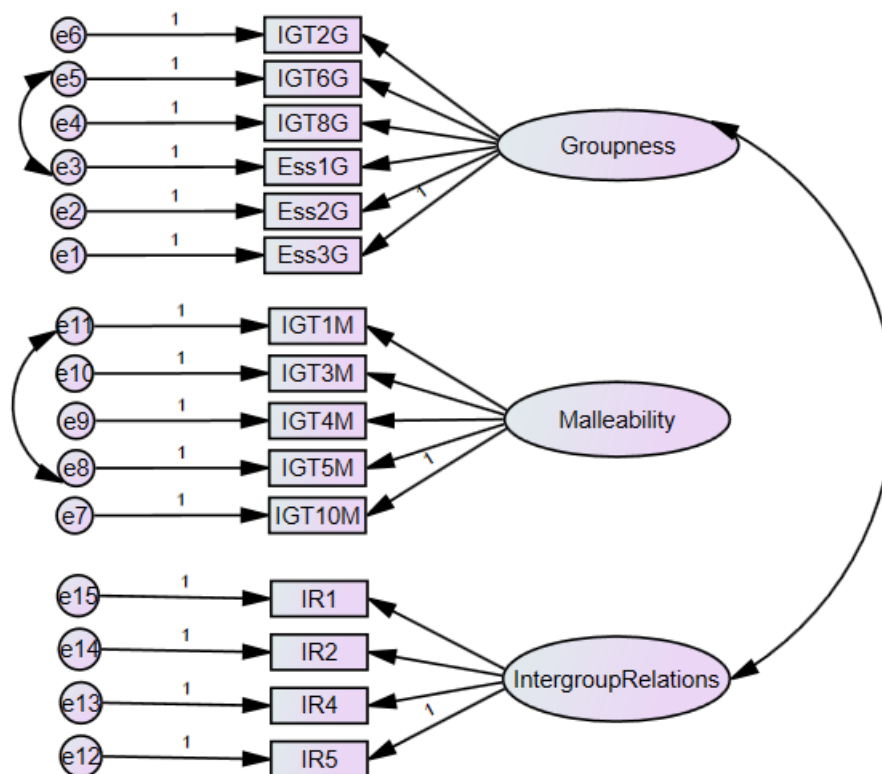
These analyses confirm the factor structure of the IGT measure with malleability and groupness loading on separate factors, as seen in the previous analysis. Furthermore, the IGT factors load separately from the Intergroup Relations items indicating that they are measuring perceived properties of groups rather than items related to relations between groups.

#### **Confirmatory Factor Analysis (CFA) - Implicit Group Theory and Intergroup Relations items**

The EFA, outline above, suggested a three-factor solution. A CFA model was therefore specified with three latent factors (groupness, malleability and intergroup relations). The estimation model used was maximum likelihood, standardised coefficients were used and observations with missing values were excluded. The attempted model can be seen in Figure 8.

**Figure 9**

*Confirmatory Factor Analysis of IGT and IR items (Study 3a - Adults)*



After estimating the model, goodness-of-fit statistics were obtained. The results are displayed in Table 42. The fit is adequate. The CFI should preferably be above 0.95 (Hooper et al., 2008), however the RMSEA is approaching the generally recommended value of 0.05. All regression weights are significant ( $p < .05$ ).

**Table 42**

*Goodness-of-fit statistics for the 3-factor model (Study 3a - Adults)*

Fit statistic	Three Factor model
Chi2 (df)	161.77 (87)
RMSEA	.052
CFI	.926
TLI	.910

Although the goodness-of-fit statistics only suggested an adequate fit for the three-factor model, the results confirm the results of the previous CFA – groupness and malleability load on separate factors – and the results of the three factor CFA from study 2a. Taken together these results suggest that implicit group theory items, in particular perceived group malleability, are tapping into the perceived properties groups rather than elements of intergroup relations.

### **Reliability Results (Other Constructs)**

The reliability of the other constructs measured in the current study are summarised in Table 43.

#### **Social Dominance Orientation (SDO)**

A shortened version of an SDO scale was created for the current study and was measured across age groups. In adults the reliability of the 6-item scale was  $\alpha = .829$ .

This was improved to  $\alpha = .838$  by removing 1 item ('To do well in life groups sometimes have to be selfish and not worry about the feelings or needs of other groups'). Whilst the increase in reliability is not vast, further analysis of the mean SDO scores suggest that when this item is excluded the mean score is lower for the majority of participants. The SDO item in question is the lowest loading item in an EFA of SDO items, and taken together these results suggest that it may be

measuring something other than the desired construct. This item was therefore removed from all further analyses with adult data. The remaining scale contains five items.

#### Intergroup Relations (IR)

Internal reliability of the four remaining IR items (after the EFA) was measured at  $\alpha = .672$ .

This could not be improved by removing any further items.

#### Right Wing Authoritarianism (RWA)

Three items were reverse coded to ensure that a higher score was reflective of higher right-wing authoritarianism. Internal reliability of the Very Short Authoritarianism scale (Bizumic & Duckitt, 2018) reached an acceptable level of  $\alpha = .767$ .

#### Empathy

Eight items were reverse coded to ensure that a higher score was reflective of higher empathy. The internal reliability of the Basic Empathy Scale (Jolliffe et al. 2006) was  $\alpha = .880$ .

#### Need for closure (NFC)

Two facets of need for closure were measured – order and predictability. 6 items from the 15 item NFC scale (Roets & Van Hiel, 2011) were included. These items showed internal reliability of  $\alpha = .778$ .

### Table 43

#### *Reliability of other constructs (Study 3a - Adults)*

Construct	Reliability ( $\alpha$ )
SDO (5 items)	.838
Intergroup relations (4 items)	.672
RWA (6 items)	.767
Empathy (20 items)	.880
NFC (6 items)	.778

### **Correlational Analysis**

A number of theoretically related variables were included in the current study to assess convergent and discriminant validity of the IGT-11 scale. Analyses included IGT, RWA, SDO, NFC, Intergroup relations items, empathy and data from the two contact stars – Contact Star 1 Attitude (CSA) and Contact Star 2 Contact (CSC). The two factors of IGT – perceived malleability and groupness – were also included. The correlation coefficients for these variables are displayed in Table 44.

As expected, higher levels of IGT (fixed thinking) were significantly and positively correlated with higher scores on IR, SDO, and RWA, and significantly negatively correlated with higher scores on empathy items.

Higher levels of IGT were also significantly and negatively correlated with scores on the willingness for contact measure (CSC), and approaching significance on the attitudes to multiple groups measure (CSA).

**Table 44***Descriptive Statistics and Correlations for Study Variables (Study 3a -Adults)*

Variable	n	M	SD	1	2	3	4	5	6	7	8	9	10
1. IGT	322	2.51	0.54	-	-	-	-	-	-	-	-	-	-
2. Malleability	322	2.00	0.62	-	-	-	-	-	-	-	-	-	-
3. Groupness	322	2.94	0.71	-	.29***	-	-	-	-	-	-	-	-
4. IR	322	2.12	0.70	.36***	.28***	.30***	-	-	-	-	-	-	-
5. SDO	322	1.91	0.75	.34***	.23***	.31***	.34***	-	-	-	-	-	-
6. RWA	322	2.40	0.78	.31***	.19**	.30***	.27***	.29***	-	-	-	-	-
7. Empathy	322	3.88	0.50	-.16**	-.15**	-.11*	-.24***	-.29***	-.11	-	-	-	-
8. NFC	322	3.67	0.66	.09	.02	.11*	.11	.06	.25***	.06	-	-	-
9. CSA	322	4.70	1.21	-.11	-.20***	-.006	-.28***	-.21***	-.121*	.21***	-.04	-	-
10. CSC	322	4.30	0.98	-.14**	-.15**	-.09	-.22***	-.24***	-.22***	.15**	-.08	.35***	-

Note. N = 322, \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$



Whilst both factors, malleability and groupness, are significantly and positively correlated with IR, SDO and RWA, and negatively with empathy, only malleability is significantly negatively correlated with the two contact star measures. Groupness is not significantly associated with either measure of attitudes or willingness for contact with multiple groups, suggesting that it is the perceived malleability of groups, and not groupness as measured in the current study, that is associated with generalised prejudice.

This has implications for the validation of a measure of IGT and warrants further exploration in an adult sample.

### **Regression analysis**

Multiple regression analysis was conducted to explore whether an IGT could reliably predict generalised prejudice as measured by the CSA and CSC.

#### **Attitudes (CSA)**

Given the lack of previous research into Implicit Group theories and their relationship to generalised prejudice, together with robust evidence that both SDO and RWA predict generalised prejudice in adults, SDO and RWA were entered as predictors of generalised prejudice in block 1, and IGT was entered as a predictor in block 2. Only SDO was a significant predictor of CSA score in the multiple regression analysis. SDO had  $\beta = -.184$ ,  $p < .005$ .

The results from the correlational analyses, as outlined above, suggest that perceived malleability, but not perceived groupness is associated with generalised prejudice as measured by the CSA. Given these results, an exploratory regression analysis was conducted using mean malleability instead of mean IGT score as a predictor of attitudes. SDO and RWA were entered as predictors in block 1 and malleability as a predictor in block 2. SDO and malleability were both

significant predictors of CSA in the multiple regression analysis. RWA did not significantly predict CSA. SDO had  $\beta = -.163$ ,  $p < .05$ , Malleability had  $\beta = -.153$ ,  $p < .05$ .

#### Willingness for contact - CSC

Regression analyses were also conducted to predict willingness for contact with other social groups. A similar analysis was conducted with SDO and RWA in block 1, and IGT in block 2. Only SDO and RWA were significant predictors of CSC with SDO having  $\beta = -.181$ ,  $p < .005$ , and RWA having  $\beta = -.155$ ,  $p < .05$ .

Again, given the results of the correlational analysis IGT was dropped and replaced by mean malleability. However, results indicated that malleability was not a significant predictor of CSC over and above the effects of SDO and RWA.

#### **Analysis of Incremental and Entity Theorists.**

One of the aims of the current study, in addition to the development of a reliable IGT scale, is to identify entity and incremental theorists and to explore whether the type of theory that people hold influences prejudice to multiple groups in society. Previous research has shown that holding an entity theory leads to greater endorsement and reliance on stereotypes, and that this is true of both adults and children (e.g., Levy & Dweck, 1999; Levy, Stroessner & Dweck, 1998).

Previous work has identified incremental and entity theorists by calculating the mean implicit theory score, creating an implicit group theory index for each participant, and then categorizing everyone who scores 2 or below as an entity/incremental thinker (depending on how the scale is oriented), and everyone who scores 3 or above as an entity/incremental thinker (Chiu, Hong & Dweck, 1997; Levy, Stroessner and Dweck, 1998). Everyone who scored, on average,

between a 2 and a 3 is therefore excluded; categorizing in this way is based on clear theory and prediction and indicates overall agreement or disagreement.

Given the lack of research to date with regards to the relationship between implicit theories of groups and generalised prejudice, particularly in child and adolescent samples, the current study will use the previous strategy explained above but rather than excluding everyone who scores between a 2 and 3 on IGT, it will employ a system that sees the cut-off point at 2.5. Everyone who scores below 2.5 is identified as an incremental thinker, and everyone who scores above 2.5 is identified as an entity thinker. Any mean IGT score equal to 2.5 will be excluded from this analysis on the grounds that it indicates neither overall agreement nor disagreement with the items. Treating incremental and entity theorists as two separate groups is standard practice in studies such as this (e.g., Chiu, Dweck, Tong, & Fu, 1997; Chiu, Hong, & Dweck, 1997; Levy et al., 1998; Tong & Chiu, 2002) and previous studies have also used a midpoint cut off as a method of identifying entity and incremental thinkers (e.g., Hong et al., 2003).

The percentage of participants identified as either an incremental or entity theorists are displayed in Table 45, and the mean scores for all constructs measured in the current study by theory type are displayed in Table 46.

**Table 45**

*Percentage of the sample categorised as Incremental or Entity theorists (Study 3a - Adults)*

Theorist type	%
Incremental	49.7
Entity	50.3

*Note.* No participant scored a mean score of 2.5 and therefore all participants were categorized as either entity or incremental theorists.

**Table 46***Mean Score by Theory Type (Study 3a - Adults)*

Theorist type	Mean Scores							
	IGT	IR	SDO	RWA	Empathy	NFC	CSA	CSC
Incremental	2.08	1.92	1.68	2.16	3.92	3.63	4.73	4.38
Entity	2.93	2.31	2.13	2.64	3.84	3.72	4.67	4.21

The categorization of individuals into either incremental or entity theorists, reported above, suggests that roughly half the participants had a fixed mindset when it came to their perception of groups (entity theorists), whilst the other half had a more flexible way of perceiving groups (incremental mindset). What is interesting to note is that those participants who were categorised as entity theorists also scored higher in their levels of SDO, RWA, NFC, and were more negative about intergroup relations. Participants who were categorised as entity theorists also scored lower in measures of empathy, and had on average more negative attitudes towards and willingness for contact with other groups.

Whilst these relationships are captured in the correlation data, they are presented here for two reasons. Firstly, to clarify that the sample was not skewed towards one type of theorist and secondly, to illustrate the size of the differences between their scores on other variables.

Further analyses by theory type (entity vs incremental) were conducted to check whether the mean differences for the constructs in Table 46 were statistically significant. Results indicated that entity and incremental theorists differed significantly on SDO ( $F(1,320) = 32.61, p < .001$ ), RWA ( $F(1, 320) = 26.45, p < .001$ ) and IR ( $F(1,320) = 26.45, p < .001$ ). No significant differences in mean score were found for empathy, NFC, CSA or CSC by theory type.

## Discussion

The exploratory and confirmatory factor analyses of implicit group theory items build on the findings from studies 1a and 2a, confirming that perceived malleability and groupness represent separate factors of an implicit group theory in adults. Furthermore, the revised items included in the IGT scale load separately from intergroup relations items.

The revisions made to the items, such as making the IGT scale unidirectional, appears to have increased the reliability of both the overall scale and its subscales. The reliability of the scale is now considered to be good, however there is room for improvement in terms of internal consistency. As expected, the convergent and discriminant validation of the scale was supported by the results of the correlational analyses. IGT was positively correlated with SDO and RWA, and negatively correlated with empathy.

Results of the test-re test study indicated that there was a significant positive correlation between IGT scores at the two time points, with the correlation being considered fair to good (Cicchetti 1994; Fleiss, 1986). The debrief about the nature of the study given to participants at the end of the first part of the study may have influenced the responses of those who chose to return for the follow up study, and an alternative approach, such as a less explicit explanation being given to a sample of participants returning for the follow up study, needs to be considered in future studies.

The correlational analysis revealed that NFC was not significantly correlated with any of the other constructs except RWA and groupness. Given the over reliance of people holding an entity theory on stereotypes and predictability of behaviour, a correlation between malleability and NFC was expected. However, only two facets of the NFC scale were included and a shortened version was used, and this may have impacted the results by not measuring the construct adequately. Further work is needed to explore the cognitive components of an entity style of thinking about groups and its potential relationship with need for cognitive closure.

A primary aim of study 3a was to explore the potential association between holding an entity theory of groups and generalised prejudice. Correlation analyses revealed that higher levels of entity style thinking were associated with less willingness for contact with other groups. Moreover, this relationship appeared to be driven by the IGT factor of perceived malleability, rather than groupness. Perceived malleability was significantly correlated with both measures of generalised prejudice – perceiving groups as more fixed (and less malleable) was correlated with lower scores in both attitudes towards, and willingness for contact with, multiple groups in society. Groupness, on the other hand, was not correlated with either measure of generalised prejudice. Furthermore, the regression analyses revealed that perceived malleability predicted attitudes to multiple groups over and above the effects of SDO and RWA – thereby partially confirming one of the study hypotheses.

### **Study 3b: An Implicit Group Theory and Generalised Prejudice in Adolescents**

Following on from the development of a measure of Implicit Group Theories in Studies 1b and 2b, the current study aimed to finalise the measure for Implicit Group Theories and explore the relationship between an implicit group theory and generalised prejudice in adolescents.

## **Method**

### **Design**

The study was a within groups correlational design. All participants were required to answer all sections of the questionnaire.

## Measures

The measures were identical to those used in the adult study (study 3a), however due to time constraints and in order not to overwhelm younger participants some scales and/or items were excluded:

- RWA items were not included
- NFC items were not included
- Empathy scale consisted of 12, rather than 20 items, as described in the introduction to the chapter.

A full outline of the questionnaire items included can be found in Appendix W.

As in study 3a, two versions of the contact were used. The first measured attitudes towards other groups, and the second measured willingness for contact with other groups. The groups included were identical to those used in the adult study (study 3a, reported earlier in the chapter). The scenarios included in the two version of the Contact Star were based on the original version used in collaborative work with the Anne Frank Trust. The two scenarios were as follows:

### Contact Star - Attitude (CSA)

Imagine that you have to spend lunch time for a week with one person you had never met before. How much would you like it if this person was.....?

### Contact Star - Willingness for Contact (CSC):

Imagine that you have to spend lunch time for a week with one person you had never met before. You are asked how many days in that week you are willing to spend with the person, from a minimum of one day to a maximum of five days.

How many lunch times in the week would you be willing to spend with someone who is.....?

As in study 3a, attitudes were measured on a 7-point scale (1 =Not at all like to, 4 = Neither like or dislike, 7 = Very much like to), and willingness for contact on a 5-point scale (1- 5 days/lunch times). The two versions of the Contact Star used with adolescents in study 3b can be found in Appendix X.

### **Participants**

Participants in this age group came from two sources: a local secondary school and Anne Frank Trust (AFT) workshop participants. All AFT participants were asked to complete the questionnaire prior to attending an anti-prejudice workshop. In total 286 participants between the ages of 12 and 14 years completed the questionnaire. 121 were male, 146 were female, 4 responses were missing, 7 participants preferred not to indicate their gender, and 8 identified as 'other'.

### **Procedure**

The procedure of the study was identical to that for study 2b, as outlined in Chapter 5, with one exception. The results from study 2b indicated that questionnaire version, and therefore order of items, made no significant difference to the outcome of the study and therefore in the current study one version was designed, and administered, for simplicity.

## **Results**

Two rounds of Factor Analysis were run; the first to finalise the factor structure of IGT items and the second to check that IGT items loaded separately from Intergroup relations items (IR).

### **Factor Analysis – Implicit Group Theory items**

An exploratory factor analysis was conducted on all 11 items making up Implicit Group Theories; this included 5 items related to perceived malleability of groups, and 6 related to groupness.



A varimax factor analysis with orthogonal rotation was conducted on all 11 items and produced 3 factors with eigenvalues over 1 accounting for 51.1% of the variance. Despite 3 factors emerging only 2 factors were predicted; this was confirmed by the scree plot. The analysis was repeated extracting two fixed factors. Results indicated that the two factors accounted for 41.4% of the total variance. KMO = .727. The factor loadings are displayed in Table 47.

**Table 47**

*Summary of Exploratory Factor Analysis for IGT items (Study 3b - Adolescents)*

Item	Factor Loading	
	1	2
<b>Factor 1: Malleability</b>		
People cannot change the group they belong to.	<b>.712</b>	.072
The groups someone belongs to cannot be changed.	<b>.681</b>	.122
Groups cannot change and develop.	<b>.585</b>	-.032
Groups cannot substantially change the kind of group they are.	<b>.494</b>	.024
Groups cannot change their most basic qualities.	<b>.373</b>	.116
<b>Factor 2: Groupness</b>		
The characteristics of a group tend to be stable over time and context.	-.013	<b>.586</b>
In general, all members of a group share common goals.	.013	<b>.583</b>
People who share the same group generally hold the same views as each other.	.159	<b>.494</b>
In terms of what defines them, all members of a given group are largely the same underneath the surface.	.056	<b>.461</b>
Every group is a collection of a certain type of person.	.244	<b>.419<sup>a</sup></b>
The group someone belongs to tells us a lot about them as a person.	-.003	.269 <sup>b</sup>

*Note.* N = 286. The extraction method was maximum likelihood with an orthogonal (Varimax with Kaiser normalization) rotation. Factor loadings above .30 are in bold.

<sup>a,b</sup> Although these two items either load relatively poorly or cross load to some degree they are left in the measure to ensure comparability with the adult measure.

### Reliability of IGT scale

Reliability analysis (Cronbach's Alpha) was conducted on the 11-item scale, as well as on the two subscales (groupness and malleability). The results of the reliability analyses are displayed in Table 48. Although the reliability of the malleability sub scale could be improved from .703 to .721 by the removal of one item, the improvement was not considered not significant enough and the item remained in the measure in order to enable maximum comparability with the items included in the adult scale.

**Table 48**

*Reliability of IGT measure (Study 3b - Adolescents)*

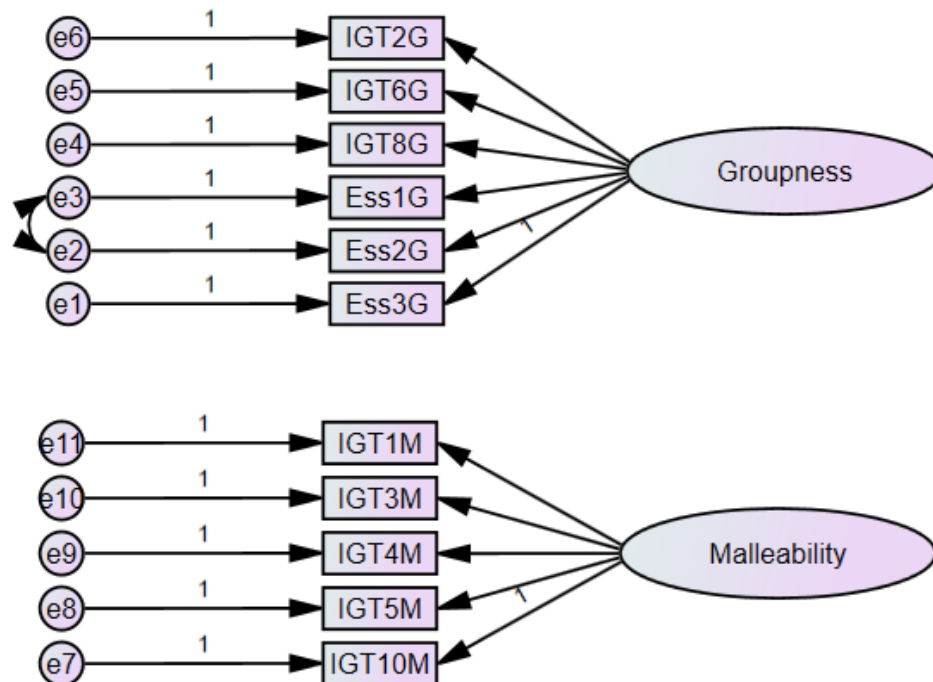
Scale	Reliability ( $\alpha$ )
IGT (11 items)	.670
Groupness (6 items)	.656
Malleability (5 items)	.703

### Confirmatory factor Analysis (CFA) – Implicit group Theory items

The EFA outlined above shows a clear two factor solution for IGTs. To confirm this, a CFA was specified with two latent factors (Malleability and Groupness). The estimation model used was maximum likelihood. Standardised coefficients were used and observations with missing values excluded. The attempted model can be seen in Figure 9.

**Figure 10**

*Confirmatory Factor Analysis of IGT items (Study 3b - Adolescents)*



After estimating the model, goodness-of-fit statistics were obtained. The results are displayed in Table 49 and indicate good fit. The CFI is above the recommended value of 0.95 (Hooper et al., 2008) and the RMSEA is below the generally recommended value of 0.05. All regression weights are significant ( $p > .05$ ). The two-factor model demonstrates a better, and more parsimonious fit, than a one factor model.

**Table 49**

*Goodness-of-fit statistics for the 2-factor model (Study 3b - Adolescents)*

Fit statistic	Two Factor model
Chi2 (df)	60.86 (43)
RMSEA	.041
CFI	.952
TLI	.939

The CFA reported above confirms that malleability and groupness represent separate factors of implicit group theories in an adolescent sample.

### **Factor analysis – Implicit Group Theory and Intergroup Relations items**

A second EFA was conducted to ensure that the factors related to IGT loaded separately from those concerned with intergroup relations.

A varimax factor analysis with orthogonal rotation was conducted on all 16 items and produced 4 factors with eigenvalues over 1 accounting for 48.7% of the variance.  $KMO = .748$ . Despite 4 factors emerging only 3 factors were predicted; this was confirmed by the scree plot. The analysis was repeated extracting three fixed factors. Results indicated that the three factors accounted for 41.8% of the total variance.  $KMO = .748$ .

Two IR items in factor 1 cross loaded across factors and were removed from further analyses. A varimax factor analysis with orthogonal rotation was conducted on the remaining 14 items extracting three fixed factors. The three factors were confirmed by the scree plot and accounted for 44.7% of the variance.  $KMO = .715$ . Factors and factor loadings are displayed in Table 50.

**Table 50**

*Summary of Exploratory Factor Analysis for IGT and IR items (Study 3b - Adolescents)*

Item	Factor Loading		
	1	2	3
<b>Factor 1: Malleability</b>			
People cannot change the group they belong to.	<b>.699</b>	.084	.075
The groups someone belongs to cannot be changed.	<b>.671</b>	.110	.159
Groups cannot be changed and developed.	<b>.587</b>	-.036	.076
Groups cannot substantially change the kind of group they are.	<b>.506</b>	.025	-.038
Groups cannot change their most basic qualities.	<b>.373</b>	.105	.089
<b>Factor 2: Groupness</b>			
In general, all members of a group share common goals.	.014	<b>.561</b>	.009
The characteristics of a group tend to be stable over time and context.	-.023	<b>.545</b>	.124
People who share the same group generally hold the same views as each other.	.156	<b>.525</b>	-.013
In terms of what defines them, all members of a given group are largely the same underneath.	.046	<b>.457</b>	.073
Every group is a collection of a certain type of person.	.235	<b>.454</b>	.022
The group someone belongs to tells us a lot about them as a person.	-.019	.291	.089
<b>Factor 3: Intergroup Relations</b>			
Groups generally keep separate from each other because they don't get on.	.024	.170	<b>.699</b>
In general, groups don't want to interact with each other.	.068	.213	<b>.562</b>
Different groups of people who interact do not learn from each other.	.127	-.047	<b>.362</b>

*Note:* N = 286. The extraction method was maximum likelihood with an orthogonal (Varimax with Kaiser normalization) rotation. Factor loadings above .30 are in bold.

The factor structure of IGT and IR items is virtually identical for adolescents and adults except adults retain one more IR item in factor 3 ('Relationships between groups in society can't be changed'). However, the factor structure above (with 14 items) was re-analysed with adult data to confirm that the two scales load in the same way for adults and adolescents. The structure is confirmed and the two scales are comparable for future use with adults and adolescents.

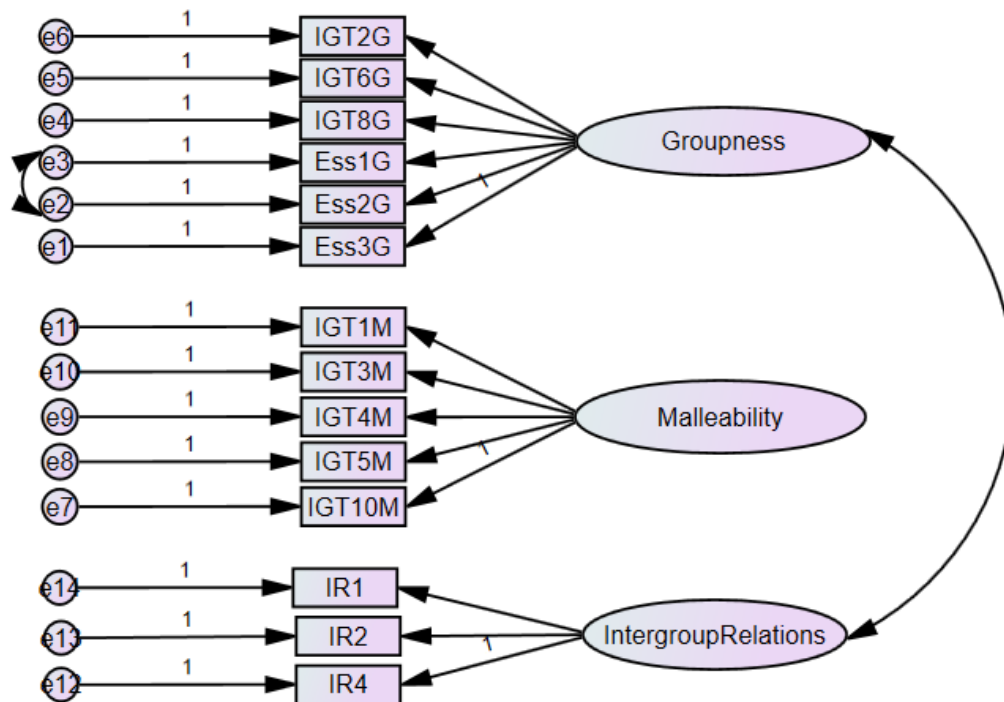
As in the adult data these analyses confirm the factor structure of the IGT measure; perceived malleability of groups is a separate construct from groupness, and both load separately from intergroup relations items.

### **Confirmatory Factor Analysis (CFA) - Implicit Group Theory and Intergroup Relations items**

The EFA, outline above, suggested a three-factor solution. A CFA model was therefore specified with three latent factors (groupness, malleability and intergroup relations). The estimation model used was maximum likelihood, standardised coefficients were used and observations with missing values were excluded. The attempted model can be seen in Figure 10.

**Figure 11**

*Confirmatory Factor Analysis of IGT and IR items (Study 3b - Adolescents)*



After estimating the model, goodness-of-fit statistics were obtained. The results are displayed in Table 51. The fit is adequate. The CFI should preferably be above 0.95 (Hooper et al., 2008), however the RMSEA is below the generally recommended value of 0.05. All regression weights are significant ( $p < .05$ ).

**Table 51**

*Goodness-of-fit statistics for the 3-factor model (Study 3b - Adolescents)*

Fit statistic	Three Factor model
Chi2 (df)	103.84 (75)
RMSEA	.039
CFI	.924
TLI	.938

The goodness-of-fit statistics suggest a good to adequate fit for the three-factor model. This model is very similar to that seen in the adult data, and the results confirm those of the previous CFA – groupness and malleability load on separate factors. Taken together these results suggest that implicit group theory items, in particular perceived group malleability, are tapping into the perceived properties groups rather than elements of intergroup relations.

### **Reliability Results (Other Constructs)**

The reliability of the other constructs measured in the current study are summarised in Table 52.

#### **Social Dominance Orientation (SDO)**

A shortened version of an SDO scale was created for the current study and was measured across age groups. In adolescents the reliability of the scale was  $\alpha = .769$ . As in the adult data (study 3a) the reliability could be improved to  $\alpha = .796$  by removing the item 'To do well in life groups sometimes have to be selfish and not worry about the feelings or needs of other groups.'

The reliability of the SDO scale could be further improved to  $\alpha = .833$  by removing two further items, however for the purposes comparability with the results from study 3a these two items were left in the scale for future analyses.

#### **Empathy**

Reliability of the 12-item empathy scale is  $\alpha = .838$

#### **Intergroup Relations**

Reliability of the 3 IR items remaining after the EFA was  $\alpha = .555$ . This could be improved slightly by including all 4 items as seen in study 3a,  $\alpha = .572$ . To increase reliability and ensure comparability with study 3a, 4 items were considered more appropriate for the IR in future analyses.



**Table 52***Reliability of other constructs (Study 3b - Adolescents)*

Construct	Reliability ( $\alpha$ )
SDO (5 items)	.796
Intergroup relations (4 items)	.572
Empathy (20 items)	.838

**Correlational Analysis**

A number of theoretically related variables were included in the current study to assess convergent and discriminant validity of the IGT-11 scale. Initial analyses for adolescent data included IGT, SDO, IR, Empathy and data from the two contact stars – Contact Star 1 Attitude (CSA) and Contact Star 2 Contact (CSC). IGT was also broken down into malleability and groupness, and correlational analysis conducted as in study 3a. The correlation coefficients for these variables are displayed in Table 53.

As expected, higher levels of IGT (fixed thinking) were significantly and positively correlated with higher scores on IR and SDO. Although a negative relationship is seen between IGT and empathy, this was not statistically significant. No significant relationships are seen between IGT and either contact star measure (attitudes and intended behaviour). Whilst both factors of IGT - malleability and groupness - are significantly and positively correlated with IR, only groupness has a significant correlation with SDO. In contrast perceived malleability, but not groupness, is significantly and negatively related to empathy. Of the two factors of IGT, only malleability significantly correlates with one of the contact star measures. Malleability is significantly and negatively correlated with the CSC – meaning higher perceived fixedness of groups is associated with less willingness for contact with multiple groups on the contact star. As in the adult data (study 3a) groupness is not significantly associated with either measure of attitudes or willingness for contact with multiple groups, suggesting that it is the perceived malleability of groups, and not groupness as measured in the current study, that is associated with generalised prejudice.

**Table 53***Descriptive Statistics and Correlations for Study Variables (Study 3b - Adolescents)*

Variable	n	M	SD	1	2	3	4	5	6	7	8
1. IGT	286	2.48	0.48	-							
2. Malleability	285	1.94	0.62	-	-						
3. Groupness	286	2.94	0.64	-	.16**	-					
4. IR	286	2.09	0.62	.35***	.26***	.27***	-				
5. SDO	286	1.91	0.82	.26***	.11	.26***	.32***	-			
6. Empathy	282	3.72	0.63	-.10	-.19**	.02	-.16**	-.29***	-		
7. CSA	260	5.59	1.22	-.09	-.10	-.05	-.11	-.20**	.22***	-	
8. CSC	238	4.11	0.98	-.09	-.16*	-.008	-.13*	-.17**	.23***	.51***	-

Note. N = 322, \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$

One further result of interest is the significant correlation between SDO and both contact star measures. This suggests that in adolescents a higher level of SDO is associated with more negative attitudes, and less willingness for contact with, multiple social groups. This is the first time, to the authors knowledge, that SDO in this age group has been linked to generalised prejudice.

### **Regression analysis**

A multiple regression analysis was conducted to explore whether IGT, and in particular the factor of malleability, could reliably predict generalised prejudice as measured by the CSA and CSC. Given the results of the correlational analysis, as outlined above, only analyses predicting generalised prejudice as measured by the CSC were conducted.

Empathy, SDO and Malleability were included as predictor variables. Only Empathy and Malleability were significant predictors of CSC in the multiple regression analysis. Empathy had  $\beta = .181$ ,  $p = .006$ , Malleability had  $\beta = -.142$ ,  $p = .025$ .

### **Analysis of Incremental and Entity Theorists**

Similarly, to the analysis from study 3a, entity and incremental theorists were identified by their mean IGT score. Any participant with a score above 2.5 was identified as an entity theorist, and anyone with a mean score below 2.5 was identified as an incremental theorist. The percentage of participants identified as either an incremental or entity theorists is displayed in Table 54, and the mean scores for all constructs measured in the current study by theory type are displayed in Table 55.

**Table 54***Percentage of the sample categorised as Incremental or Entity theorists (Study 3b - Adolescents)*

Theorist type <sup>a</sup>	%
Incremental	48.6%
Entity	50.3%

<sup>a</sup> 1% of the sample had a mean score of 2.5. and were therefore not categorized as either holding an entity or incremental theory.

**Table 55***Mean Score by Theory Type (Study 3b - Adolescents)*

Theorist type	Mean Scores							
	IGT	IR	SDO	Empathy	Malleability	Groupness	CSA	CSC
Incremental	2.10	1.91	1.77	3.80	1.60	2.52	5.77	4.24
Entity	2.85	2.25	2.05	3.64	2.27	3.34	5.40	3.98

The categorization of individuals into either incremental or entity theorists, reported above, suggests that roughly half the participants had a fixed mindset when it came to their perception of groups (entity theorists), whilst the other half had a more flexible way of perceiving groups (incremental mindset). These are similar figures to those seen in the adult data (study 3a). What is interesting to note is that those participants who were categorised as entity theorists also scored higher in their mean levels of SDO, were more negative about intergroup relations. Participants who were categorised as entity theorists also scored lower in measures of empathy, and had more negative attitudes towards, and willingness for contact with, other groups.

Presentation of the results in this way clearly demonstrates that the sample was not skewed towards one type of theorist and illustrates the size of the differences between their scores on the other variables.

Further analyses by theory type (entity vs incremental) were conducted to check whether the mean differences for the constructs in Table 55 were statistically significant. Results indicated that entity and incremental theorists differed significantly on SDO ( $F(1,281) = 13.55, p < .001$ ), IR ( $F(1,281) = 13.83, p < .001$ ), Empathy ( $F(1,278) = 4.87, p < .05$ ), CSA ( $F(1,255) = 6.17, p < .05$ ), and CSC ( $F(1,235) = 4.49, p < .05$ ).

## Discussion

The exploratory and confirmatory factor analyses of implicit group theory items, build on the findings from studies 1b and 2b, confirming that perceived malleability and groupness represent separate factors of an implicit group theory in adolescents. Furthermore, the revised items included in the IGT scale load, in general, separately from intergroup relations items.

The revisions made to the items, such as making the scale unidirectional, increased the reliability of both the overall scale and its subscales. The reliability for the scale improved compared to that seen in study 2b, however it is still only reached acceptable, and not good, levels of reliability in this age group. This suggests that some further refinement to the existing items, and the possible addition of further items, are needed in order to measure aspects of malleability and groupness with 12–14-year-olds in a consistent manner. Despite appearing to have the same structure as an implicit group theory in adults, the poorer reliability levels may indicate that the construct itself is still ill-formed in early adolescence and therefore difficult to assess. Further studies may need to explore alternative ways of tapping into an understanding of group malleability in this age group. By contrast, the revisions made to both the wording of the SDO items and the scale itself, improved its reliability to within a good level.

The results of the correlation analyses, in terms of convergent and discriminant validity of the scale, are less conclusive than that seen in study 3a with adults. Whilst IGT correlated, as

expected with SDO, it was not significantly correlated with empathy. As expected, there was a negative relationship between the two, however this was not statistically significant. Surprisingly, there was also no significant relationship between malleability and SDO, and the positive correlation between IGT and SDO may have been largely driven by the influence of groupness.

Further results from the correlation and regression analyses suggest that malleability, but not groupness, is associated with willingness for contact with other groups. A higher level of fixed thinking in terms of groups (lower perceived malleability of groups) was associated with less willingness for contact with multiple groups. The regression analyses confirmed that malleability was a unique predictor of willingness for contact beyond levels of SDO and empathy. These results suggest that implicit theories of groups in terms of how fixed or malleable they are considered to be, is already influencing generalised prejudice, in the form of willingness for contact, by early adolescence. To the authors best knowledge this is the first study of its kind to demonstrate that implicit theories of groups may be associated with generalised prejudice in adolescents.

Furthermore, the correlation analyses revealed that higher SDO in adolescence was associated with more negative attitudes towards, and less willingness for contact with, multiple groups in society. Again, to the authors best knowledge this is the first study of its kind to make a link between SDO and generalised prejudice in adolescents.

### **Multigroup Modelling Analysis**

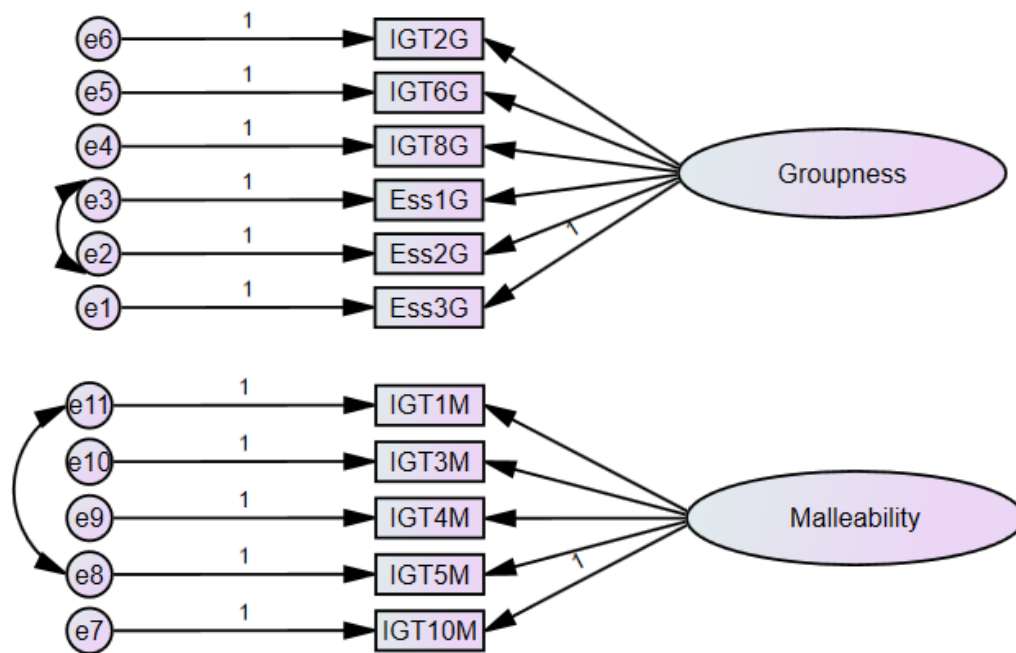
A further test was conducted to establish measurement model invariance and test the two factor IGT model across the two groups (adolescents and adults).

Measurement model invariance was first established via configural and metric invariance. A two-group, two factor model (see Figure 11) was estimated and configural invariance was established via the unconstrained model. Metric invariance was also established by comparing the constrained

and unconstrained models; the chi squared test was non-significant ( $p=.307$ ), and it was concluded that metric invariance had been established. Item intercepts were then constrained to be equivalent across the two groups and scalar invariance was established by comparing the constrained and unconstrained models; the chi squared test was non-significant ( $p = .292$ ), and it was concluded that scalar invariance had been established.

**Figure 12**

*Confirmatory Factor Analysis of IGT Items - Two factor Multigroup Model (Adults and Adolescents)*



Following these tests, a multi group two factor model of IGT was established (see Figure 11).

After estimating the model, goodness-of-fit statistics were obtained. The results are displayed in Table 56. The fit of the model is good; the CFI is above 0.95 (Hooper et al., 2008), and the RMSEA is below the generally recommended value of 0.05. All regression weights, for both adolescents and adults are significant ( $p<.05$ ).

**Table 56**

*Goodness-of-fit statistics for the 2 Factor Multigroup Model - IGT Items (Adults & Adolescents)*

Fit statistic	Two Factor model
Chi2 (df)	139.09 (84)
RMSEA	.034
CFI	.951
TLI	.935

The results of the multigroup model suggest that the two-factor structure is a good fit in both age groups, and furthermore that the items or indicators are measuring the same construct across age groups.

### General Discussion

The two main studies reported in this chapter aimed to refine and test items related to an implicit theory of groups (IGT), establish reliability and validity of the IGT measure and explore an association between an IGT and generalised prejudice across two age groups. A secondary aim of the studies was to establish a reliable measure of SDO that could also be used across age groups.

Two studies were conducted between Studies 2a, b and c (reported in empirical chapter 5) and Studies 3a and b (reported here), to help refine the wording of the items included in the IGT measure as well as to evaluate scale properties, such as the use of counter intuitive items. Results from these two studies suggested that simpler wording of items and unidirectional scales would be beneficial across age groups. The revision of the measure in this way, not only enabled comparability for results across the two groups, but also increased the reliability of the scale. Reliability of the IGT scale, and its sub scales, was revealed to be good in the adult population (Study 3a) and adequate in the adolescent sample (Study 3b). Test re-test reliability also revealed fair to good reliability of the measures in adults, but this may have been affected by participants having prior knowledge of the



scale and having been debriefed following the initial questionnaire. Further work, and potentially more items, are needed to establish better reliability of the scales in adolescents.

Closely related measures such as RWA, SDO, NFC and empathy were also included in the current studies to help establish validity for the measure of IGT. In the study with adults, higher levels of RWA and lower levels of empathy were associated with higher levels of IGT or fixed thinking about groups as predicted, and therefore the null hypotheses were rejected. No significant correlation was seen between IGT score and NFC, and therefore the null hypothesis was not rejected. In the study with adolescents, only empathy and SDO were measured alongside IGT. Unexpectedly, empathy was not found to be significantly negatively associated with a higher IGT score, and the null hypothesis was therefore not rejected. SDO was found to be significantly correlated with IGT score in both adults and adolescents and is discussed in more detail below. Overall, the results from these analyses provides good convergent and discriminant validity for the IGT measure in adults and adolescents, however the relationship between IGT and empathy in adolescents requires further exploration.

Including the same items in the measures across both age groups enabled greater comparison of results, and analyses from both exploratory and confirmatory factor analysis of IGT items revealed that the same two factor structure existed for both adults and adolescents. The two-factor model was comprised of perceived malleability and perceived groupness of groups, and was found to fit more parsimoniously and to a better degree than a one factor model in both age groups. Multigroup model analysis also established configural, metric and scalar invariance for the model, suggesting that the model was comprised of the same factor structure in both age groups, and furthermore that items included in the IGT scale were measuring the same construct in both adults and adolescents. In developmental terms this suggests that individuals already have a clear implicit theory of groups by the time they reach early adolescence, and that this structure does not change when they reach adulthood.

One of the main aims of the current set of studies was to explore whether there is an association between holding a fixed implicit theory of groups and generalised prejudice. Study 1a, and reported in this chapter, established the Contact Star (Purewal, 2015) as an appropriate measure for assessing attitudes to and willingness for contact with multiple groups in society, and these measures were used to measure generalised prejudice in both adolescents and adults. Results revealed that, in adults, a more fixed mindset in terms of the perceived malleability of groups, but not perceived groupness, was associated with more negative attitudes towards, and less willingness for contact with, other groups in society. The results of the regression analyses suggest that malleability, but not groupness, predict more negative attitudes to multiple groups, and therefore the hypothesis 'Higher levels of entity or 'fixed' thinking about groups (higher score on IGT items) will predict more negative attitudes to multiple groups' is only partially supported. Regression analyses also suggested that IGT score did not predict less willingness for contact with multiple groups and therefore the null hypothesis was not rejected.

In the adolescent sample a more fixed mindset in terms of perceived malleability of groups was only associated with willingness for contact with other groups, and not attitudes. Regression analyses revealed that malleability predicted willingness for contact with other groups and therefore provided partial support for the hypothesis 'higher levels of entity or fixed thinking about groups (higher score on IGT items) will predict less willingness for contact with multiple groups. However, IGT scores did not predict adolescents' attitudes to multiple groups and therefore the null hypothesis was not rejected.

Together these results suggest that having a more fixed mindset in terms of how malleable groups are perceived to be – that is how much they can change and develop through collective effort – may have a very real, and negative, association with intergroup attitudes and contact. Furthermore, what is apparent from the data, is that this association - a fixed mindset about groups and less willingness for contact - may be established as early as 12-14 years of age or even earlier. The results

of the current study are the first, to the authors knowledge to establish an association between an implicit theory of groups with generalised prejudice in this age group. Further work is needed however, to establish whether perceived malleability, in particular, can predict attitudes towards, and willingness for contact with, multiple groups.

A secondary aim of the current study was to establish a reliable scale to measure SDO in adults, adolescents and children. Whilst children were not included in the current study due to restrictions imposed by the Covid-19 pandemic, the SDO measure was refined and tested across the other two age groups. Analyses revealed that the five item SDO measure was reliable for use with both adults and adolescents, and was correlated as expected with RWA in adults, as well as with IGT in both adults and adolescents. Exploratory analyses revealed that SDO was significantly associated with both measures of generalised prejudice in both age groups, and therefore the null hypotheses are rejected. Whilst it is well established that SDO predicts generalised prejudice in adults, no study to the authors best knowledge has explored the relationship of SDO with both attitudes and willingness for contacts in adults, nor by using a measure such as the Contact Star. Of even greater significance perhaps is the finding that higher levels of SDO are associated with more negative attitudes to, and less willingness for contact with, people from multiple social groups in 12-14-year-olds.

In terms of development, it was predicted that the proportion of entity theorists would increase with age, as people become more fixed in their thinking and in line with increases in SDO and RWA (Zubielevitch, et al., 2023). However, analyses revealed that the proportion of individuals categorized as entity theorists remained constant at 50.3% across adolescence into adulthood. The lack of younger children in the sample prevents the full exploration of this prediction, and the null hypothesis is therefore not rejected.

The results of the current study are hugely encouraging in terms of establishing associations between both IGT and generalised prejudice across age groups, as well as adding to our knowledge

on the development and consequences of SDO in young people. There are however, a number of limitations of the current study.

### **Limitations**

The revision of the IGT scale to include unidirectional items had a positive effect on the reliability of the scale, particularly in adults. The reliability of the scale however, whilst improved from that seen in study 2b, remained at an adequate level. Further work needs to be conducted to increase this level of internal consistency, and further work across age groups needs to establish better reliability over time.

The greatest limitation of the current study was the lack of younger children in the sample. One of the main aims of the current work is to establish the developmental pathway for an implicit group theory, and therefore including children in the sample, as in studies 1c and 2c, is imperative. The children and adolescents who have participated in the current work were all recruited via schools in the local vicinity, however due to the Covid-19 pandemic and resulting lockdowns primary schools, in particular, were less willing to take part in research projects. This was for two main reasons. Firstly, the studies were conducted when Covid-19 remained a very real threat to the health of the people in the U.K and therefore schools were unwilling to invite researchers in person to conduct research studies. And secondly, children in the UK had missed months of schooling during the pandemic and therefore schools were less willing to give time to non-curriculum activities.

### **Next steps**

There are a number of areas of work related to the current thesis. These are outlined below and discussed in more detail in the next chapter. Future work needs to:

- Conduct the current study with a child sample (9-10 years) and test the two-factor model in this age group.
- Establish whether the SDO scale is a reliable measure in children as young as 9-10 years.

- Improve the reliability of the IGT scale in all groups, but particularly adolescents.
- Develop the malleability scale and test its association with, and power to predict, generalised prejudice across age groups.
- Explore the social determinants of an implicit group theory.

## **Chapter 7: General Discussion, Conclusions and Future Research Directions**

*This final chapter presents a summary of the work outlined within this thesis. It provides a brief outline of the theoretical background that underpinned the aims of the study, together with a summary of the main findings. The theoretical implications of the results for social developmental research, and the applied potential for prejudice reduction programmes, are considered. Potential limitations of the work that may affect the external validity of the conclusions are discussed. The chapter concludes by outlining a programme for the future directions of this work.*

### **Theoretical Background and Aims**

Children's intergroup attitudes have long been of interest within intergroup relations research. In particular, a considerable number of studies have examined children's intergroup attitudes towards members of particular ethnic groups, and research suggests that children are able to distinguish amongst people based on physical cues such as ethnicity and gender by a very young age (Aboud, 1988; Nesdale, 2001). Considerable evidence exists that children are not only aware of group membership, but also display strong in group preferences and out group negativity by the age of 6 years (Aboud, 1988; Nesdale 2001).

Whilst intergroup prejudice is considered problematic at any age, the idea that it may be widespread and potentially psychologically damaging to members of target groups amongst school age, or even younger children, is of particular concern (e.g., Abrams & Killen, 2014; Puhl & Latner, 2007; Verkuyten & Thijs, 2001b). Furthermore, evidence suggests that prejudice which is established or acquired during childhood may well be long-lasting, with negative attitudes and intergroup divisions enduring into adulthood (Durkin, 1995). Not surprisingly, the development of prejudice in

childhood has become a rich area of theoretical interest and the basis for many prejudice reduction programmes.

The aim of this thesis was to extend the understanding of factors that contribute to the development of prejudice thereby adding to the social developmental intergroup literature. More specifically, it highlighted the previously neglected role of individual differences in the development of prejudice in children, and aimed to develop and test a measure of implicit group theories in children, adolescents and adults.

### **Theories of intergroup attitudes development**

The expanse of research in the intersecting disciplines of social and developmental psychology has led to a better understanding of intergroup relations and attitudes across different age groups. It has also led to the development of a number of theoretical approaches to explain the development of prejudice in children. The most predominant of these theories, and outlined in Chapter 1, has been the social cognitive development theory (SCDT; Aboud, 1988; Bigler & Liben, 2006; Spears-Brown & Bigler, 2004).

The SCDT proposes that as a child gets older their focus shifts from the self (egocentrism) to the group and then to a more individuated form of judgement. This shift is thought to reflect an increasing cognitive ability to use multiple classification when evaluating others, whereby children can make use of an increased sensitivity to the attributes of individuals when understanding members of their own and other groups. The theory accounts for the evidence that young children display stronger ingroup preference rather than outgroup prejudice (e.g., Aboud, 2003), however it also assumes that increased cognitive abilities underlie a reduction in prejudice, and that this is a stable developmental progression. This theory cannot account for the evidence that older children, adolescents and adults who are cognitively mature display prejudice and negative intergroup attitudes (e.g., Abrams, 1985; Bennett et al., 1998; Rutland, 1999). In addition, the SCDT is grounded in empirical research regarding race and ethnicity, and struggles to account for the variation in levels

of prejudice based on other categories such as nationality and gender (e.g., Brown, 1995; Maccoby, 1988; Powlisha et al., 1994; Rutland, 1999; Yee & Brown, 1994).

The Developmental Intergroup Theory (DIT; Bigler & Liben, 2006), by contrast, has been argued to be a truer developmental approach as it 'considers how developmental constraints and advances in children's cognitive skills affect their construction of social categories and their meaning' (p. 47). Far from simply considering the developing cognitive abilities of children, it takes into account how groups become salient to children, and considers the internal and external processes that can lead to the development and prejudices towards those salient groups.

Theories of prejudice development such as the SCDT contribute knowledge to the understanding of how and when prejudices may develop in childhood, however what these theories don't explain is why children and adults who grow up with similar cognitive abilities display differing types and levels of prejudice and intergroup attitudes. The idea that cognitive maturity, and an awareness of which groups are salient targets for stereotyping, underpins prejudice implies that given the capacity older children and adults who can process information about group members should exhibit no, or very low levels of, prejudice. However, we know that this is not the case, and there is extensive evidence that adults express strong intergroup biases across a range of groups and situations (Brown & Gaertner, 2001). Our understanding of the development of prejudice is informed by these theories, but it is also limited by not accounting for variability or individual differences in social ideologies and lay theories held by children and young people.

### **Individual Differences and an Implicit Theory of Groups**

Although many theoretical approaches have emerged to account for the development of prejudice, very few incorporate individual difference variables - key predictors of prejudice in adults (see Hodson & Dhont, 2014). Variables such as personality factors (e.g., Akrami et al., 2011; Hodson & Ashton, 2009) Social Dominance Orientation (SDO; e.g., Sibley & Duckitt, 2008), Right Wing Authoritarianism (RWA; Sibley & Duckitt, 2008) and broader lay theories such as the Protestant Work



Ethic (PWE; e.g., Rosenthal et al., 2011) have all been shown to predict prejudice, with SDO and RWA estimated to account for around 50% of the variance in prejudice in adults (Altemeyer, 1998; Son Hing & Zanna, 2010; Van Hiel & Mervielde, 2005). Despite this considerable evidence for the role of individual differences as a predictor of prejudice in adults, these variables have been largely ignored in the developmental literature, and do not feature as part of developmental theories of prejudice.

One further individual difference variable that has emerged as having a strong association with stereotyping in both children and adults is an implicit theory of malleability (e.g., Levy & Dweck, 1998; Levy, Stroessner, & Dweck, 1998; Plaks et al., 2001). As outlined in Chapter 2, implicit theories are characterized by either an entity or incremental style of thinking, whereby constructs such as intelligence or personality, of both the self and others, are considered to be fixed or malleable respectively.

In terms of an implicit theory of individuals, an entity or fixed style of thinking is consistently associated with higher levels of stereotype endorsement. Despite its relevance to intergroup relations research, the impact of implicit theories is relatively untapped within the literature. A small body of work has shown that an entity theory of groups predicts stereotyping over and above that predicted by an entity theory of individuals (e.g., Rydell et al., 2007), however this research has not progressed to the exploration of generalised attitudes or prejudice towards other groups, nor what an implicit theory of groups may look like in childhood. As is the case for other closely related individual difference variables and lay theories, research has predominantly been carried out with adults.

Perceiving groups as more malleable, having the potential to change and develop through coordinated effort, has been demonstrated to lead to more positive attitudes to an outgroup in a real-life conflict situation (Halperin et al., 2011). It has also been shown to be associated with less anxiety about meeting an outgroup member, and being more willing to have contact with a member of an outgroup (Halperin et al., 2012). Similar studies around peer conflict situations (e.g., Yeager et

al., 2013) have likewise demonstrated that mindsets around the malleability of groups are not fixed but are frameworks that can be manipulated and altered in positive ways as young people develop and grow.

The perceived malleability of groups may be considered as a lay theory about the property of groups. Closely related variables also include entitativity, outgroup homogeneity and essentialism, and these are discussed at length in Chapters 1 and 2. Evidence suggests that outgroup homogeneity is associated with stereotyping (e.g., Miller & Brewer, 1986), and essentialism has been consistently linked to negative intergroup attitudes, prejudice and stereotyping in adults (e.g., Haslam, Rothschild & Ernst, 2002; Keller, 2005; Leyens et al., 2003; Prentice & Miller, 2007; Yzerbyt, Corneille & Estrada, 2001). There is less evidence associating entitativity with stereotyping and negative intergroup attitudes, but entitativity has been shown to mediate the relationship between the perceived malleability of groups and stereotyping (Rydell et al., 2007). All four of these variables relate to how people perceive groups in general and therefore it was argued that these variables together may represent a broad vision of an implicit theory of groups.

Given the broad utility of an implicit theory of groups in terms of the impact on intergroup relations, it was proposed that it is an individual difference variable worthy of consideration in the social and developmental literature. Children, like adults, vary in terms of their endorsement of social ideologies and lay theories of groups, and therefore it was argued that such individual differences are both interesting and valuable variables to measure in childhood and adolescence. Furthermore, they represent a new and innovative avenue for use within prejudice reduction programmes and broader education. Providing support for this argument, as well as the consideration of an implicit group theory from a developmental perspective and the development of a reliable measure of IGT, represented the main empirical aims of this thesis.

The specific aims of the thesis were: to develop a measure of IGT across age groups, to test the reliability and validity of the newly designed IGT measure, to develop a measure of SDO for use

with adults, adolescents and children, to test the use of the Contact Star as a measure of generalised prejudice with adults, and to test the association of SDO and IGT with generalised prejudice across age groups. A condensed summary of the empirical studies together with the main findings can be found in in Table 57.

**Table 57***Summary of Empirical Studies*

Study	Purpose/Aim	Participants	Variables measured	Main Findings
<b>Chapter 4</b>				
Study 1a	Test items related to perceived malleability and homogeneity for inclusion in IGT measure	201 adults (20 -60 years)	Perceived homogeneity  Perceived malleability of groups  Items related to intergroup trust, group deviance, belief in a just world, intergroup relations and SDO	EFA of items revealed clear two factor structure for IGT: perceived malleability and perceived homogeneity.  Overall scale showed acceptable level of reliability
Study 1b	Test items related to perceived malleability and homogeneity for inclusion in IGT measure	268 adolescents (12 -14 years)	Perceived homogeneity  Perceived malleability of groups  Items related to intergroup trust, group deviance, intergroup relations and SDO	EFA of items revealed a two-factor structure similar to that seen in study 1a: perceived malleability and perceived homogeneity.  Scale showed good reliability
Study 1c	Test items related to perceived malleability and homogeneity for inclusion in IGT measure	57 children (9-10 years)	Perceived homogeneity  Perceived malleability of groups  Items related to intergroup trust, group deviance, intergroup relations and SDO	No clear factor structure emerged from EFA  Scale showed an adequate level of reliability

Study	Purpose/Aim	Participants	Variables measured	Main Findings
<b>Chapter 5</b>				
Study 2a	Refine and test items related to perceived malleability, perceived homogeneity, entitativity and essentialism.  Develop a short SDO scale	286 under-graduates	Perceived malleability, homogeneity, entitativity and essentialism.  SDO items.  Items related to intergroup relations and intergroup trust	EFA and CFA revealed an IGT with a clear two factor structure. The factors were i) perceived malleability, ii) groupness (homogeneity, entitativity and essentialism items).  Reliability of IGT scale was acceptable (but lower than in study 1a).  Reliability of 6 item SDO scale was good  Higher IGT score (fixed thinking) positively correlated with SDO score and negatively correlated with intergroup trust.
Study 2b	Refine and test items related to perceived malleability, perceived homogeneity, entitativity and essentialism.  Develop a short SDO scale	506 adolescents (12-14 years)	Perceived malleability, homogeneity, entitativity and essentialism.  SDO items.  Items related to intergroup relations and intergroup trust	EFA and CFA revealed an IGT with a clear two factor structure. The factors were i) perceived malleability, ii) groupness (homogeneity, entitativity and essentialism items).  Reliability of the scale was poor (lower than that seen in 1b and 2a)  Reliability of 6 item SDO scale was good  Higher IGT score (fixed thinking) positively correlated with SDO score and negatively correlated with intergroup trust.

Study	Purpose/Aim	Participants	Variables measured	Main Findings
Study 2c	Refine and test items related to perceived malleability, perceived homogeneity, entitativity and essentialism.  Develop a short SDO scale	78 children (9-10 years)	Perceived malleability, homogeneity, entitativity and essentialism.  SDO items.  Items related to intergroup relations and intergroup trust	EFA and CFA revealed a two-factor structure: perceived malleability and homogeneity. However, the malleability factor was less well defined than that seen in studies 2a and 2b.  Reliability was revealed to be good for 'groupness' scale, adequate for 'malleability', and poor for the overall scale.  Reliability of the SDO scale was poor.  Higher IGT score (fixed thinking) positively correlated with SDO score and negatively correlated with intergroup trust
<b>Chapter 6</b>				
Study 1a	Test the Contact Star as a measure of generalised prejudice in adults	201 adults (20 -60 years)	Attitudes to, and willingness for contact with, multiple groups	Both versions of contact star showed very good levels of reliability – acceptable for use as a measure of generalised prejudice (attitudes and willingness for contact) in adults
Study 2d	Test a unidirectional scale for IGT items	100 adults	IGT (Perceived malleability and homogeneity)	Confirmed two factor structure seen in study 2a  Increased reliability of the scale to a good level
Study 2e	Test simplified wording of SDO items with adults	100 adults	SDO items	Increased reliability of the SDO items

Study	Purpose/Aim	Participants	Variables measured	Main Findings
Study 3a	<p>Test final items for inclusion in IGT measure.</p> <p>Establish convergent and discriminant validity, and test-retest reliability of IGT measure.</p> <p>Test association between IGT, SDO and generalised prejudiced.</p>	322 adults (18 -65 years)	<p>IGT (perceived malleability and groupness)</p> <p>SDO</p> <p>RWA</p> <p>NFC</p> <p>Intergroup relations items</p> <p>Empathy</p> <p>(Contact Stars)</p> <p>Attitudes to, and willingness for contact with, multiple groups.</p>	<p>Perceived malleability and homogeneity represent separate factors of an IGT.</p> <p>Internal consistency was good, test-retest reliability was considered fair to good.</p> <p>Discriminant and convergent validity were established</p> <p>Perceived malleability was significantly correlated with both measures of generalised prejudice.</p> <p>Reliability of the SDO scale was good</p> <p>SDO was significantly correlated with both measures of generalised prejudice</p>
Study 3b	<p>Test final items for inclusion in IGT measure.</p> <p>Establish convergent and discriminant validity.</p> <p>Test association between IGT, SDO and generalised prejudiced.</p>	286 adolescents (12-14 years)	<p>IGT (perceived malleability and groupness)</p> <p>SDO</p> <p>Intergroup relations items</p> <p>Empathy</p> <p>(Contact Stars)</p> <p>Attitudes to, and willingness for contact with, multiple groups.</p>	<p>Perceived malleability and homogeneity represent separate factors of an IGT</p> <p>Reliability of the IGT improved to an acceptable level.</p> <p>Convergent validity of the IGT scale was established.</p> <p>Perceived malleability was significantly correlated with lower willingness for contact with other groups.</p> <p>Reliability of the SDO scale improved to a good level.</p> <p>SDO was significantly correlated with both measures of generalised prejudice</p>

## Summary of Findings

### Studies 1a, 1b and 1c

Studies 1a, 1b and 1c aimed to provide an initial test of items related to perceived malleability and homogeneity for inclusion in an implicit group theory measure. Previous studies which have measured the perceived malleability of groups have adapted the implicit theory of individuals measure (e.g., Rydell et al., 2007), but have not taken into account the qualitative differences between judgments of individuals and groups. Until now, no measure existed to test an implicit group theory, and this set of studies represents the first attempt to measure items related to the perceived malleability and homogeneity of groups in adults, adolescents and children.

The results of study 1a revealed that perceived malleability and homogeneity represent two separate factors of an IGT in adults. Similar results were revealed in study 1b with an adolescent sample. Here, a two-factor structure was also seen. However, Study 1c, involving 9–10-year-olds, revealed no coherent factor structure in terms of perceived malleability and homogeneity items. Whilst some sense could be made of the three factors that emerged, children between the ages of 9–10 years appeared to have a relatively disorganised implicit theory of groups that did not simply divide into two factors; no clear factor structure was seen in terms of the malleability and homogeneity items. For example, items related to perceived malleability such as ‘Any group can change and develop’, and items related to homogeneity such as ‘Groups are usually made up of certain type of person and there is not much that can be done to change this’, were seen across factors.

Good to adequate levels of reliability were established for the overall IGT measure across age groups. The results suggested that IGT is a construct that can be reliably measured in adults and adolescents, and whilst children may not have a well-established understanding of the malleability and homogeneity of groups in comparison to the older groups, further work including the refinement of items and a larger sample size were needed to illuminate these issues further.



### **Studies 2a, 2b and 2c**

Having provided initial support for an IGT as a multi factorial construct, studies 2a, 2b and 2c were conducted with several aims in mind. Firstly, to refine the items related to perceived malleability and homogeneity, secondly to broaden the scope of the measure to include the closely related items of essentialism and entitativity, and thirdly to test items for inclusion in a short SDO scale to be used across groups.

Results revealed that a similar two factor structure existed for adults and adolescents. The two factors were malleability and groupness, with the latter including items related to homogeneity, essentialism, and entitativity. Results from study 2c revealed that whilst the data collected with children also showed a two factor structure, it was not the same as that seen in adolescents or adults. The groupness factor was identical – including items related to perceived homogeneity, essentialism and entitativity - however more of the malleability items cross loaded or loaded weakly and as result the malleability factor was made up of fewer items than in studies 2a and 2b. These results are interesting because they suggest that children aged 9-10 years do not yet have a clear understanding of groups in terms of malleability, but by the time they reach 12-14 years old their understanding is similar to that of adults.

Correlational results from studies 2a, 2b and 2c, demonstrated that higher scores on the IGT measure (more fixed thinking about groups) was associated with higher levels of SDO, and lower levels of intergroup trust, in all three age groups. Given that SDO is a robust predictor of generalised prejudice in adults (e.g., Hodson & Dhont, 2015), and the fact that there is little research into the development of SDO in childhood this is interesting for two main reasons. Firstly, it suggests that an ideology about the hierarchy of groups in society is associated with an awareness or understanding of groups in terms of their potential for change. And secondly, that whilst children's understanding of malleability is not as well established as that of adolescents, children who do have a tendency to understand groups as more fixed are also more likely to score higher in terms of social dominance

orientation. Children who perceived groups as more fixed, and unable to change and develop, also agreed more strongly with items on the SDO scale such as with items such as 'Some groups of people are more important than other groups of people'. Although an IGT in children did not split neatly into the two subscales, as it did in adolescents and adults, the combined general measure that subsumes both factors is a viable measure that related to the expected outcomes. The potential for an association between a fixed mindset of group understanding and less positive attitudes to outgroups from an early age is clear.

### **Studies 3a and 3b**

Results from two further studies, 3a and 3b, confirmed that an IGT comprised two factors: perceived malleability and groupness, across age groups. Further analyses revealed measurement invariance, and it was concluded that an IGT is stable across adolescents and adults. In other words, both adolescents and adults have a similar understanding of groups in terms of their properties.

Research has demonstrated the association of an implicit theory of individuals and groups with higher levels of stereotyping (e.g., Levy & Dweck, 1999; Levy, Stroessner & Dweck, 1998; Rydell et al., 2007), but little attention has been paid to the potential association of an IGT with intergroup attitudes. Once a clear factor structure for an implicit theory of groups had been established across age groups it was then necessary to test its association with intergroup attitudes and behaviours. Studies 3a and 3b set out to achieve these aims. The use of the Contact Star (Purewal, 2015), an established measure of attitudes to multiple groups with adolescents (Goodbun, 2018, 2019, 2020, 2021, 2022), and verified for use with adults in study 1a, was included as a measure of generalised prejudice in studies 3a and 3b. Whilst studies in this area have tested prejudice towards multiple groups, they are often concerned with attitudes towards different ethnicities rather than a range of social categories, (e.g., Coenders et al., 2008) and there has been, until now, no established measure of generalised prejudice for use with adults. The inclusion of the Contact Star in a study with adults represents the first time such a measure of generalised prejudice has been used in empirical work,

and potentially provides a new and innovative way of measuring both attitudes and behavioural intention towards multiple groups.

Significant correlations between perceived malleability and generalised prejudice measures in both adolescents and adults were seen. This suggests that the understanding of groups by adolescents, as early as 12 years of age, impacts their intended behaviour with a range of social groups. Significant correlations were also seen between SDO and both measures of generalised prejudice across age groups. Whilst this supports previous findings about the relationship between SDO and generalised prejudice in adults (Sibley & Duckitt, 2008) it also suggests that adolescent's understanding of groups in terms of hierarchy influences their attitudes towards, and willingness for contact with, other groups. This is the first study up until now to highlight the association between and SDO and generalised prejudice in children and adolescents (12-14 years).

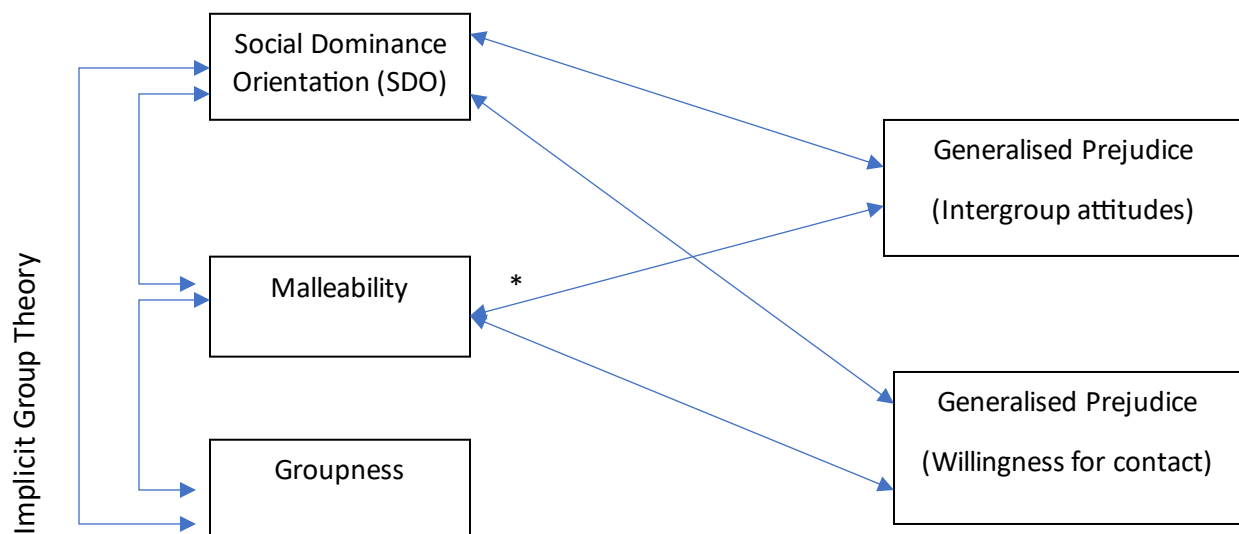
The results of the empirical work outlined here support a number of the relationships identified in the conceptual model provided in Chapter 3. Evidence from studies 2a, 2b, 2c, 3a and 3b suggest there is a positive relationship between SDO and an implicit theory of groups thereby supporting previous work in this area (e.g., Hoyt et al., 2018; Kahn et al., 2018). Furthermore, there also appears to be evidence for a relationship between the perceived malleability of groups and generalised prejudice. Study 3a found that those holding an entity theory of groups had more negative attitudes towards, and wanted less contact with, other social groups. Study 3b however, suggested that this is not such a straight forward relationship for adolescents and holding an entity theory was only related to willingness for contact with and not attitudes towards other groups. A slight revision to the model is necessary to accommodate these different expressions of generalised prejudice.

Whilst the original conceptual model outlined the individual component of an Implicit theory of Groups as individual constructs, results from the exploratory and confirmatory factor analyses in studies 2 and 3, suggested that homogeneity, essentialism and entitativity loaded on one latent factor and this subsequently was labelled 'groupness'. This revision also needs to be accommodated

in a revised model. The diagram below outlines the revised model in light of the evidence presented here.

**Figure 13**

*Revised conceptual model showing relationships between variables*



\*This relationship was only significant for adults (3a). it was not significant in adolescents (3b).

### **Summary of Theoretical Implications**

It is undeniable that great advances have been made in understanding the development of prejudice in children over recent years (e.g., Aboud, 1988; Abrams 2011; Abrams et al., 2009; Bigler & Liben, 2006; Raabe & Beelmann, 2011). But it is also true that little attention has been paid to the individual differences of children and young people, how those differences may underpin prejudice and negative intergroup relations, or indeed to the structural, functional and dynamic properties of

children's lay theories of groups (for exceptions see e.g., Bratt et al., 2016; Duriez & Soenens, 2009, Hirschfeld, 2001; Ruffman et al., 2020).

This thesis has highlighted the limitations of current theories of prejudice, whilst simultaneously considering the role that individual differences play in generalised prejudice amongst children and adolescents. The individual difference, or lay theory, of particular interest in this thesis was an implicit theory of groups. The inclusion of an implicit theory of groups as a potential driver of prejudice represents a new and innovative approach to the developmental intergroup relations literature and furthers our knowledge about how children understand groups.

### **An Implicit Theory of Groups**

The findings obtained across chapters 4, 5 and 6 revealed that whilst the factor structure of an implicit group theory was identical for adolescents and adults, it was less similar in children aged 9-10 years. More specifically the results from study 2c suggested that although children had developed an understanding of groupness identical to that seen in the older age groups, younger children's understanding of the perceived malleability of groups was less well developed. This series of studies established an IGT as a variable of considerable importance in children, adolescents and adults, and the IGT scale as a viable measure that needs exploring further.

Little attention has been paid to children's understanding of groups despite the evidence that people use lay theories, to understand, predict and interpret the world around them (Hong et al., 2001). In the same way that adults understand the social world by generating lay theories and testing their utility, the studies in this thesis demonstrate that children and adolescents also hold naïve theories or ways of understanding their social world and use these to inform their decisions about other groups. These results support the earlier evidence of lay theories in children and young people, such as an implicit theory of individuals (Dweck, Chiu & Hong, 1995a), and the protestant work ethic (PWE; Levy et al, 2005; Levy et al, 2006).

### **Children's understanding of groups**

The results of the current studies also support earlier work on the developmental model of subjective group dynamics (DGSD; Abrams et al., 2009). Whilst partly accounting for the developing cognitive and reasoning skills of children, the strength of this theory lies in its inclusion of a growing social awareness of children between the ages of five and twelve years (e.g., Abrams et al., 2007). In accordance with the social understanding hypothesis the DGSD suggests that intergroup bias may actually increase with age because children develop greater awareness and understanding of the norms around group membership and loyalty.

This study both supports, and adds to that reasoning, via the finding that children's understanding of groups, and in particular the perceived malleability of groups, becomes both more structured with age, and impacts their intended behaviour towards groups. Together these findings suggest that as children get older, they have an increased awareness of how groups work, and ultimately an IGT develops with knowledge and experience of one's own group membership and differences between groups. If that understanding of groups develops in a way in which an individual comes to perceive groups as fixed, and having little potential for development, then the studies reported here suggest that this mindset is likely to be associated with both higher levels of SDO and generalised prejudice.

In this way the development of an IGT supports, to some degree, ideas founded in the Developmental Intergroup Theory (DIT; Bigler & Liben, 2006; 2007), and those suggested by Hirschfeld (2001). Both argue that children are not passive recipients of the information from their social worlds, but rather they construct their knowledge and theories according to both their cognitive competence together with evidence and experience from their social reality. What these perspectives have in common, as well as with Cameron et al's (2001) similarity-difference lay theory, is that they all offer a perspective that is grounded in cognitive socialization but with an emphasis more strongly on socialisation. Children (and adult) understanding of the perceived malleability of

groups is not universal, as the results of the current studies show, and arguably is impacted by their individual experiences of socialisation. Furthermore, it has been demonstrated that lay theories can be manipulated through direct means, via cultural learning and when experiencing real life socio-political change (e.g., Halperin et al, 2011; 2012; Levy, Stroessner & Dweck, 1998). Whilst the explanation of how an implicit theory of groups develops in childhood is beyond the scope of this thesis, it is reasonable to assume that it depends partly on cognitive maturity, whether children are ready to understand conceptually based theories, and socialisation processes.

With age, peer group norms become increasingly influential (e.g., Albert et al., 2013; Ciranka & Van den Bos, 2019; Nickerson & Nagle, 2005) and an increased understanding of how peer groups work is needed in order for children and adolescents to navigate the social world. Whilst cognitive abilities such as multiple classification, develop in middle childhood and according to SCDT should predict a decline in prejudice after this time, adolescents still exhibit prejudice and intergroup bias. In Study 3b a measure of empathy was included to provide divergent validity for the IGT measure. Whilst a negative correlation between empathy and IGT was found, this was not significant. Perspective taking and empathy have been shown to undergo a temporary decline in adolescence (Hoffman, 2000; Van der Graff, 2014; Van der Graff et al., 2014) which may be due to cognitive and physiological changes that occur during puberty (Blakemore & Choudhury, 2006), and may also partly explain the results of the current study to some degree. These findings also support the need for a greater understanding of how groups work, group loyalty norms, and 'why fitting in' become increasingly important during this period, as personal identity becomes embroiled with social identity (Albarello et al., 2017). The studies in this thesis demonstrate that adolescents' understanding of group functioning becomes more similar to that of adults, and given that social groups become increasingly important to social identity and self-esteem, judgments are being made about who they spend their time with. These judgments are influenced both by adolescents' cognitive and physiological changes as well as their growing understanding of groups.

## Generalised Prejudice

The finding that adolescents' understanding of the perceived malleability of groups is associated with lower levels of willingness for contact with other groups is theoretically important for two reasons. Firstly, it is the first time a lay theory or individual difference variable has been associated with generalised prejudice in a sample with participants as young as 12-14 years; individual differences and generalised prejudice have long been the domain of adult studies. And secondly, because the results suggest that children as young as 12 are expressing lower levels of willingness for contact with a range of groups when they understand groups as more fixed in nature.

Individual difference variables, such as SDO, RWA, religiosity, and personality, are well supported as predictors of generalised prejudice in the adult literature (e.g., Akrami et al., 2011; Batson & Stocks, 2005; Sibley & Duckitt, 2008), and whilst an implicit theory of groups has been shown to be associated with and predict higher endorsement of stereotyping (e.g., Rydell et al, 2007) until now it has not been associated with generalised prejudice. The results from these studies show a clear association between higher levels of fixed thinking about groups (groups are fixed and not malleable) and generalised prejudice in the forms of more negative attitudes and lower willingness for contact with a range of groups.

The finding that adolescents' levels of fixed thinking about groups is also associated with lower willingness for contact is arguably even more significant. Intergroup bias in adolescence is not uncommon (e.g., Costa & Davies, 2012; Crocetti et al., 2021; Lam et al., 2006) however, what the current studies demonstrate is that holding a fixed theory of groups at a young age can have very real and negative associations with willingness for contact. In other words, for children as young as 12 years of age their understanding and thoughts about the malleability of groups impacts their behaviour towards those groups.

Lower willingness for contact is problematic in both adolescents and adults. Intergroup contact (Allport, 1954) is widely cited as an effective tool for reducing prejudice (Pettigrew & Tropp,



2006; 2008), however one of most common reasons for higher rates of prejudice is a lack of contact between groups, a behaviour underpinned by intergroup anxiety and fear (e.g., Stephan & Stephan, 1985; Turner, West & Christie, 2013). Research suggests that although contact can reduce prejudice between groups (e.g., Pettigrew & Tropp, 2006), a lack of willingness or an avoidance of contact can also fuel prejudice (e.g., Binder et al., 2009; West et al., 2014). If young people's understanding of groups as fixed is developed by early adolescence and is associated with less willingness for contact, as demonstrated in the current thesis, then this does not bode well for either intended or actual future intergroup contact.

### **Social Dominance Orientation (SDO)**

A second individual difference variable of interest in the current thesis was Social Dominance Orientation (SDO; Pratto et al., 1994). Whilst being widely studied for its links to other variables such as RWA as well to generalised prejudice in adults, it has been relatively understudied in the child and adolescent literature. Historically it was assumed to develop in later adolescence (Chatard & Selinbegovic, 2008; Duckitt, 2001; Duriez & Soenens, 2009) despite evidence that even young children are aware of group inequality and intergroup unfairness (Tagar et al., 2017; Thomsen, 2020), and few tools exist to measure SDO in children.

A short version of an SDO scale was developed alongside the IGT measure, and provided good internal consistency for use with both adults and adolescents. Further work needs to be completed to test the scale for use with children younger than 12 years. However, despite being unable to test the scale with a younger population in study 3 the results from study 2 with children, and study 3 with older populations provide some interesting outcomes with regards to SDO, IGT and prejudice.

Higher levels of SDO were revealed to be associated with lower intergroup trust, and higher levels of generalised prejudice in adults. This is not a new finding, but it is the first time SDO has been linked to two dimensions of generalised prejudice – attitudes and willingness for contact. In

adolescents, higher levels of SDO were also associated with lower intergroup trust, and both measures of generalised prejudice. To my best knowledge, this is the first study to find an association between SDO and generalised prejudice in this age group and is a finding of clear theoretical importance to the developmental and intergroup literatures.

Developmental theories of prejudice have until now paid very little attention to individual differences and the impact they may have on the expression of prejudice in children and adolescents. Here, for the first time, a clear link is seen between SDO and generalised prejudice in a group of adolescents aged between 12 and 14 years. Higher levels of SDO were also found to be associated with a more fixed mindset by 9-10 years of age. Not only does this suggest that SDO, as we understand it, develops earlier than previously thought, but that an understanding of groups in terms of hierarchy and malleability are also related. Perceiving groups as fixed may be one way of justifying why groups should remain where they are in an established social hierarchy. SDO and IGT, represent ways of understanding groups, in terms of hierarchy and malleability, and both have a valid contribution to make towards our understanding of the development of prejudice in children. Future research is now needed to understand SDO in younger children, as well as how, why, and when SDO may develop.

Both of the scales developed within this thesis, the IGT and SDO scales, were intended for use with adults, adolescents and children. Whilst the evidence suggested that using the same items and wording was appropriate for adults and adolescents, it is reasonable to assume that a parallel measure with simpler wording may be necessary for use with children in order to facilitate their understanding. However, it is important to ensure that the items remain functionally similar to enable the measurement of the same construct. Having a scale that can be used across age groups is both methodologically and theoretically preferable. Methodologically it can ensure measurement invariance; that the same construct is being measured across different ages. And moreover, is useful for the longitudinal evaluation of the development of a variable such as IGT or SDO. Given that the

knowledge about how either of these constructs develops is relatively scant, the need for such a measure is highly relevant.

### **Summary of theoretical contribution**

This thesis contributes towards a growing body of literature supporting the argument that the development of prejudice is not merely a product of increasing cognitive maturity and skill, but rather that children and adolescents construct lay theories in order to navigate their social world. These lay theories provide children with a way of understanding groups, in the same way that they do for adults. Children's growing awareness of how groups work and function is demonstrated in the developmental model of subjective group dynamics and further supported by the current work on the development of an IGT, and clearly supports the idea that an individual's understanding of groups impacts their attitudes and behaviour towards those groups.

### **Summary of Practical Applications**

Successfully addressing prejudice and discrimination relies on robust psychological theory and evidence. Intergroup contact theory (Allport, 1954) provides one such approach, and evidence also suggests that interventions based around cognitive and social skills training may help to reduce prejudice in children and adults (Berger et al., 2018; Paluck & Green, 2009).

An implicit theory of groups, as presented in this thesis, provides another avenue for prejudice reduction interventions. As outlined in Chapter 2, implicit theories are not restricted to perceptions of groups, they originated in work on intelligence (e.g., Dweck & Leggett, 1988) and personality (Chiu, Hong & Dweck, 1997) and studies have also explored implicit theories in terms of morality (e.g., Chiu, Dweck et al., 1997), and relationships (e.g., Knee, 1998). Consistent evidence suggests that promoting a growth mindset can improve student grades (e.g., Broda et al., 2018),

student success in STEM subjects (Hacisalihoglu et al., 2020) and the motivation to learn (e.g., Burnette et al., 2018).

Whilst the evidence presented here suggests that young people's understanding of groups resembles that of adults by the time they reach early adolescence, implicit theories are not rigid or set for life, rather evidence suggests that they are themselves malleable and can be manipulated (e.g., Levy, Stroessner & Dweck, 1998; Rydell et al., 2007). Previous studies have suggested that changing adult's mindsets about the malleability of groups can improve attitudes towards long standing adversaries and the willingness to make compromises for peace (e.g., Halperin et al., 2011), and can increase adult's willingness for cross-race interactions (Carr, Dweck & Pauker, 2012).

Further evidence for the utility of an intervention based on the manipulation of implicit theories comes from evidence with high school aged students in the U.S (Yeager et al., 2011; Yeager et al., 2013). Whilst interventions to reduce aggression in high school aged students are often unsuccessful (Silvia et al., 2011), evidence from the studies by Yeager and colleagues suggest that inducing a growth mindset in students led to reduced propensity to respond to conflict situations with aggression. In other words, aggressive tendencies are not set by adolescence, as is commonly believed, but rather mindsets can underpin attitudes and behaviours, and more importantly can change and develop as people age and with new experiences.

The inclusion of a growth mindset in education is not, however, restricted to psychological studies. The growth mindset is a widely used tool in both tutor time and assemblies across schools in the U.K (Busch, 2018) and is used to support improvements in academic subjects, coping with transition, higher self-regulation and mental health initiatives. Research also suggests that 98% of teachers believe that adopting a growth mindset would lead to student improvement in learning, but that only 20% of them feel equipped to deliver sessions on fostering a growth mindset (InnerDrive, n.d.). Given that the growth mindset is already one of the most popular psychological theories within education, extending work to include a growth mindset of groups in society is a feasible initiative.

Current techniques such as changing the language students use (Prieur, 2022; Yeager et al., 2019), to reflect a growth mindset when talking about groups and social categories could be one simple technique that could be rolled out within school sessions, but also one that has a positive effect on young people's lay theory of groups.

The empirical findings of this thesis also provide exciting possibilities for further collaboration with the Anne Frank Trust UK (AFT). As alluded to in Chapter 3 the evidence presented has been made available to the AFT and content centered on young people's lay theories of groups and social hierarchy ideology has already made its way into some of the workshops provided to young people. The work on Social Dominance Orientation is particularly pertinent to their current workshops on Misogyny. Furthermore, items related to the perceived malleability of groups and SDO are currently being prepared to include in workshop evaluation.

The evidence in the current thesis suggests that mindsets about the malleability of groups are formed by around the age of 12 years, and that this impacts negatively on generalised prejudice. However, mindsets themselves are not fixed, and evidence suggests that beliefs about the fixed or malleable nature of groups can be altered in both adolescents and adults, and even in people living in situations of intractable conflict. Such an approach offers a new and exciting means to the design and implement prejudice reduction programmes. When interventions are designed around people's potential for learning and change, the opportunities to maximise this are clear with both novel learners, children who are still developing their understanding of groups, and more experienced learners, who may be open to change.

### **Limitations**

Critics may argue that the measures of generalised prejudice used in the studies reported here are explicit measures, and therefore open to social desirability bias. Whilst this is true to some degree the mean scores reported on both Contact Stars indicated that no group reported extremely positive attitudes or willingness for contact with the groups included on the star. Furthermore,

previous work conducted as part of the collaboration with the Anne Frank Trust UK (see Chapter 3) has explored the possible social desirability of these measures and shown that responses are not negatively affected by such a bias.

The use of the Contact Star is a relatively simple but novel method to evaluate prejudice towards multiple groups. Having so many social groups on the star inevitably means that the participants own ingroups may be represented. The study did not ask the participants how much they identified with each group on the star and therefore these were not controlled for in the analyses. However, as all participants are part of social groups, having multiple common groups on the Contact Star and using mean scores as a measure of generalised prejudice goes some of the way towards overcoming this issue.

In the last set of studies, the scale used to measure Implicit Theories was unidirectional for two main reasons: to avoid confusion on the part of the participants and to avoid 'attractive' and easy to endorse incremental items. Both of these were an attempt to increase reliability. Only including entity-based statements may be misconstrued as a flawed approach to categorising participants as either Entity or Incremental theorists, however evidence has demonstrated that disagreement with entity items can be taken to represent agreement with incremental items (Levy & Dweck, 1996), and therefore this is not a concern in the current study. Issues around using a mean split approach to identifying theory type from ordinal Likert scale data is also acknowledged, however this approach is standard practice in the Implicit Theories literature and has been shown to represent a 'true' reflection of theory type (e.g., Chiu, Hong & Dweck, 1997; Levy, Stroessner and Dweck, 1998).

Few studies recruit a cross section of age groups across a series of projects, and the inclusion of ten studies with adults, adolescents and children is a strength of the current work. One drawback however, was the lack of success in recruiting a sample of children for Study 3, and the smaller participant numbers for this age groups in Studies 1 and 2. The onset of Covid-19 delayed data

collection in all age groups, but significantly disrupted access to primary aged participants, and testing the model with a sample of 9–10-year-olds is necessary to further the contribution of this work. Whilst it was not possible to capture longitudinal data or data from more than two age ranges of children and adolescents, according to social cognitive developmental theory (Aboud, 1988) there is no evidence for cognitive changes between the ages included in the studies. Rather the social environment changes as children get older and therefore the changes captured in these studies may be considered social developmental rather than cognitive developmental and therefore the evidence still presents a strong developmental trend.

The research studies with children and adolescents that formed the empirical basis of this thesis were conducted in the south east of England between 2019 and 2022. Whilst data on ethnic identity was not collected in these age groups, the schools were based in and around two areas of Kent: Canterbury and Dover. Data from the 2021 census showed that 83.2% of residents in Kent identified as White English, Welsh, Scottish, Northern Irish or British. This figure was recorded as 82.5% for residents in Canterbury and 90.3% in Dover. It is reasonable to assume from these statistics that the majority of children and adolescents who completed the questionnaires in each of the studies identified as White English, Welsh, Scottish, Northern Irish or British, and that other ethnic identities were not well represented.

Ethnic identity was recorded in each of the studies conducted with adults. In studies 1a and 3a (conducted online) the proportion of participants identifying as White British was between 80 and 90%. In study 2a however, which was conducted with university students this figure dropped to just over half (53.5%). Whilst the differences in ethnic diversity between the studies did not appear to impact the results, the possible effect of ethnic status is a variable that needs to be considered. The effect of group status on the perception of groups and intergroup behaviours are relatively well documented (e.g., Dovidio et al., 2008; Guinote et al., 2015) and given that ethnic minorities are likely to have been underrepresented in these studies this may have had some effect on the results.

Future studies which explore an implicit group theory in any age group need to include a diverse sample and account for these potential differences.

Given the lack of work on implicit theories of groups, developing a new measure of an IGT was a challenge. And critics may argue that the development of items for inclusion in the measure of IGT had the potential to be more rigorous. Previous studies which had measured implicit theories of individuals rely heavily on the original scale developed by Dweck and colleagues (Dweck, Chiu & Hong, 1995a; Levy & Dweck, 1998). Furthermore, the items developed to measure implicit theories of groups, of which there were very few, relied heavily on adapting items from the original implicit person theory. Very few studies have discussed the qualitative differences between implicit theories of individuals and groups, and for that reason a number of items were created for testing and items were also borrowed from related areas such as essentialism and entitativity. The items were a combination of those from previously established measures and those created for the sole purpose of testing within studies 1a, 1b and 1c. Rigorous testing of the items was conducted across age groups, several phases of refinement took place and particular attention was paid to establishing the reliability and validity of the items.

The items were found to be less reliable in younger children, and this was potentially due to issues around wording of items, and scale properties such the inclusion of counter intuitive items. The third study in the series with children was unable to go ahead due to previously mentioned issues during the Covid 19 lockdowns, but testing of these items from study 3 is needed in future work. Whilst the items included in the studies were discussed with staff from the Anne Frank Trust, who have a wealth of experience in working with secondary aged students, advice was not sought from other sources such as teachers, children or educational professionals. On reflection, pilot testing the items in this way may have improved the reliability of the scales in the younger age groups and is an example of best practice when creating measures (Oppenheim, 2000). It is a useful



strategy and one that will be employed for any upcoming study which tests these items with younger children (Study 3c).

## **Future Directions for Research**

### **Testing the Two-Factor Model with 9-10 years**

The results of the studies in this thesis shed light on the differences in the understanding of groups according to age; with adolescent theories resembling those of adults to a greater degree than those of younger children. The model outlined in study 2 suggested that children have a similar understanding in terms of an IGT to older participants, but that whilst an understanding of groupness may be more fully established, a clear understanding of the malleability of groups is not yet fully formed. Analyses of the refined items and scales used in studies 3a and b, revealed an identical two factor model in adults and adolescents (perceived malleability and groupness), and this model needs testing with 9–10-year-olds.

### **Studies with Younger Participants**

Little is known about the development of lay theories in children. It is commonly accepted that socialisation plays a key role in how children come to form an implicit theory about themselves and other people (e.g., Dweck et al., 1995b), but evidence related to specific socialization practices or experiences are rare.

One of the only strands of research to answer the question of how lay theories develop in children, is concerned with the feedback that children are given by their parents and other carers. (e.g., Dweck, 1999; Heyman, Dweck & Cain, 1992, Kamins & Dweck, 1999). The study by Kamins et al. (1999) highlighted the role of feedback in an experimental situation using dolls and imaginary scenarios. After children performed a series of tasks, using the dolls to act the scenarios out,

teachers delivered one of four types of critical feedback (ranging from a critique of the child, to feedback that guided the children towards alternative future strategies). The results demonstrated that the feedback children were given significantly affected the way they judged themselves. The children who had received the person judgement (such as 'I'm very disappointed in you') rated themselves as sadder, and came up with fewer strategies for fixing their mistakes. The group who had received feedback orientated towards future strategies displayed the most positive and constructive responses.

But how might such feedback influence a child's implicit theory? The authors of these studies suggest that feedback pertaining to personal judgement conveys information to the child that the adult views the child's behaviour as a permanent quality (for example a child's morality or intelligence). In contrast feedback that is oriented towards future strategies, suggests to the child that any mistakes can be rectified through alternative approaches or effort. Studies such as this further support the argument that children are ready and prepared to learn from their social worlds, and that implicit theories are frameworks that we develop to understand that social world.

Whilst the evidence outlined above pertains to implicit theories of individuals, it is reasonable to assume that children acquire knowledge about groups in a similar manner. Feedback given about groups within a child's world may enforce or discourage a theory about their malleability. Similarly, children's implicit theories may be directly impacted by intergenerational transmission of such theories. Research is beginning to emerge which suggests that SDO (e.g., Chatard & Selimbegovic, 2008) and RWA (Duriez et al., 2008) are passed on through familial generations, and given the close association of these variables it is reasonable to propose that IGT may be socialised in a similar manner. Further work with younger participants is needed if we are to be able to begin to answer these questions.

### **The Interaction of Gender and Implicit Theories.**

Gender is widely considered to be the first social category that children become aware of (e.g., Powlishta, 2004), with evidence suggesting that infants are aware of rudimentary gender categories by the middle of their first year of life (Fagan & Shepherd 1981; Fagan & Singer, 1979; Katz, 1996). Categorisation based on gender shows a sharp increase between the ages of 18 and 22 months (Johnston et al., 2001) and children have been consistently shown to sort photographs based on gender by 2 to 3 years of age (Katz, 1996; Yee & Brown, 1994). Gender is very salient to children by this age and there is evidence of ingroup favouritism based on gender in young children (e.g., Hilliard & Liben, 2010; Maccoby, 1998) and the emergence of gender stereotypes (e.g., Eichstedt et al., 2002; Katz, 1996; Ruble & Martin, 1998).

Common gender stereotypes include males as more agentic, and females as more nurturing, however other gender stereotypes exist around levels of intelligence and aptitude for subjects such as maths and sciences (e.g., Bian, 2022). Whilst the impact of such stereotypes is well documented (see Ellemers, 2018), the ways in which these stereotypes interact with an implicit theory has also been considered. Evidence suggests that females are not only more likely than males to hold an entity theory of intelligence but that girls' intelligence is also less likely to be perceived as malleable than the intelligence of boys by others (e.g., Todor, 2014; Verniers & Martinot 2015). Further evidence suggests that females have a weaker belief in an incremental theory of physical or sporting ability than males (e.g., Danthony et al., 2020; Li et al, 2004), and that girls more strongly endorse an entity theory of personal attributes (Schleider & Weisz, 2016).

Whilst gender was not explored within this thesis, previous evidence which suggest that females are more likely to endorse an entity theory across a number of domains, may have important consequences for an implicit theory of groups. However, gender has also been shown to play a role in the expression of social dominance orientation, whereby males generally exhibit higher levels than females (e.g., Levin, 2004; Wilson, 2003). Gender stereotypes such as those which

promote a norm of competition for males, and less aptitude for STEM subjects in females, may influence the development of lay theories of malleability and hierarchy in males and females. Whilst females more strongly endorse entity theories and males display higher levels of social dominance it is not known how people's understanding of gender may influence an implicit theory of groups, and this is therefore of interest for further research.

### **Types of Groups**

The literature presented in Chapters 1 and 2 highlighted the work by researchers such as Lickel et al. (2000), which discusses the perceptions of groups according to properties such as entitativity and has led to a taxonomy of groups including social categories, task groups, intimacy groups and loose associations. This research demonstrates that not all types of groups are categorised in the same way and furthermore some are more likely to be subjected to stereotyping and prejudice than others.

The current study approached the categorization of a groups in a very general manner, with groups being described as anything from a social category such as gender to smaller more intimate or task-oriented groups such as sports teams. However, the possibility exists that we develop a lay theory of groups according to group type. Are some groups more malleable than others? Are some groups more homogeneous than others? The research by Lickel and colleagues would suggest that the latter is indeed the case – people perceive task or intimacy groups to be more homogenous than social categories. The question then arises around whether we form different implicit theories about different types of groups, and how they might impact our intergroup attitudes and behaviours towards those different types of groups.

### **Minority and Majority Groups**

In addition to holding different theories of groups according to the type of group, it is also possible that people's different experiences of groups, as either a member of a majority or a minority

group, also influences their understanding of group malleability and homogeneity. It is rare for social groups to occupy similar positions within society in terms of factors such as group status, size or power, and the position that a group occupies affects both the group members' social experiences and social perceptions (Guinote, 2004).

Evidence suggests that minority and majority group members perceive group homogeneity differently, with majority group members perceiving their ingroup to be more heterogeneous than the outgroup (the outgroup homogeneity effect), whilst minority group members perceive the outgroup as more heterogeneous than their ingroup (Devos et al., 1996). Similarly, when group members occupy a minority position within society or are dependent on outgroups, they tend to be more attentive to the variability within the outgroup. Group members who are part of the majority position by contrast, pay less attention to outgroup or minority group members (Guinote, 2001). Research also suggests that those who hold an entity theory pay more attention to trait properties and often disregard counterstereotypical information about outgroup members (e.g., Plaks et al., 2001). Taken together these pieces of evidence suggest that minority members may view outgroups in a style of thinking more akin to incremental thinking and as such their understanding of groups may be one that views groups as more malleable than fixed in nature. Group membership, and factors such as power and status are areas which need to be considered in any future research on this topic.

### **Conclusion**

The aim of this thesis was to develop and test a measure of Implicit Group Theory (IGT) for use with children, adolescents and adults, and to explore the association of that theory with generalised prejudice in these age groups. To do this, existing theories of prejudice development were discussed and it was argued that whilst providing a solid knowledge base, the theories have limitations. In order to highlight these limitations, it was necessary to spotlight the lack of research

on individual differences and generalised prejudice in the developmental literature. It was argued that whilst many individual difference variables have been robustly linked to generalised prejudice in adults, an implicit theory of group is missing from that research base, both in terms of adult and child studies.

The empirical chapters within the thesis developed and tested a measure of Implicit Group Theory that was comprised of two factors: perceived malleability of groups, and groupness. The latter was made up of items including perceived homogeneity, entitativity and essentialism. The model structure was found to be identical across adolescents and adults, but less similar in younger children.

One of the factors of IGT, perceived malleability, was associated with generalised prejudice in both adults and adolescents. Furthermore, IGT was found to be associated with social dominance orientation, and the study is the first to demonstrate a link between social dominance orientation and generalised prejudice in adolescents. It was argued that greater clarity is needed around children's understanding of groups, and the impact that understanding has on intergroup attitudes and behaviours. More research is needed to better understand how individual differences, including perceived malleability of groups, develops in children and how it impacts their intergroup attitudes. The present findings leave us optimistic however for the use a growth mindset of groups as a tool for generalised prejudice reduction across age groups.

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APPENDIX A

The Contact Star

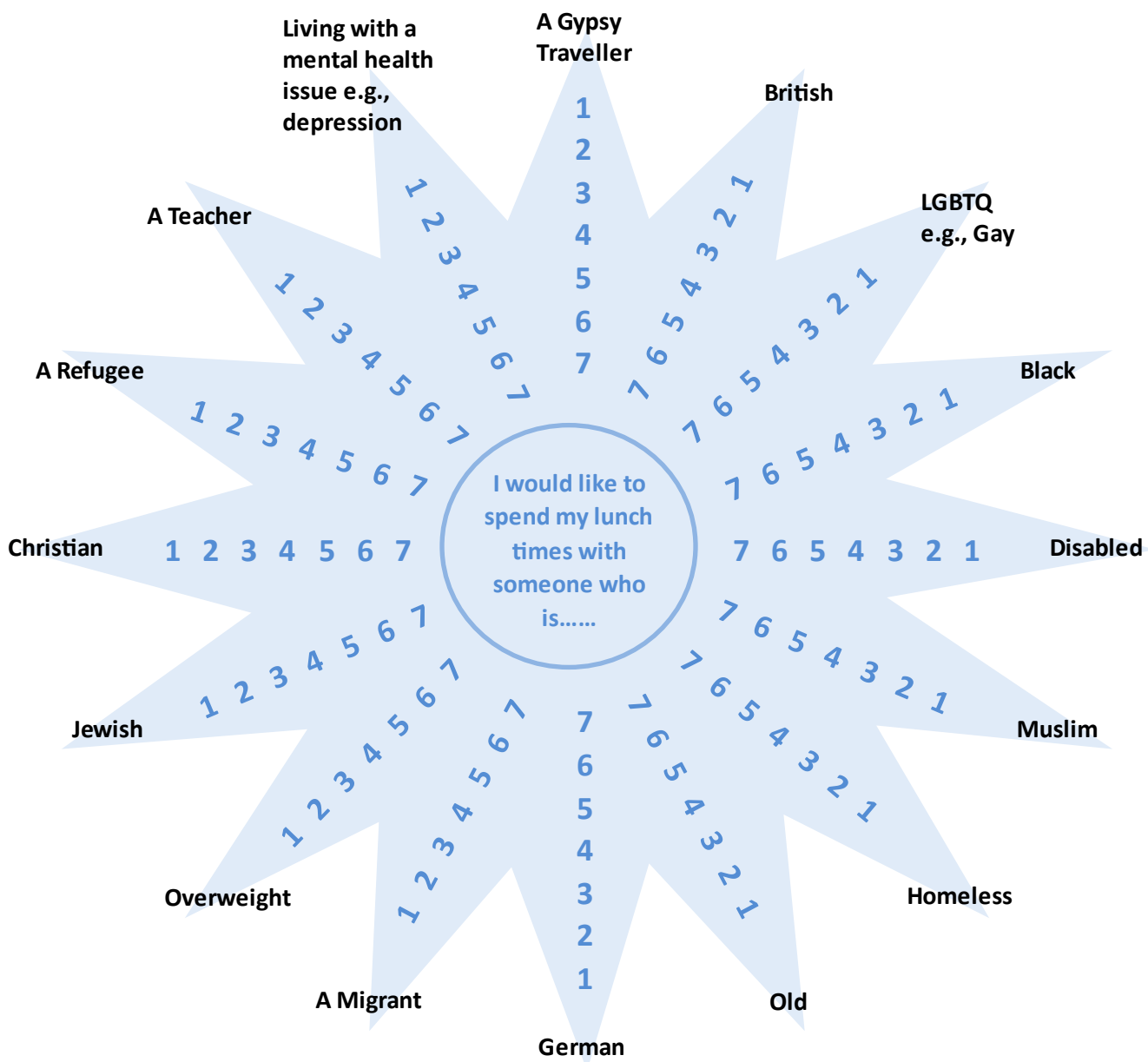


Imagine that you have to spend lunch time for a week with **one person you had never met before**.

How much would you like it if this person was...

(Use the star to mark your answers, **1** = Not at all like to, **4** = Neither like or dislike, **7** = very much like to.

Please make sure you choose **one number for each person**.)



## APPENDIX B

## Feelings of Commonality Measure

Using the grid below, please think about how much you may or may not have in common with the person who is...

Please tick only **ONE** box per row



	 1 Nothing in common	 2 A little in common	 3 Quite a lot in common	 4 Very much in common
LGBTQ e.g., Gay				
Disabled				
Christian				
A Gypsy Traveller				
British				
German				
Overweight				
Black				
A Teacher				
Muslim				
Jewish				
Someone living with a mental health issue e.g., depression				
A Refugee				
Homeless				
A Migrant				
Old				



## APPENDIX C

## Pilot Knowledge, Empathy and Confidence Measure (KEC)

Please read the following statements carefully and decide how much each one could be used to describe you. Your answers are completely confidential and anonymous, so you can be completely honest and not have to worry about being judged or having your answers shared. Please select only one answer for each statement.

## Section 1: Empathy and Motivation to control prejudice measures.

I sometimes try to understand my friends better by imagining how things look from their perspective.	1 Not at all like me	2 Not much like me	3 A bit like me	4 Quite a lot like me	5 Very much like me
When I'm upset at someone I usually try to 'put myself in their shoes' for a while.	1 Not at all like me	2 Not much like me	3 A bit like me	4 Quite a lot like me	5 Very much like me
Before criticizing somebody, I try to imagine how I would feel if I were in their place.	1 Not at all like me	2 Not much like me	3 A bit like me	4 Quite a lot like me	5 Very much like me
When someone gets hurt in my presence, I feel sad and want to help them.	1 Not at all like me	2 Not much like me	3 A bit like me	4 Quite a lot like me	5 Very much like me
I would describe myself as a pretty soft-hearted person.	1 Not at all like me	2 Not much like me	3 A bit like me	4 Quite a lot like me	5 Very much like me
I care for my friends a great deal.	1 Not at all like me	2 Not much like me	3 A bit like me	4 Quite a lot like me	5 Very much like me
I really get involved with the feelings of a character in a story.	1 Not at all like me	2 Not much like me	3 A bit like me	4 Quite a lot like me	5 Very much like me
Being in a tense emotional situation scares me	1 Not at all like me	2 Not much like me	3 A bit like me	4 Quite a lot like me	5 Very much like me
I sometimes feel helpless when I am in the middle of a very emotional situation.	1 Not at all like me	2 Not much like me	3 A bit like me	4 Quite a lot like me	5 Very much like me

It is not OK with me to use stereotypes about people in other ethnic groups.	1 Not at all like me	2 Not much like me	3 A bit like me	4 Quite a lot like me	5 Very much like me
I try not to say the wrong thing about other ethnic groups so people won't think I'm prejudiced.	1 Not at all like me	2 Not much like me	3 A bit like me	4 Quite a lot like me	5 Very much like me

Section 2: Knowledge, Confidence and Self-esteem measures.

I feel confident.	1 Strongly disagree	2 Somewhat disagree	3 Neither agree nor disagree	4 Somewhat agree	5 Strongly agree
I know a lot about what prejudice is.	1 Strongly disagree	2 Somewhat disagree	3 Neither agree nor disagree	4 Somewhat agree	5 Strongly agree
I know a lot about the harm prejudice can cause.	1 Strongly disagree	2 Somewhat disagree	3 Neither agree nor disagree	4 Somewhat agree	5 Strongly agree
On the whole I am satisfied with myself.	1 Strongly disagree	2 Somewhat disagree	3 Neither agree nor disagree	4 Somewhat agree	5 Strongly agree
At times I think I am no good at all.	1 Strongly disagree	2 Somewhat disagree	3 Neither agree nor disagree	4 Somewhat agree	5 Strongly agree

Section 3: Social desirability measures.



I sometimes litter.	Yes	No
I always admit my mistakes openly and face the potential negative consequences.	Yes	No
I always accept others' opinions, even when they don't agree with my own.	Yes	No
In conversations I always listen attentively and let others finish their sentences.	Yes	No

I never hesitate to help someone in case of emergency.	Yes	No
I occasionally speak badly of others behind their back.	Yes	No
I always try to stay courteous with other people even when I am stressed out.	Yes	No
There has been at least one occasion when I failed to return an item that I borrowed.	Yes	No
I always eat a healthy diet.	Yes	No
Sometimes I only help because I expect something in return.	Yes	No

APPENDIX D

Revised Knowledge, Empathy and Confidence Measure (KEC)

# EMPATHY PRE QUESTIONNAIRE

Your answers are completely private, confidential and anonymous. This means you can be completely honest and not worry about being judged or having your answers shared!

**Gender**

**Age**

**School**

**Date**

**Do you follow/belong to a religion? If so which one?**

**How would you describe your ethnicity?**

**Your class/form and initials**

Please read the following sentences that could be used to describe you. Decide how much you agree with each sentence by selecting one answer only for each row

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I know a lot about what prejudice is	( 1 )	( 2 )	( 3 )	( 4 )	( 5 )
I know a lot about the harm prejudice can cause	( 1 )	( 2 )	( 3 )	( 4 )	( 5 )

**Page 1**

# EMPATHY PRE QUESTIONNAIRE



I sometimes try to understand my friends better by imagining how things look from their perspective

Strongly disagree

Disagree

Neither agree nor disagree

Agree

Strongly agree

1

2

3

4

5

Before criticising somebody, I try to imagine how I would feel if I were in their place

Strongly disagree

Disagree

Neither agree nor disagree

Agree

Strongly agree

1

2

3

4

5

When I'm upset at someone I usually try to 'put myself in their shoes' for a while

Strongly disagree

Disagree

Neither agree nor disagree

Agree

Strongly agree

1

2

3

4

5

I feel confident about myself in general

Strongly disagree

Disagree

Neither agree nor disagree

Agree

Strongly agree

1

2

3

4

5

I feel confident talking about prejudice

Strongly disagree

Disagree

Neither agree nor disagree

Agree

Strongly agree

1

2

3

4

5

## APPENDIX E

## Workshop Questionnaire 2021

# POST WORKSHOP QUESTIONNAIRE



## Your initials

Up to four letters

## What is your birthday

Example. 26 July



## How much do you agree?

Tick one answer for each statement	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I know what prejudice means	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can see when someone is being prejudice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can understand how it feels to be a victim of prejudice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Challenging all types of prejudice is important to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I understand how prejudice can cause harm	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel confident about how I can challenge prejudice	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It's ok to call someone names because of their appearance, disability, gender, race, religion, or sexuality, as long as you're only joking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## What would you do?

One lunchtime at school, you hear a pupil in your class saying prejudiced things about a particular group of people because of their appearance, disability, gender, race, religion or sexuality. Please tick all the things you would definitely do.

- Ask them to stop
- Record or film them on a phone
- Use violence against them
- Tell a teacher or other adult
- Report to the police
- Ignore them or do nothing
- Other - please specify

One day after school, you see someone about your age being bullied because of their appearance, disability, gender, race, religion or sexuality. Please tick all the things you would definitely do.

- Ask them to stop
- Record or film them on a phone
- Use violence against the bully
- Tell a teacher next time you're in school
- Ask the victim if they're ok
- Report to the police
- Tell a parent or other adult
- Ignore or do nothing
- Other - please specify

One day on social media, you find a video/post that makes fun of someone because of their appearance, disability, gender, race, religion or sexuality. Please tick all the things you would definitely do.

- Tell a parent or teacher
- Share the video/post with friends
- Share the video/post with everyone
- Report it to the social media provider
- Report to the police
- Ignore or do nothing
- Other - please specify

## Appendix F

### Questionnaire Items (Study 1a - Adults)

1. Every group is a collection of certain type of people, and there is not much that can be done to really change that.
2. Groups can change even their most basic qualities.
3. No matter what kind of group you look at, their members can always change very much.
4. As much as I hate to admit it, you can't teach an old dog new tricks. Groups can't really change their deepest attitudes.
5. Every group, whatever it is, can significantly change its basic characteristics.
6. Groups can substantially change the kind of group they are.
7. Groups can do things differently, but the important things about the group's identity can't really be changed.
8. Every group has basic moral values and beliefs that can't be changed significantly.
9. The groups that someone belongs to are fixed and cannot be changed.
10. The groups someone belongs to tells us a lot about them as a person.
11. People who share the same group generally hold the same views as each other about things.
12. I can definitely trust people from the same group as me more than people from other groups.
13. People can always change the group to which they belong.
14. The characteristics of a group can always change and adapt.
15. A group is made up of all sorts of people; they do not have to all be similar or hold similar views on things.
16. People are just people; I can trust anyone regardless of what group they belong to.
17. It is fairly easy to tell what a group is like by observing some of their members once or twice.
18. Individual members do not generally reflect what their group is like as a whole.
19. Members of a group should support one another no matter what the situation.
20. If a member of your group acts 'out of character' and embarrasses the group it is likely to be a one off mistake.
21. Groups should not put up with members who support the norms and values of another group more strongly than their own.
22. In general, the world treats groups fairly.
23. Groups mostly get what they deserve.
24. Groups generally treat each other fairly in life.
25. Groups earn the rewards and punishments they get.
26. Groups get what they are entitled to have.
27. Groups' efforts are noticed and rewarded.
28. When groups meet with misfortune, they have brought it upon themselves.
29. Relationships between groups in society are fixed and no amount of interaction between them can change that.
30. Groups in society give the world order, so clear divisions between them should be maintained.
31. Interaction between social groups is of no practical benefit to everyday life.
32. Interaction between different groups helps them develop and change.
33. People of different groups who live and work side by side can learn from one another.
34. Groups are different from each other for a reason and don't mix well.

35. Encouraging people from different groups to interact will make the world a better place.
36. People from different groups will never see eye to eye.
37. No matter which groups people belong to they can all learn from each other.
38. To get ahead and be successful in life, it is sometimes necessary to step on other groups of people.



## Appendix G

### Questionnaire Items (Study 1b and 1c – Adolescents and Children)

All items appeared with the following scale:



Strongly  
Disagree



Disagree



Neither



Agree



Strongly Agree

Disagree

Agree/Disagree

1. The group someone belongs to cannot be changed.
2. Members in a group can all be described in the same way; there is not much difference between them.
3. Groups can't really change the way they are.
4. The important things that people in a group have in common with each other do not change.
5. Groups can change even their most basic characteristics.
6. Groups are usually made up of a certain type of person and there is not much that can be done to change this.
7. Every group has basic beliefs and attitudes and that can't be changed.
8. Even if groups act differently to usual the members of the group don't change who they are.
9. Any group can change and develop.
10. I can trust someone from my own group more than I can trust someone from other groups.
11. A group is made up of all sorts of people; they don't all have to think the same.
12. People can always change the group they belong to.
13. I can trust someone from another group just as much as someone from my own groups.
14. People who don't fit in with their group should not expect to be able to stay in that group.
15. Groups expect their members to be on their side and not stick up for other groups more.
16. It is OK if some groups of people have more chances to do well than other groups of people.
17. Some groups of people are more important than other groups of people; and that is a good thing.
18. It is important that different groups of people mix so that they can learn about the other groups.
19. Groups think differently from each other about most things and will never agree.
20. It is a good thing if groups are separate from each other because they might not get on.
21. No matter which group we belong to we can all learn from other groups of people.

**Appendix H****Example Information Letter for Parents/Carers**

Katie Goodbun

School of Psychology

University of Kent, Canterbury

kjg29@kent.ac.uk

Date

RE: Important information about a research project being conducted at your child's school

University of Kent Psychology Ethics Approval XXX]

Dear Parents /Carers,

My name is Katie Goodbun and I am a researcher in the School of Psychology at the University of Kent. I am currently working on a research project looking at how children understand group membership and group interaction. The study is being supervised by Professor Dominic Abrams who is a researcher in the department here at Kent.

XXX would like XXX School to participate in the project. I would be most grateful if you would allow your child to take part. We are interested in how children of different ages understand groups, whether this changes over time (i.e. with age) and whether this understanding influences attitudes to groups. This initial stage of the research is concerned with narrowing down which aspects of children's thoughts about groups can be meaningfully measured.

Students who participate will be asked to complete a short questionnaire taking around 10-15 minutes; this will involve indicating their level of agreement to a number of statements and it will be made clear before the questionnaire that there are no wrong answers – it is not a test. All answer booklets that the students use will be given a unique code to enable me to keep track of the data and ensure that all answers are confidential and anonymous; no access to school registers will be required. All data

will be stored according to GDPR guidelines. Finally, we will, of course, ask your child whether they assent to participating before beginning. If they do not agree, they will just continue normal school activities.

As well as having experience at conducting research of this type I have been trained by and will be supervised by a professional researcher at the University. The University conducts police criminal records checks on all researchers (including me) working with children. Furthermore, our research has been reviewed by the University’s Psychology Ethical Review committee (<http://www.kent.ac.uk/psychology/ethics/>) to ensure that it meets ethical guidelines and poses minimal risk to participants. Studies involving children are subject to the fullest review by the committee. We have also obtained permission from the school’s headteacher before beginning the study and we will coordinate with teachers to ensure minimal disruption within the classroom. My colleagues and I generally find that the students really do enjoy taking part. After taking part in the study, children will be given a letter to take home outlining in more detail the purpose of the study.

Although XXX has most kindly allowed me access to the school, I will not include your child if you object to their participation but you need to let me know this. If you do NOT wish your child to take part please let us know by EITHER:

1. Returning a signed copy of the slip below to the school
2. Contacting me by email at [kjg29@kent.ac.uk](mailto:kjg29@kent.ac.uk) with your child’s name to indicate that you do NOT wish your child to take part.

If you are happy for your child to take part, you do not need to do anything. Unless we receive a signed copy of the slip below by XXX, we will assume you are happy for your child to take part. Should you decide after the study that you no longer want your child’s data included, simply contact me and I will withdraw your child’s data. If you have any further questions, please do not hesitate to contact me on [kjg29@kent.ac.uk](mailto:kjg29@kent.ac.uk). Thank you for your cooperation.

Sincerely,

Katie Goodbun

.....

I DO NOT give permission for my child to participate in Katie Goodbun’s project.

Name of pupil.....

Signature of parent / guardian.....

If you have any serious concerns about the ethical conduct of this study, please inform the Chair of the Psychology Research Ethics Panel in writing, providing a detailed account of your concern.

Email: [psychethics@kent.ac.uk](mailto:psychethics@kent.ac.uk) or Post: Ethics Chair, School of Psychology, University of Kent, Canterbury, CT2 7NP.

## Appendix I

### Example Post Study De-Brief Letter for Parents/Carers



Katie Goodbun

[kjg29@kent.ac.uk](mailto:kjg29@kent.ac.uk)

School of Psychology

University of Kent

Dear Parent/Guardian

Thank you for allowing your child to take part in my research study.

This study was an investigation into how well a range of statements about groups capture children's understanding of group membership and the ways in which groups interact. Although we are all part of many groups, smaller groups such as families, friendship groups or sports team, and larger groups such as cultural, ethnic and national groups, we rarely think at a conscious level about how these groups work. Understanding how people think about groups will enable us to more clearly understand their attitudes and behaviours towards other groups in society.

Your child indicated their agreement to a number of different items on groups, ranging from statements on group loyalty and trust, to group interaction and development. The children were given full instructions before they started and support from the researcher/teacher if they had any questions before, during or after taking part.

We anticipate that the results from this study will help us identify which statements better capture children's ideas about groups and will enable us to form a reliable and valid scale to measure children's theories about groups.

The data collected in this study is anonymised and confidential. However, if you change your mind about your child's data being included or have any questions regarding this study, please feel free to contact me on the email address at the top of this letter.

Thanks again for your co-operation.

Yours Sincerely,

A handwritten signature in black ink on a light blue background. The signature is cursive and appears to read 'Katie Goodbun'.

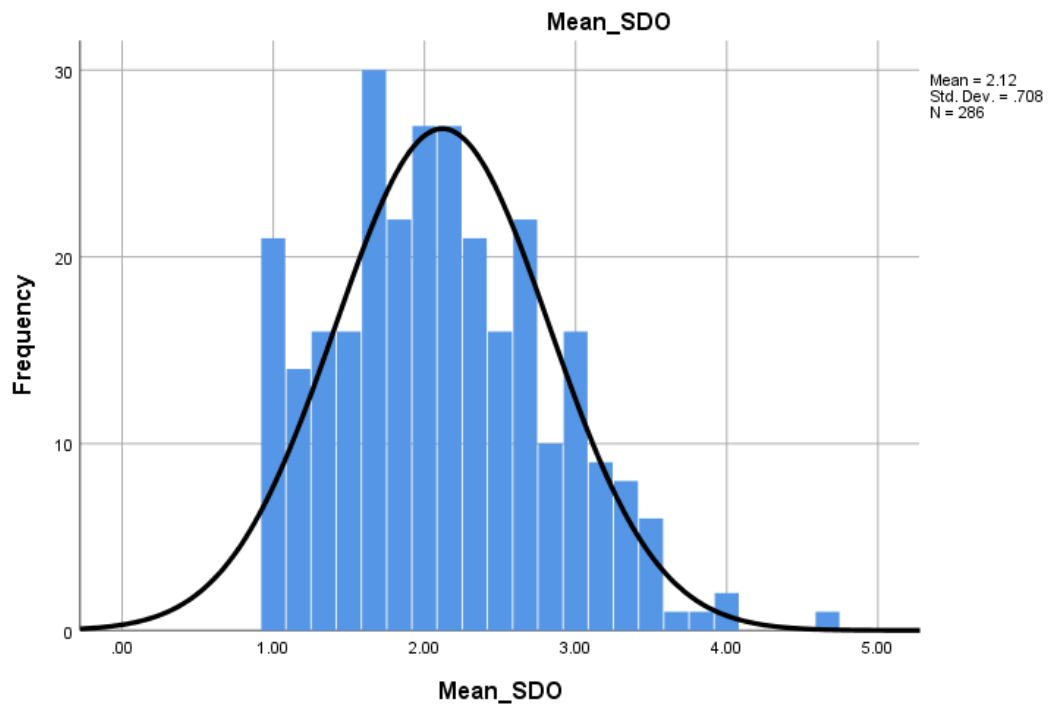
(Katie Goodbun)

**APPENDIX J****Questionnaire Items (Study 2a and 2b - Adults and Adolescents)**

1. Groups can change even their most basic qualities
2. Groups cannot substantially change the kind of group they are.
3. Any group can change and develop
4. The group someone belongs to cannot be changed
5. People can always change the group they belong to
6. The groups someone belongs to tells us a lot about them as a person
7. People who share the same group generally hold the same views as each other
8. A group is made up of all sorts of different people; they don't have to think the same
9. Every group is a collection of a certain type of person
10. Different groups of people who interact can learn from each other
11. No matter which groups people belong to they can all learn from each other
12. Groups generally keep separate from each other because they don't get on
13. In general groups don't want to interact with each other
14. Relationships between groups in society can't be changed
15. To be successful in life it is sometimes necessary for some groups to step on other groups of people.
16. Some groups of people are more important than other groups of people
17. It's OK if some groups have more of a chance in life than other groups
18. All groups should be given an equal chance in life
19. It's a good thing that in society some groups are at the top and other groups are at the bottom.

20. No single group should dominate in society.
21. People can trust members of other groups less than members of their own group.
22. Groups can trust their own members more than anyone else.
23. All members of a group generally share common group goals
24. The characteristics of a group tend to be stable over time and context
25. In terms of what defines them, all members of a given group are largely the same underneath the surface

**Appendix K**  
**Distribution of Mean SDO Scores (Study 2a – Adults)**



*Note.* N =286, M = 2.12, SD =0.71.



**Appendix L****Information Sheet/Answer Booklet (Study 2b – Adolescents)**

(School Code)

(Unique Code – e.g., 01)

## Information Sheet

This study aims to explore the way in which children and young people understand group membership. Groups can take lots of different forms, for example gender, nationality, ethnicity, culture etc.

By filling in this answer booklet you will be telling us what you think about groups and the way that groups behave together.

This is not a test! None of your answers are right or wrong, we just want to know what you think.

All of your answers are confidential and anonymous; so other pupils, your parents and your teachers will not know what you write, and we will not ask for your name. This means you can answer all of the questions honestly because they will stay private.

Remember:

- This is not a test; there are no right or wrong answers.
- Don't talk to your friends whilst you are filling in this answer booklet – we want to know what YOU think.
- If you have any questions or want to stop at any time, please put up your hand.

Before we start, please fill in a few more details about yourself:

What are your year group and class? \_\_\_\_\_

What is your gender? (Please tick)

Male	<input type="checkbox"/>
Female	<input type="checkbox"/>
Other	<input type="checkbox"/>
Prefer not to say	<input type="checkbox"/>

Put the first letter of your FIRST name here: \_\_\_\_\_

Put the first letter of you SURNAME here: \_\_\_\_\_

Thank you 😊. Someone will now collect your information sheet. Now turn to your answer booklet.

## Answer Booklet

One last detail before we start. Using the questions below can you tell us your date of birth?

Circle the day you were born:

1	2	3	4	5	6	7	8	9	10	
11	12	13	14	15	16	17	18	19	20	
21	22	23	24	25	26	27	28	29	30	31

Circle the month you were born:

Jan	Feb	March	April
May	June	July	August
Sept	Oct	Nov	Dec

Circle the year that you were born:

2002	2003	2004
2005	2006	2007
2008	2019	2010

Here are some questions about groups. To show how much you agree with each sentence please only circle **one** answer to each question.

For example, if the statement was:

- Strawberry ice-cream is the best flavour ice cream

If you **completely** agree with this you would circle strongly agree, like this:



If you **completely** disagree with the statement you would circle strongly disagree, like this:



If you don't agree or disagree with the statement you would circle the option neither agree/disagree, like this:



Remember:

- This is not a test; there are no right or wrong answers.
- Don't talk to your friends whilst you are filling in this answer booklet – we want to know what YOU think.
- Circle just one answer to each statement.
- If you have any questions or want to stop at any time, please put up your hand.
- Groups can take lots of different forms e.g. gender, nationality, ethnicity, age, culture etc.

1. Groups can change even their most basic qualities.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

2. Groups cannot substantially change the kind of group they are.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

3. Any group can change and develop.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

4. The groups someone belongs to cannot be changed.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

5. People can always change the group they belong to.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

6. The groups someone belongs to tells us a lot about them as a person.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

7. People who share the same group generally hold the same views as each other.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

8. A group is made up of all sorts of people; they don't all have to think the same.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

9. Every group is a collection of a certain type of person.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

10. Different groups of people who interact can learn from each other.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

11. No matter which groups people belong to, they can all learn from each other.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

12. Groups generally keep separate from each other because they don't get on.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree



13. In general groups don't want to interact with each other.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

14. Relationships between groups in society can't be changed.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

15. To be successful in life it is sometimes necessary for some groups to step on other groups of people.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

16. Some groups of people are more important than other groups of people.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

17. It's OK if some groups of people have more of a chance in life than other groups of people.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

18. All groups should be given an equal chance in life.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

19. It's a good thing that in society some groups are at the top and other groups are at the bottom.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

20. No single group should dominate in society.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

21. People can trust members of other groups less than members of their own group.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

22. Groups can trust their own members more than anyone else.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

23. All members of a group generally share common group goals.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

24. The characteristics of a group tend to be stable over time and context.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

25. In terms of what defines them, all members of a given group are largely the same underneath.



Strongly

Disagree



Disagree



Neither

Agree/Disagree



Agree



Strongly Agree

Thank you for taking part in our research!

Remember none of your answers were right or wrong, we just wanted to know what you think. All of your responses will stay confidential and anonymous.

You will get a letter to take home to your parents/guardians about the task you have just completed explaining it in more detail.

If you change your mind about us using your answers, please let us know and we will remove them from our research.

THANK YOU!



## Appendix M

### Example Instructions for Form Tutors

#### Understanding Groups and Group Interaction Questionnaire

##### Brief Instructions

Dear Form Tutor

Thanks for administering the questionnaire to your form. I have included 30 copies of the questionnaire and 30 copies of the de-brief letter.

Please ensure the following:

- All students complete the questionnaire at the same time
- Students read the information sheet and fill in all details on this sheet and in the answer booklet.
- There is no talking or discussion between students when completing the questionnaire – I do not want them to influence each other at all.
- Students only give one response to each question.
- They understand that is completely confidential and anonymous so they can be honest with their answers.
- They complete all the questions.
- If they are at all uncomfortable or do not want to take part that is fine, there is no pressure to participate.
- Once they have finished they can hand it in to you to be passed back to me.
- Ensure all students who participated get a copy of the de-brief letter to take home.
- Please **do not** give them the de-brief letter until all questionnaires have been handed in – there is more information about the study in the letter that could potentially influence the way they answer.

Should you have any questions regarding the study my email is  
kjg29@kent.ac.uk

Many thanks.

Katie Goodbun (PhD researcher, University of Kent)

## Appendix N

### Questionnaire Items (Study 2c - Children)

1. Groups can change even their most basic qualities
2. Groups can't really change the kind of group they are.
3. Any group can change and develop
4. The group someone belongs to cannot be changed
5. People can always change the group they belong to
6. The groups someone belongs to tells us a lot about what they are like as a person.
7. People who share the same group generally hold the same views as each other
8. A group is made up of all sorts of different people; they don't have to think the same
9. Groups are made up of people who are very similar to each other.
10. Different groups of people who mix can learn from each other.
11. It doesn't matter which groups people belong to, they can all learn from each other.
12. Groups generally keep separate from each other because they don't get on
13. In general groups don't want to mix with each other
14. The way groups behave towards each other can't be changed.
15. To do well in life groups sometimes have to be selfish and not worry about the feelings or needs of other groups.
16. Some groups of people are more important than other groups of people
17. It's OK if some groups of people have more chance to do better in life than other groups of people.
18. All groups should be given the same opportunities as each other.
19. It's a good thing if some groups do well and other groups don't.

20. One group of people shouldn't have better chances to do well than every other group of people.
21. People can trust members of other groups less than members of their own group.
22. Groups can trust their own members more than anyone else.
23. All members of a group generally want to achieve the same things.
24. The characteristics of a group are the same at different times and in different places.
25. Even if they appear different from each other on the outside, people who all belong to the same group are actually very similar.



## Appendix O

### Information Sheet/Answer Booklet (Study 2c – Children)

J2



This study aims to explore the way in which children and young people understand group membership. Groups can take lots of different forms, for example gender, nationality, ethnicity, and culture.

By filling in this answer booklet you will be telling us what you think about groups and the way that groups behave together.

This is not a test! None of your answers are right or wrong, we just want to know what you think.

All of your answers are confidential and anonymous; this means other people in your class, your parents and your teachers will not know what you write, and we will not ask for your name. This means you can answer all of the questions honestly because they will stay private.

#### Remember:

- This is not a test; there are no right or wrong answers.
- Don't talk to your friends whilst you are filling in this answer booklet – we want to know what YOU think.
- If you have any questions or want to stop at any time, please put up your hand.

Before we start please fill in a few more details about yourself:

What class are you in? \_\_\_\_\_

What is your gender? (Please tick)

Male

Female

Other

Prefer not to say

Put the first letter of your FIRST name here: \_\_\_\_\_

Put the first letter of you SURNAME here: \_\_\_\_\_

One last detail before we start. Using the questions below can you tell us your date of birth?

Circle the day you were born:

1	2	3	4	5	6	7	8	9	10	
11	12	13	14	15	16	17	18	19	20	
21	22	23	24	25	26	27	28	29	30	31

Circle the month you were born:

Jan	Feb	March	April
May	June	July	August
Sept	Oct	Nov	Dec

Circle the year that you were born:

2009            2010

2011            2012

Below are some questions about groups. To show how much you agree with each sentence please only circle **one** answer to each question.

For example, if the statement was:

- Strawberry ice-cream is the best flavour ice cream

If you **completely** agree with this you would circle strongly agree, like this:



If you **completely** disagree with the statement you would circle strongly disagree, like this:



If you don't agree or disagree with the statement you would circle the option neither agree/disagree, like this:



Remember:

- This is not a test; there are no right or wrong answers.
- Don't talk to your friends whilst you are filling in this answer booklet – we want to know what YOU think.
- Circle just one answer to each statement.
- If you have any questions or want to stop at any time, please put up your hand.
- Groups can take lots of different forms e.g. gender, nationality, ethnicity, age, culture etc.

## 1. Groups can change even their most basic qualities.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

## 2. Groups can't really change the kind of group they are.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

3. Any group can change and develop.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

4. The groups someone belongs to cannot be changed.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

5. People can always change the group they belong to.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

6. The groups someone belongs to tells us a lot about what they are like as a person.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

7. People who belong to the same group usually think the same as each other.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

8. A group is made up of all sorts of people; they don't all have to think the same.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

9. Groups are made up of people who are very similar to each other.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

10. Different groups of people who mix can learn from each other.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

11. It doesn't matter which groups people belong to; they can all learn from each other.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

12. Groups generally keep separate from each other because they don't get on.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

13. In general, different groups don't want to mix with each other.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

14. The way groups behave towards each other can't be changed.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree



15. To do well in life groups sometimes have to be selfish and not worry about the feelings or needs of other groups.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

16. Some groups of people are more important than other groups of people.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

17. It's OK if some groups of people have more chance to do better in life than other groups of people.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

18. All groups should be given the same opportunities as each other.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

19. It's a good thing if some groups do well and other groups don't.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

20. One group of people shouldn't have better chances to do well than every other group of people.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

21. People can trust members of other groups less than members of their own group.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

22. Groups can trust their own members more than anyone else.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

23. All members of a group generally want to achieve the same things.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

24. The characteristics of a group are the same at different times and in different places.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

25. Even if they appear different from each other on the outside, people who all belong to the same group are actually very similar to each other.



Strongly  
Disagree



Disagree



Neither  
Agree/Disagree



Agree



Strongly Agree

Thank you for taking part in our research!

Remember none of your answers were right or wrong, we just wanted to know what you think. All of your responses will stay confidential and anonymous.

You will get a letter to take home to your parents/guardians about the task you have just completed explaining it in more detail.

If you change your mind about us using your answers, please let us know and we will remove them from our research.

THANK YOU!



### Appendix P

#### The Contact Star (AFT Version)

Imagine that you have to spend lunch time for a week with **one person you had never met before**.

How much would you like it if this person was...

(Use the star to mark your answers, 1 = Not at all like to, 4 = Neither like or dislike, 7 = very much like to.

Please make sure you choose **one number for each person.**)

I would like to spend my lunch times with someone who is...

A Teacher

A Gypsy Traveller

British

A Refugee

Gay

Christian

Muslim

Jewish

Homeless

Overweight

Old

An Immigrant

German

PTO >

**Appendix Q**

**Adapted Contact Stars (Study 1a – Adults)**

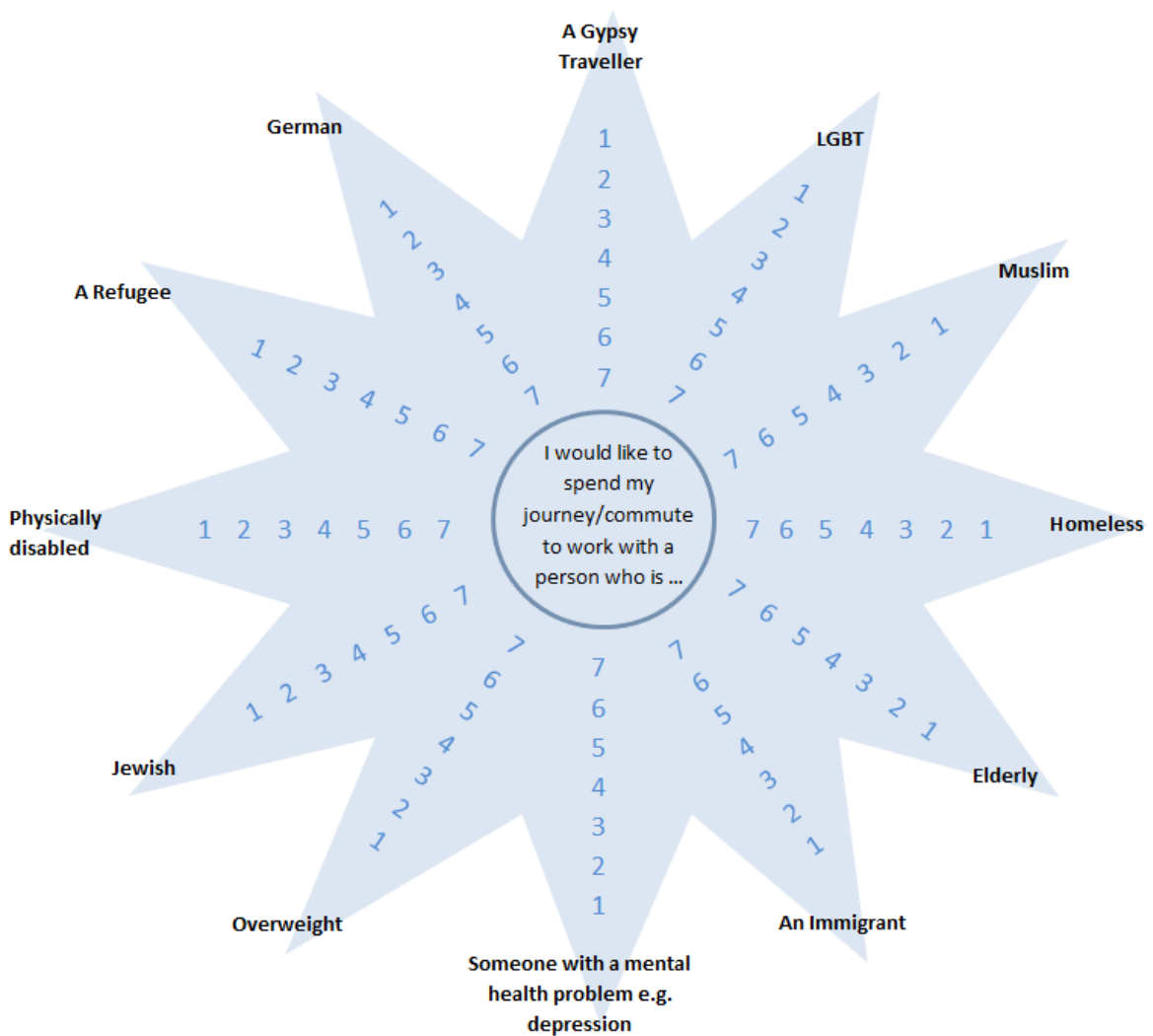
*Contact Star A (Attitude):*

Imagine that you have started a new job an hour away from where you live. In your first week you discover that you will have to share transport every day with another person whom you have never met before and that this arrangement will last for several weeks.

How enthusiastic would you be about this arrangement if this person was?

(Using the star as a guide please choose a number from 1 to 7 to indicate your response, 1=Not at all enthusiastic, 4= Neither enthusiastic or not enthusiastic, 7=Very enthusiastic). Use the corresponding boxes to enter your responses.

Please make sure you choose ONE number for each person.



*Contact Star C (Behavioral Intention):*

Imagine that you have started a new job an hour away from where you live. In your first week you are asked if you can share transport for a minimum of one day and a maximum of five days to help out a person whom you have never met before.

How many days in the week would you be willing to spend your journey with someone who is.....

(Using the star as a guide please choose a number from 1 to 5 to indicate the number of days you would be willing to do this. Use the corresponding boxes to enter your responses.

Please make sure you choose ONE number for each person.

I would be willing to spend my commute with someone who is.....

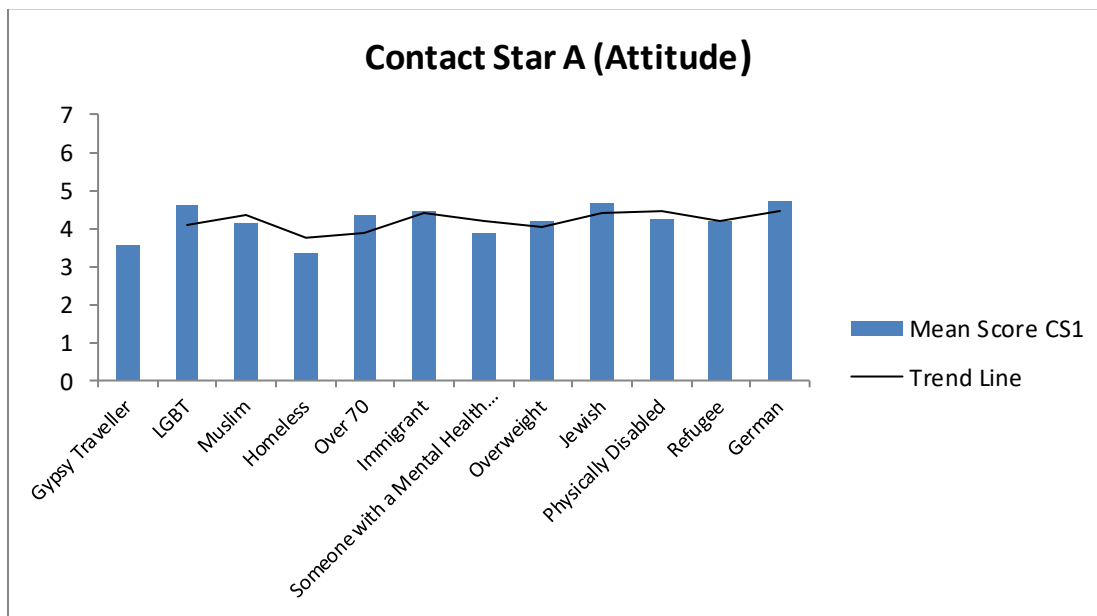
Demographic Group	1	2	3	4	5
German					
A Gypsy Traveller					
LGBT					
Muslim					
Homeless					
Elderly					
An Immigrant					
Someone with a mental health problem e.g. depression					
Overweight					
Jewish					
Physically disabled					
A Refugee					

**Appendix R**

**Pattern of Responses to Contact Star A and C (Study 1a - Adults)**

**Figure R1**

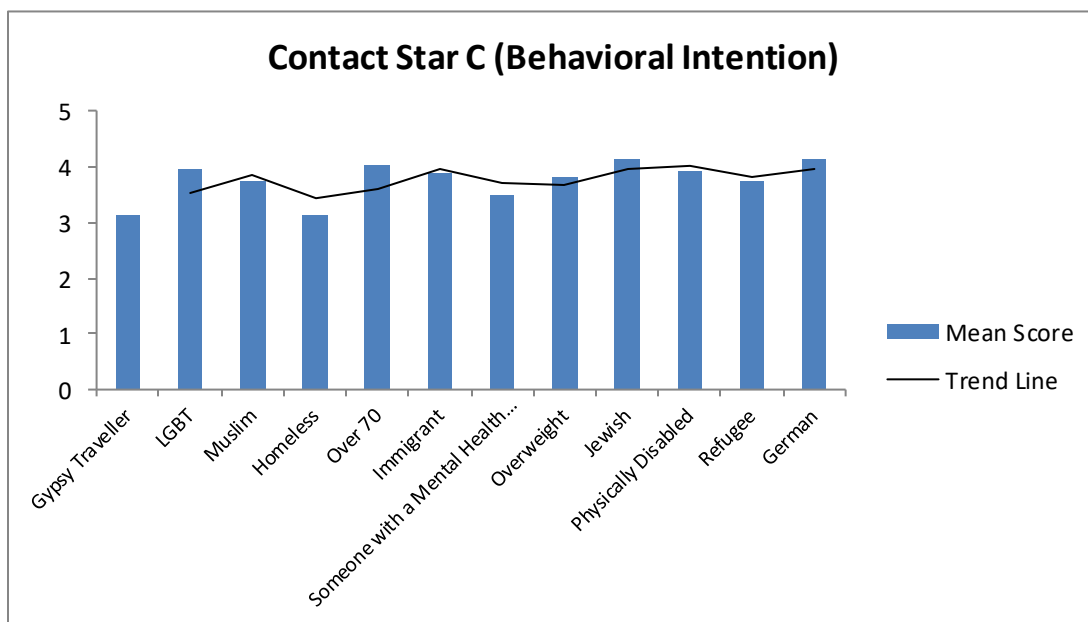
Mean scores of Contact Star A (Study 1a - Attitude)



Note. N =205

**Figure R2**

Mean scores of Contact Star C (Study 1a - Contact)



Note. N =205



## Appendix S

## Principal Components Analysis for Contact Star Data (Study 1a and 3a)

Table S1

*Results from a Factor Analysis of the Contact Star (Study 1a; CSA – Attitudes)*

Group	Factor Loading	
	1	2
Factor 1:		
Muslim	<b>.77</b>	.31
LGBT	<b>.77</b>	.25
Jewish	<b>.76</b>	.27
Immigrant	<b>.75</b>	.29
Refugee	<b>.71</b>	<b>.43</b>
German	<b>.70</b>	.20
Physically disabled	<b>.60</b>	<b>.62</b>
Gypsy Traveller	<b>.53</b>	.23
Overweight	<b>.40</b>	<b>.66</b>
Over 70	<b>.30</b>	<b>.74</b>
Mental Health	.26	<b>.77</b>
Homeless	.19	<b>.79</b>

*Note.* N = 205. The extraction method was principal components factoring with an orthogonal (Varimax with Kaiser normalization) rotation. Factor loadings above .30 are in bold. KMO = .903. Factor 1 explained 53.10% of the total variance.

**Table S2**

*Results from a Factor Analysis of the Contact Star (Study 1a; CSC – Contact)*

Group	Factor Loading	
	1	2
Factor 1:		
Jewish	<b>.88</b>	.19
German	<b>.81</b>	.21
Muslim	<b>.80</b>	<b>.36</b>
LGBT	<b>.79</b>	<b>.36</b>
Immigrant	<b>.78</b>	<b>.39</b>
Refugee	<b>.66</b>	<b>.52</b>
Overweight	<b>.51</b>	<b>.54</b>
Physically Disabled	<b>.45</b>	<b>.68</b>
Gypsy Traveller	<b>.37</b>	<b>.64</b>
Mental Health	<b>.32</b>	<b>.75</b>
Over 70	<b>.30</b>	<b>.63</b>
Homeless	.07	<b>.87</b>

*Note.* N = 205. The extraction method was principal components factoring with an orthogonal (Varimax with Kaiser normalization) rotation. Factor loadings above .30 are in bold. KMO = .913. Factor 1 explained 57.93% of the total variance.

**Table S3**

*Results from a Factor Analysis of the Contact Star (Study 3a; CSA – Attitudes).*

Group	Factor Loading	
	1	2
Factor 1:		
Chinese	<b>.92</b>	.27
Black	<b>.90</b>	.24
Jewish	<b>.90</b>	<b>.30</b>
Muslim	<b>.88</b>	<b>.30</b>
Disabled	<b>.84</b>	<b>.37</b>
Elderly	<b>.82</b>	.16
LGBTQ+ e.g., Gay	<b>.81</b>	<b>.27</b>
Migrant	<b>.79</b>	<b>.41</b>
Refugee	<b>.77</b>	<b>.42</b>
Overweight	<b>.76</b>	<b>.38</b>
Mental Health	<b>.63</b>	<b>.55</b>
Gypsy	.18	<b>.89</b>
Homeless	<b>.33</b>	<b>.83</b>

*Note.* N = 322. The extraction method was principal components factoring with an orthogonal (Varimax with Kaiser normalization) rotation. Factor loadings above .30 are in bold. KMO = .952. Factor 1 explained 71.86% of the total variance.

**Table S4**

*Results from a Factor Analysis of the Contact Star (Study 3a; CSC – Contact)*

Group	Factor Loading	
	1	2
Factor 1:		
Black	<b>.93</b>	.22
Chinese	<b>.90</b>	.28
Muslim	<b>.88</b>	.27
Jewish	<b>.87</b>	.27
LGBTQ+ e.g., Gay	<b>.82</b>	.29
Elderly	<b>.76</b>	<b>.30</b>
Overweight	<b>.67</b>	<b>.45</b>
Migrant	<b>.65</b>	<b>.53</b>
Disabled	<b>.64</b>	<b>.45</b>
Refugee	<b>.63</b>	<b>.54</b>
Mental Health	<b>.55</b>	<b>.57</b>
Homeless	.19	<b>.88</b>
Gypsy	<b>.23</b>	<b>.84</b>

*Note.* N = 322. The extraction method was principal components factoring with an orthogonal (Varimax with Kaiser normalization) rotation. Factor loadings above .30 are in bold. KMO = .933. Factor 1 explained 66.01% of the total variance.

## Appendix T

### Questionnaire Items (Study 3a – Adults)

Groups cannot change their most basic qualities.

The group someone belongs to tells us a lot about them as a person

Groups cannot change and develop

The groups someone belongs to cannot be changed.

Groups cannot substantially change the kind of group they are.

People who share the same group generally hold the same views as each other

Every group is a collection of a certain type of person.

People cannot change the group they belong to.

In general, all members of a group share common goals

The characteristics of a group tend to be stable over time and context.

In terms of what defines them, all members of a given group are largely the same underneath the surface.

To do well in life groups sometimes have to be selfish and not worry about the feelings or needs of other groups.

Some groups of people are more important than other groups of people.

It's OK if some groups of people have more chance to do better in life than other groups of people.

It's OK if some groups are not given the same opportunities as each other.

It's a good thing if some groups do well and other groups don't

It's OK if one group of people have better chances to do well than every other group of people.

Different groups of people who interact do not learn from each other

Groups generally keep separate from each other because they don't get on

In general groups don't want to interact with each other

Relationships between groups in society can't be changed

If a member of a group shares the norms and values of another group more strongly than those of their own group, they should not expect to be able to stay in that group.

My friends' emotions don't affect me much.

After being with a friend who is sad about something, I usually feel sad.

I can understand my friend's happiness when she/he does well at something.

I get frightened when I watch characters in a good scary movie.

I get caught up in other people's feelings easily.

I find it hard to know when my friends are frightened.

I don't become sad when I see other people crying.

Other people's feeling don't bother me at all.

When someone is feeling 'down' I can usually understand how they feel.

I can usually work out when my friends are scared.

I often become sad when watching sad things on TV or in films.

I can often understand how people are feeling even before they tell me.

Seeing a person who has been angered has no effect on my feelings.

I can usually work out when people are cheerful.

I tend to feel scared when I am with friends who are afraid.

I can usually realize quickly when a friend is angry.

I often get swept up in my friends' feelings.

My friend's unhappiness doesn't make me feel anything.

I am not usually aware of my friends' feelings.

I have trouble figuring out when my friends are happy.

It's great that many young people today are prepared to defy authority

What our country needs most is discipline, with everyone following our leaders in unity.

God's laws about abortion, pornography, and marriage must be strictly followed before it is too late.

There is nothing wrong with premarital sexual intercourse

Our society does NOT need tougher government and stricter laws

The facts on crime and the recent public disorders show we have to crack down harder on troublemakers, if we are going preserve law and order.

I find that a well-ordered life with regular hours suits my temperament.

I find that establishing a consistent routine enables me to enjoy life more.

I enjoy having a clear and structured mode of life.

I don't like to be with people who are capable of unexpected actions.

I don't like to go into a situation without knowing what I can expect from it.

I dislike unpredictable situations.

**Appendix U**

**Contact Star Measures (Study 3a – Adults)**

*Contact Star – Attitudes (CSA):*

Imagine that you have started a new job an hour away from where you live. In your first week you discover that you will have to share transport every day with another person whom you have never met before and that this arrangement will last for several weeks.

How much would you like it if this person was...?

(Using the star as a guide please choose a number from 1 to 7 to indicate your response, **1 = Not like it at all**, **4 = Neither like nor dislike it**, **7 = Like it very much**. Use the corresponding boxes to enter your responses.

Please make sure you choose ONE number for each person.

The survey tool is a blue star with 12 points. In the center is a circle containing the text: "How much would you like it if this person was.....?". Each point of the star is labeled with a demographic group and contains a scale of numbers from 1 to 7, arranged from the center outwards. The labels and their corresponding scales are as follows:

- A Gypsy Traveller**: 1, 2, 3, 4, 5, 6, 7
- LGBTQ e.g., Gay**: 1, 2, 3, 4, 5, 6, 7
- Black**: 1, 2, 3, 4, 5, 6, 7
- Muslim**: 1, 2, 3, 4, 5, 6, 7
- Homeless**: 1, 2, 3, 4, 5, 6, 7
- Disabled**: 1, 2, 3, 4, 5, 6, 7
- A Migrant**: 1, 2, 3, 4, 5, 6, 7
- Elderly**: 1, 2, 3, 4, 5, 6, 7
- Overweight**: 1, 2, 3, 4, 5, 6, 7
- Jewish**: 1, 2, 3, 4, 5, 6, 7
- Chinese**: 1, 2, 3, 4, 5, 6, 7
- A Refugee**: 1, 2, 3, 4, 5, 6, 7
- Living with a mental health issue e.g., depression**: 1, 2, 3, 4, 5, 6, 7



*Contact Star 2 – Willingness for contact (CSC)*

Imagine that you have started a new job an hour away from where you live. In your first week you are asked if you can share transport for a minimum of one day and a maximum of five days to help out a person whom you have never met before.

How many days in the week would you be willing to spend your journey with someone who is.....?

(Using the star as a guide please choose a number from 1 to 5 to indicate the number of days you would be willing to do this. Use the corresponding boxes to enter your responses.

Please make sure you choose ONE number for each person

How many days would you be willing to share your journey with someone who is.....?

- A Gypsy Traveller**: 1, 2, 3, 4, 5
- LGBTQ e.g., Gay**: 1, 2, 3, 4, 5
- Black**: 1, 2, 3, 4, 5
- Muslim**: 1, 2, 3, 4, 5
- Homeless**: 1, 2, 3, 4, 5
- Disabled**: 1, 2, 3, 4, 5
- A Migrant**: 1, 2, 3, 4, 5
- Elderly**: 1, 2, 3, 4, 5
- Overweight**: 1, 2, 3, 4, 5
- Jewish**: 1, 2, 3, 4, 5
- Chinese**: 1, 2, 3, 4, 5
- A Refugee**: 1, 2, 3, 4, 5
- Living with a mental health issue e.g., depression**: 1, 2, 3, 4, 5

## Appendix V

### Participant Information given in Follow Up Study (Study 3a - Adults)

You previously completed a questionnaire related to groups in society as part of this ongoing study. This follow up study aims to explore how well particular items on the questionnaire perform over time. The results of this study will be used to develop these scales so that they are accurate and reliable.

You will be asked to indicate your level of agreement to a series of items, but no prior knowledge of psychology is required. You are asked to answer all questions as accurately as you can and you will be remunerated for your time. The questionnaire will also include questions to check you are paying due attention, there is only one right answer to these questions. If you fail to answer these questions correctly your responses will not be valid and you will not be paid. Please note that you will be required to answer each question before being allowed to move on to the next.

Please note that you will be given 5 days (120 hours) from the time you are contacted to complete the survey. If you do not complete and return the survey within this time period your data will not be used and you will not be remunerated for your time.

The survey should not take longer than around 5 minutes of your time. The study is voluntary and you have the right to withdraw at any time. All results are anonymous and no personal data, except basic demographic information are recorded. Only those in the research team will have access to the results of the survey. Any information generated by the study, which is published, will reflect broad trends only and no participant will be identifiable.

Participants may contact the researcher at any time if they have any questions or concerns. You may contact the researcher (Katie Goodbun) at [kjg29@kent.ac.uk](mailto:kjg29@kent.ac.uk), or the research supervisor (Prof. Dominic Abrams) at [D.Abrams@kent.ac.uk](mailto:D.Abrams@kent.ac.uk). Following completion of the study results of the survey can be made available for participants if requested. The study has been reviewed by the University's Psychology Ethical Review committee to ensure that it meets ethical guidelines and poses minimal risk to participants. If you have any questions or concerns about the ethics of the study, please contact [psychethics@kent.ac.uk](mailto:psychethics@kent.ac.uk) quoting ethics approval number #202116215008317188

## Appendix W

### Questionnaire Items (Study 3b - Adolescents)

Groups cannot change their most basic qualities.

The group someone belongs to tells us a lot about them as a person

Groups cannot change and develop

The groups someone belongs to cannot be changed.

Groups cannot substantially change the kind of group they are.

People who share the same group generally hold the same views as each other

Every group is a collection of a certain type of person.

People cannot change the group they belong to.

In general, all members of a group share common goals

The characteristics of a group tend to be stable over time and context.

In terms of what defines them, all members of a given group are largely the same underneath the surface.

To do well in life groups sometimes have to be selfish and not worry about the feelings or needs of other groups.

Some groups of people are more important than other groups of people.

It's OK if some groups of people have more chance to do better in life than other groups of people.

It's OK if some groups are not given the same opportunities as each other.

It's a good thing if some groups do well and other groups don't

It's OK if one group of people have better chances to do well than every other group of people.

Different groups of people who interact do not learn from each other

Groups generally keep separate from each other because they don't get on

In general groups don't want to interact with each other

Relationships between groups in society can't be changed

If a member of a group shares the norms and values of another group more strongly than those of their own group, they should not expect to be able to stay in that group.

After being with a friend who is sad about something, I usually feel sad.

I can understand my friend's happiness when she/he does well at something.

I get frightened when I watch characters in a good scary movie.

I get caught up in other people's feelings easily.

When someone is feeling 'down' I can usually understand how they feel.

I can usually work out when my friends are scared.

I often become sad when watching sad things on TV or in films.

I can often understand how people are feeling even before they tell me.

I can usually work out when people are cheerful.

I tend to feel scared when I am with friends who are afraid.

I can usually realize quickly when a friend is angry.

I often get swept up in my friends' feelings.

**Appendix X**

**Contact Star Measures (Study 3b – Adolescents)**

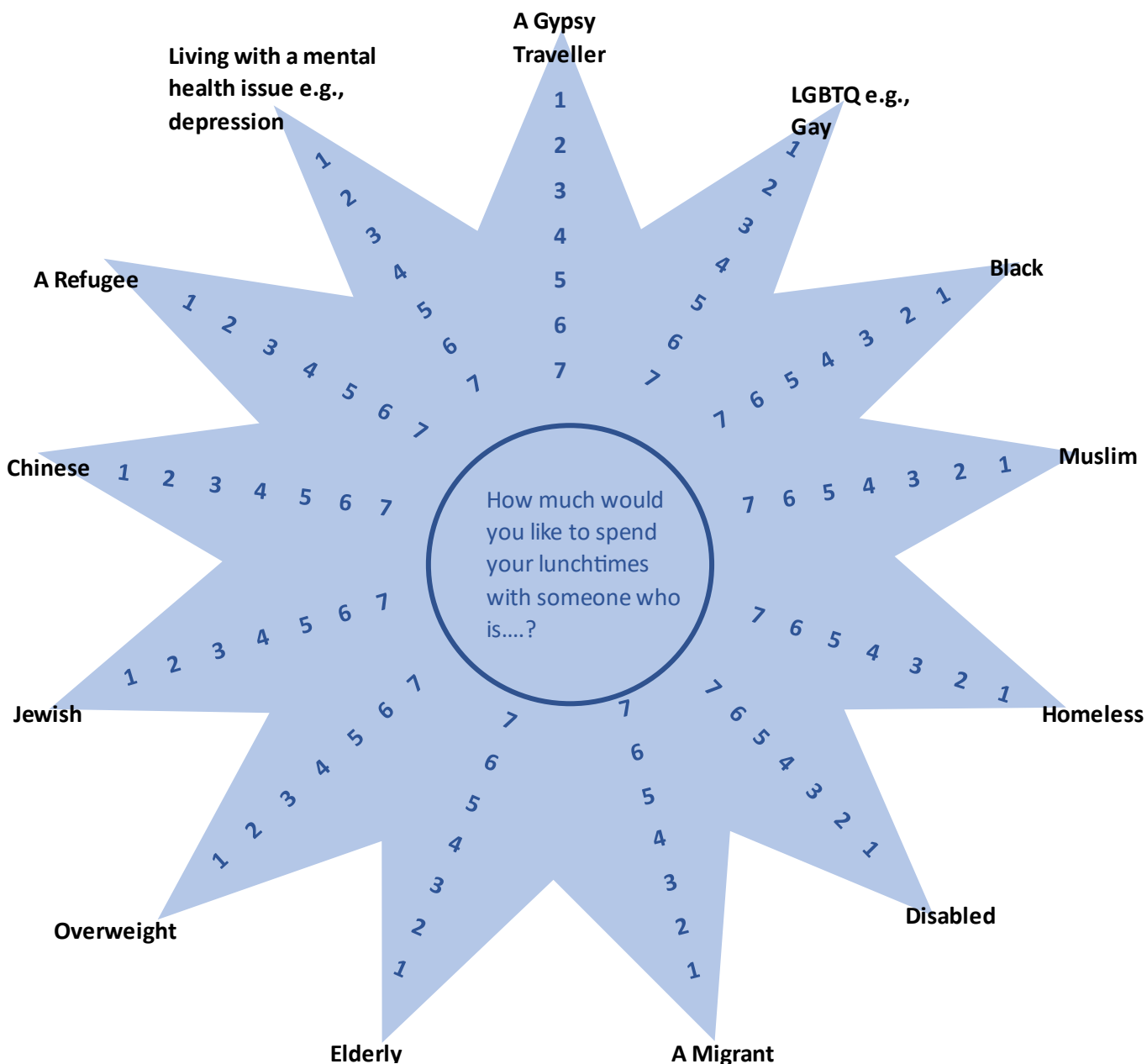
*Contact Star – Attitudes (CSA):*

Imagine that you have to spend lunch time for a week with one person you had never met before.

How much would you like it if this person was.....?

(Use the star to mark your answers, **1 =Not at all like to**, **4 = Neither like or dislike**, **7 = Very much like to**.)

Please make sure you choose ONE number for each person.



*Contact Star 2 – Willingness for contact (CSC)*

Imagine that you have to spend lunch time for a week with one person you had never met before. You are asked how many days in that week you are willing to spend with the person, from a minimum of one day to a maximum of five days.

How many lunch times in the week would you be willing to spend with someone who is.....?

Using the star to mark your answers choose a number from 1 to 5 to indicate the number of lunch times you would be willing to do this.

Please make sure you choose ONE number for each person

