

## 'Changing attitudes with a little imagination': Imagined contact effects on young children's intergroup bias

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**Título:** "Cambiar las actitudes con un poco de imaginación". Efectos del contacto imaginado en los sesgos intergrupales de los niños pequeños.

**Resumen:** En esta investigación se ha evaluado un nuevo concepto en psicología social, denominado 'contacto imaginado', en niños pequeños ( $n = 123$ , de 5 a 10 años). A la mitad de la muestra se les pidió que se imaginaran a sí mismos interactuando con un niño con una discapacidad física; la otra mitad no participó en esta actividad (grupo control). En comparación con el grupo control, los niños en la condición 'contacto imaginado' mostraron posteriormente una reducción del sesgo intergrupar cuando se evaluaban sus actitudes generales y sus valoraciones de cordialidad y aptitudes. El 'contacto imaginado' también se asoció con un mayor deseo de desarrollar conductas de amistad hacia el niño con discapacidad, pero solo en los participantes de 5-6 años. Esto apoya parcialmente nuestra hipótesis de que los niños pequeños, quizá como resultado de una falta de experiencia con el exogrupo, se benefician en mayor medida del contacto imaginado. Se discuten las implicaciones para el desarrollo de las actitudes hacia las personas con discapacidad, la teoría del contacto imaginado y el desarrollo de técnicas de reducción de los prejuicios en el aula basadas en el contacto imaginado.

**Palabras clave:** Contacto imaginado; niños pequeños; prejuicio; actitudes sociales; niños discapacitados; sesgo intergrupo.

**Abstract:** The current research tested a recent development in social psychology, namely 'imagined contact', among young children ( $n = 123$ , 5 to 10 years). Children imagined interacting with a physically disabled child, or did not take part in this activity (the control group). Compared with the control group, children who engaged in 'imagined contact' subsequently showed reduced intergroup bias in their general attitude and ratings of warmth and competence. Imagined contact also led to more positive intended friendship behavior towards the disabled, but only among 5-6 year olds. This provides partial support for our hypothesis that younger children, perhaps as a result of their lack of outgroup experience, are more likely to benefit from imagined contact. Implications for the development of attitudes towards the disabled, imagined contact theory and the development of classroom-based prejudice-reduction techniques based on imagined contact are discussed.

**Key words:** Imagined contact; young children; prejudice; social attitudes; disabled children; intergroup bias.

### Introduction

Developmental and social psychological research has shown that from a young age children can express intergroup bias where they favour members of their own social group (e.g. ethnic group, nationality, team see Brown, 1995; Nesdale, 2001; Nesdale, 2008). These early intergroup experiences and attitudes appear to have far-reaching consequences, and may predict stereotypes and attitudes in adult life (Wood & Sonleitner, 1996). Crucially, the intergroup bias exhibited in childhood can be reduced through the implementation of prejudice-reduction interventions (e.g. Aboud & Fenwick, 1999; Cameron, Rutland, Brown & Douch, 2006; Turner & Brown, 2008; Pfeifer, Brown & Juvonen, 2007 for review). Such intervention may indeed be more successful in tackling attitudes in childhood, compared with adults, as early attitudes are more embryonic and less entrenched than those found in later life. It is therefore important to develop effective theoretically-based interventions to challenge the early development of prejudice (Bigler, 1999; Paluck & Green, 2009).

One type of intervention that has been examined extensively, and been shown to have a robust effect on intergroup attitudes, is intergroup contact (Pettigrew & Tropp, 2006). This paper aims to enhance our understanding of a

particular type of intergroup contact that holds great potential as an intervention technique, namely 'imagined contact' (Crisp & Turner, 2009). We will achieve this by testing the phenomenon for the first time among children. The findings have both practical and theoretical implications, as the research can inform the development of future long-term, imagined contact interventions for use in schools, as well as advancing imagined contact theory by testing the hypothesis in the field, with a new age group and in a new context.

According to the 'contact hypothesis' (Allport, 1954), direct interactions between members of different groups lead to reduced prejudice and improved intergroup relations, provided these interactions meet the optimal conditions of equal status, cooperation in order to achieve common goals, high degree of frequency and institutional support. Research with adults has shown that the direct intergroup contact effect is highly robust (Pettigrew & Tropp, 2006). Research conducted with children and adolescents has also shown that direct intergroup contact is associated with reduced intergroup bias among children from three years of age to adolescence, and in multiple contexts (e.g. Aboud, Mendelson, & Purdy, 2003; Feddes, Noack & Rutland, 2009; Jackson, Barth, Powell & Lochman, 2006; Rutland, Cameron, Bennett & Ferrell, 2005; Tropp & Prenovost, 2008; Wagner, Dick, Pettigrew, & Christ, 2003).

Lately, researchers have turned their attention to *indirect* forms of intergroup contact, such as 'extended contact'. According to the 'extended contact hypothesis', merely being aware of intergroup friendships between a member of one's own group and another group can improve intergroup atti-

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tudes (Wright, Aron, McLaughlin-Volpe, & Ropp, 1997). There is evidence to support this hypothesis in adult populations (see Turner, Hewstone, Voci, Paolini, & Christ, 2007c for review), in minority and majority group adolescents (Liebkind & McAllister, 1999, Turner, Hewstone & Voci, 2007b), and in young children (Cameron, et al., 2006; Cameron & Rutland, 2006; Cameron, Rutland & Brown, 2007; Turner et al, 2007b). For example, Cameron and colleagues developed a classroom-based prejudice-reduction intervention that was derived from the extended contact hypothesis. Five to eleven year old children read fictional stories featuring friendships between in- and outgroup children. As a result of the extended contact intervention, children were more positive towards the outgroup and were more likely to want to interact with an outgroup member in the future.

Extended contact may be especially useful where there is little opportunity for direct contact because it does not depend on personal experience of contact, only the experience of other ingroup members. Taking this idea one step further, recent research has considered whether it is even necessary to know ingroup members who have friends in the outgroup in order for contact to exert a positive effect and has explored a new technique, 'imagined contact'.

Imagined intergroup contact can be defined as the 'mental simulation of social interaction with a member or members of an outgroup category' (Crisp, Stathi, Turner, & Husnu, 2008, p8; see also Crisp & Turner, 2009). Mental imagery has been found to elicit similar emotional and motivational responses as the real experience (Dadds, Bovbjerg, Redd, & Cutmore, 1997) and neuropsychological studies have shown that it shares the same neurological basis as perception and employs similar neurological mechanisms as memory, emotion and motor control (Kosslyn, Ganis, & Thompson, 2001). Accordingly, imagining oneself interacting positively with an outgroup member should automatically activate thoughts and feelings similar to those experienced in real-life intergroup interactions, for example feeling more comfortable and less apprehensive about interacting with outgroup members. Imagined contact may also generate deliberative thought processes similar to those experienced in real-life contact, for example thinking about what might be learned from the outgroup member and what emotions might be experienced during the interaction. By activating these automatic and deliberative processes that occur during *actual* contact, imagined contact should have the same positive effects on outgroup evaluations (Turner, Crisp, & Lambert, 2007a).

Recent research with minority and majority adults supports this hypothesis (Stathi & Crisp, 2008; Turner et al., 2007a), though less is known about the effectiveness imagined contact amongst children. Two initial studies showed that young people who were asked to imagine having a positive interaction with an elderly stranger showed less ingroup bias and were more likely to select an elderly person to interact with on a future occasion compared to participants in a control condition (Turner et al., 2007b; Studies 1 & 2). Sub-

sequently, imagined contact has been shown to change straight men's attitudes towards gay men (Turner et al., 2007b; Study 3), Mexicans' attitudes towards Mestizos in Mexico (Stathi & Crisp, 2008), and non-Muslims implicit attitudes towards Muslims (Turner & Crisp, 2010).

### Imagined contact in childhood

To date, there has been no research investigating the effect of imagined contact among young children. Research among adults has shown that imagined contact is more effective when the imagined intergroup interaction is more vivid and contextualized, that is, when they specifically imagined *when* and *where* they would meet this outgroup member, rather than thinking about interaction with an outgroup member in a more general way (Husnu & Crisp, 2009). Therefore it could be argued that older children, who are more practiced in creative thinking given their more advanced cognitive development and with more vivid imaginations, will be better able to engage in vivid imagined contact. In order to try and ensure that the imagined contact with a disabled child was vivid for all children in our study, the current research adopted a version of imagined contact that, unlike that used with adults, used pictures and photographs to create the imagined contact experience. In addition, the children were prompted by the researcher to describe the positive and fun activities they could represent with the pictures and photographs. This ensured that they focused on the task and actually engaged in imagined contact. Therefore it is expected that, since the intervention should be vivid for both younger and older children, the technique will be equally effective with both young and older children; despite younger children's arguably initial limited capacity to imagine positive contact with the outgroup.

It is constructive to examine the effect of imagined contact on children's attitudes as such research will have important theoretical and practical implications. Our reasoning for this is as follows. First, imagined contact has huge potential as a practical prejudice-reduction intervention for use in schools (Crisp et al., 2008). Potentially imagined contact is a form of indirect contact that could be used with a wide age range of children from diverse backgrounds and abilities and has great promise as a practical and efficient intergroup contact intervention (Crisp & Turner, 2009; Crisp et al, 2008). Extended contact interventions have been shown to be effective with young children, and it is feasible that imagined contact will be even more effective as it is more immediate and involves the child directly, as opposed to merely observing intergroup interactions.

Imagined contact also has a number of advantages over both direct and extended contact. The most important of these is that imagined contact does not require a person to live in a context where they themselves have contact with outgroup members, or where outgroup members may be known to anyone from the ingroup. That is, it can be used in contexts where children and adults do not have an opportu-

nity for real-life experiences with the outgroup. This is crucial as it is often in these low diversity contexts that intergroup bias is likely to form, and go unchallenged (e.g. Rutland et al., 2005).

The present research will test the effect of imagined contact on young children's attitudes towards the disabled. The limited body of research examining the effect of contact on non-disabled children's attitudes towards the disabled has produced mixed findings, with some studies demonstrating a positive relationship between contact and attitudes and others showing little effect; e.g. Furnham & Pendred, 1983; Maras & Brown, 1996; 2000). However, extended contact interventions have proven to be effective in promoting positive attitudes towards the disabled among 5-10 year old non-disabled children (Cameron & Rutland, 2006). Therefore, it is expected that imagined contact will produce similar effects.

Previous research on the effect of indirect contact on children attitudes towards the disabled has only included measures of positive and negative stereotypes (e.g. Cameron & Rutland, 2006). However, in addition to considering valence it is also important to examine the effect of imagined contact on children's paternalistic stereotypes. Disabled people as a stigmatized group may be particularly vulnerable to such stereotyping and prejudice. According to the stereotype content model, groups are stereotyped along two primary dimensions, 'warmth', which is ostensibly a positive stereotype, and 'competence' (Fiske, Cuddy, Glick & Xu, 2002). Fiske et al. (2002) argue that groups are rated on these two dimensions depending on group status and intergroup competition, and the resultant complex stereotype helps to maintain group status. Outgroups which are viewed as being low status and non-competitive, such as the disabled, will be stereotyped as warm (a positive stereotype) but incompetent (a negative stereotype). Together such ratings on these dimensions create a paternalistic stereotype.

Research in the US has shown that adults do indeed take this paternalistic view of the physically and mentally disabled and the elderly (see Fiske, Xu, Cuddy & Glick, 1999; Fiske, Cuddy & Glick, 2007) and these paternalistic stereotypes are associated with ambivalent emotional responses such as pity and sympathy (Cuddy, Fiske & Glick, 2007). This contrasts with high status and positively perceived groups, such as the ingroup, which are typically rated as being high on both warmth and competence (Fiske, et al., 2007). It is important that interventions designed to tackle attitudes towards the disabled not only promote positive attitudes towards that group, but also ensure paternalistic stereotypes are not inadvertently strengthened. Ideally, ratings of both the warmth and competence of disabled people should be increased as a result of imagining contact with disabled children.

### Design overview

The research examined the effectiveness of imagined contact on 5-10 year old non-disabled children's attitudes

towards the outgroup, disabled children. This was done by testing imagined contact among three age groups: 5-6 years, 7-8 years, and 9-10 years. There were a number of physically disabled children enrolled in the schools of the children we tested. This meant that the children had some opportunity for intergroup contact during their elementary school years (i.e. 5-11 years old). Effective prejudice-reduction interventions should lead to more favorable views of the outgroup, without changing children's ingroup attitudes (Cameron & Rutland, 2006). Extended contact has been shown to meet this requirement with children, therefore it is expected that imagined contact will operate in a similar way. The aim of imagined contact is to reduce prejudice and promote future intergroup interactions (Crisp & Turner, 2009; Crisp et al, 2008). Therefore, the effect of imagined contact on intergroup bias was examined using the following dependent variables: general attitude, warmth, competence and intended outgroup friendship behavior (see Cameron et al., 2006).

### Hypotheses

It was predicted that children would show intergroup bias, and would exhibit more favorable attitudes towards the ingroup (non-disabled) than the outgroup (disabled). However, imagined contact should reduce intergroup bias by bringing about a more positive general attitude towards the disabled and increased ratings of the disabled on the warmth and competence dimensions. It was also expected that imagined contact would lead to more positive intended outgroup friendship behavior.

## Method

### Participants

123 non-disabled children (58 boys, 65 girls) from 2 primary (elementary) schools were tested. The age of the children ranged from 5 years and 0 months to 11 years and 11 months. There were three age groups: 5-6 years ( $n = 40$ ), 7-8 years ( $n=46$ ) and 9-11 years ( $n = 37$ ). The children attended schools in mixed social class suburban or rural areas outside a large metropolitan city in the south-east of England. Approximately equal numbers of children in each age group were randomly assigned to each intervention condition: Control ( $n = 60$ ), imagined contact ( $n = 63$ ).

### Design

The study used a between-participants design and a mixed design depending on the dependent variables being tested. The dependent variables were intended behavior, general attitude, warmth and competence. For 'warmth', 'competence' and 'general attitude', a 2 (Condition: Control, Imagined contact) x 3 (Age group: 5-6, 7-8 and 9-10 years) x 2 (target: non-disabled, disabled) mixed design was adopted, with condition and age as between-participants factors, and

target as a within participants factor. For 'intended behavior', a 2 (Condition: Control, Imagined contact) x 3 (Age group: 5-6, 7-8 and 9-10 years) between-participants design was adopted.

### *Procedure*

Children were randomly assigned to the imagined contact or control condition. This study focused on the effect of imagined contact on attitudes towards and stereotypes of the *physically* disabled only. Some children already had a good knowledge of the term 'disabled' but in order to ensure a good understanding of this term, initially all children were provided with a simple definition, which was supported by pictures of physically disabled children in wheelchairs and using walking aids.

Children either engaged in 'imagined contact' with a disabled child or did not engage in imagined contact (control condition). Those in the 'imagined contact' condition completed this activity individually with the researcher. Children were given a large drawn picture of a park setting (A3 size) and laminated pictures of park related objects (e.g. swings, a dog, a bench, round-a-bout), and a photograph of an ingroup (non-disabled) child and an outgroup (disabled) child (gender-matched to participant). In order to create 'imagined contact' the ingroup child in the photo represented the child participant, and children were asked to imagine themselves in the place of the ingroup child depicted in the photograph. Children used the photographs and pictures and photographs to create a story that featured the participant themselves and a disabled child. Specifically, children were asked: "Please can you spend three minutes imagining that you are in the park with a disabled friend. You spend some time playing together and having lots and lots of fun. You had a really good time. Please think about all of the fun and interesting things that you did together." After the three minutes had passed they were then asked the following prompts: "Can you please tell me what things you did that were fun and what things you did that you found interesting whilst you were at the park with your disabled friend?" Children were not asked about anything negative that they might have imagined during this task, because they had been told to focus on positive aspects of the interaction. The questions and pictures served as a prompt for children to encourage them to create a vivid imagined contact scenario.

In order to obtain measures of the dependent variables, children in the imagined contact condition were interviewed individually immediately after the imagined contact session. Previous research with adults has shown that few, if any, participants correctly guess the hypothesis at the end of the study, despite receiving the dependent measures immediately after the imagined contact task (e.g., Turner & Crisp, 2010; Turner, Crisp, & Lambert, 2007). We therefore do not expect demand characteristics and social desirability concerns to affect the findings. Children in the control condition did

not complete the imagined contact activity, and completed the individual interview only.

### **Dependent measures**

The interview took place in one session, lasting approximately 15 to 20 minutes. To avoid order-effects the experiment was counter balanced with half the children receiving the intended behavior measure first and the other half receiving the general attitude/warmth-competence measure first.

*General attitude:* This measure was used to derive separate indices of ingroup attitude and outgroup attitude. The children were presented with 20 traits (10 positive and 10 negative) that were derived from Cameron and Rutland (2006). The positive traits were 'Friendly', 'Fun', 'Helpful', 'Kind' and 'Happy', 'Hard working', 'Clever', 'Intelligent', 'Likes working' and 'Good at school'. The negative words were 'Rude', 'Selfish', 'Unkind', 'Unfriendly', 'Unhelpful', 'Lazy', 'Stupid', 'Bad at school', 'Not clever' and 'Does not try hard at school'. In order to ensure that the children in the main study would be able to understand these traits, a pilot study was conducted with children aged 7-10 years (N = 19). Children were asked what they thought each word meant. Most children understood the terms, and the definitions they provided were used in the main study to further elaborate on traits and ensure children understood their meaning. The interviewer read each trait and provided the definition. The words were presented in a random order to avoid order-effects.

Children were presented with photographs of two children (gender-matched to participant), one in a wheelchair (representing the disabled target outgroup) and the other standing (representing the non-disabled ingroup). Children were then asked which photograph they felt the word best described and was given the option of putting the word on the picture of the disabled child, the photograph of the non-disabled child, in the middle of the two photographs if they thought the word described them both, or in a cup (labeled 'bin') if they thought the word did not describe either photograph. The total number of positive and negative traits assigned to the ingroup and the outgroup was then calculated. An ingroup general attitude scores was then computed by subtracting the total negative adjectives from the total positive adjectives. Outgroup general attitude was calculated in the same way. In this way, indicators of general attitude towards the ingroup and outgroup were derived, with higher scores indicating more favorable attitudes towards the ingroup and the outgroup respectively.

*Warmth and competence:* Children's responses on the above task were also used to gauge the extent to which children stereotyped the ingroup and the outgroup along the warmth and competence dimensions. The traits used can be categorized according to the following dimensions: 'warm', 'competent', 'cold' and 'incompetent'. The words were divided as follows; Warm words: 'Friendly', 'Fun', 'Helpful', 'Kind' and

'Happy'. Competent words: 'Hard working', 'Clever', 'Intelligent', 'Likes working' and 'Good at school'. Cold words: 'Rude', 'Selfish', 'Unkind', 'Unfriendly' and 'Unhelpful'. Incompetent words: 'Lazy', 'Stupid', 'Bad at school', 'Not clever' and 'Does not try hard at school'. These terms were piloted as described above. Ingroup warmth was calculated by summing the number of warm and cold traits assigned to the ingroup, and then subtracting the number of cold from the number of warm traits. This difference score indicates the extent to which the participant believes the ingroup is warm rather than cold, and higher scores indicate greater warmth. Outgroup warmth was calculated in the same way. Ingroup competence was calculated by summing the number of competent and incompetent traits assigned to the ingroup, and then subtracting the number of incompetent traits from the number of competent traits. This difference score indicates the extent to which the participant believes the ingroup is competent rather than incompetent, and higher scores indicate greater competence. Outgroup competence was calculated in the same way. These scores ranged from -5 to +5.

*Intended outgroup friendship:* This was a measure of how the children intended to behave, in a hypothetical situation, towards other children who were physically disabled, and was an indicator of children's future friendship behaviors towards the target outgroup (Cameron et al., 2006). Children were presented with a hypothetical scenario in which they are asked to imagine they were at the park and they met a child they knew from school. Children are shown a photograph of the child (gender-matched to participant), who is in a wheelchair. Children were asked to indicate how much they would like to play with the target, how much they would like the target, how much they would like to have them over to their house for a meal and to stay overnight (Lewis & Lewis, 1987). Participants responded on 7-point Likert scale using smiley faces to indicate the extent they would like to engage in that behavior with the target where 1 = 'not at all' (big frown) to 7 = very much so (big smile). For the four items, Cronbach's alpha was .74. Composite means were created resulting in a measure of outgroup intended behavior for each child.

## Results

*General attitude:* A three-way mixed design analysis of variance was conducted in order to explore the impact of age (5-6 years, 7-8 years and 9-10 years), condition (control and imagined contact) and group (ingroup or outgroup) on children's intergroup bias, as indicated by the measure of general attitude. Age and condition were between participants and group was a within participants variable. There was a statistically significant main effect of group,  $F(1, 116) = 6.04, p < .05$ , partial  $\eta^2 = .05$ . As predicted, children held more favorable attitudes towards the non-disabled ( $M = 4.87, SD = 5.17$ ) compared with the disabled ( $M = 3.13, SD = 5.14$ ). However, this main effect was qualified by a statistically significant interaction between group and condition,  $F(1, 116)$

$= 2.49, p < .05$ , partial  $\eta^2 = .04$ . Simple main effects of group were examined within each condition, revealing a significant main effect of group in the control condition,  $t(58) = 3.589, p < .05$  with Bonferroni correction. Children exhibited intergroup bias, holding significantly more favorable attitudes towards the ingroup than the outgroup (see Table 1). There was, however, no significant effect of group on children's general attitudes in the imagined contact condition: children did not exhibit any intergroup bias (see Table 1).

It is important that prejudice-reduction interventions create more favorable attitudes towards the outgroup, without damaging ingroup attitudes (Cameron et al., 2006). The above interaction between group and condition could be due to changing in- or outgroup attitudes. In order to test this, the interaction was also examined by testing the effect of condition on ingroup and outgroup attitudes separately. T-tests showed that there was a significant effect of condition on attitudes towards the outgroup,  $t(120) = 2.17, p < .05$ . Children held significantly more favorable attitude towards the outgroup in the imagined contact condition than the control condition (See Table 1). In contrast, there was no significant effect of condition on attitudes towards the ingroup. The above analyses suggest that the imagined contact intervention reduced intergroup bias and boosted children's outgroup attitudes to a level that is comparable with their ingroup attitude.

**Table 1:** Means and standard deviations for measures of general attitude, warmth, competence and intended behavior as a function of condition and group.

Measure	Group	Condition	
		Control	Imagined contact
General attitude	Ingroup	5.47 (4.01)	4.25 (6.05)
	Outgroup	2.10 (5.33)	4.09 (4.80)
Warmth	Ingroup	2.88 (2.51)	2.21 (3.31)
	Outgroup	1.86 (3.00)	3.02 (2.59)
Competence	Ingroup	2.65 (1.98)	2.05 (3.01)
	Outgroup	0.83 (3.17)	1.92 (2.74)
Intended behavior	Outgroup	5.02 (1.39)	5.57 (1.32)

*Note:* General attitudes could range from a minimum of -10 and a maximum value of +10. The higher the children's scores the more positive their evaluations. Warmth and competence could range from a minimum of -5 and a maximum value of +5. The higher the children's scores the more competent and warm they view that group to be. Intended behavior could range from 1 to 7, with higher scores indicating greater intention to interact with the outgroup.

Analysis also revealed a significant main effect of age,  $F(2, 116) = 5.28, p < .05$ . Post-hoc analysis using Tukey's post-hoc test, revealed that this main effect was driven by the significant difference in general attitude between 5-6 ( $M = 4.00, SD = 10.29$ ) and 7-8 year olds ( $M = .89, SD = 6.64; p < .05$ ) and 5-6 and 9-10 year olds ( $M = .32, SD = 6.71; p < .05$ ). However, there were no significant interaction effects found between age and condition or group, suggesting this is an overall trend to become more positive and less negative towards both the ingroup and the outgroup with age.

**Warmth stereotype ratings:** A three-way mixed design analysis of variance was conducted in order to explore the impact of age (5-6 years, 7-8 years and 9-10 years), condition (control and imagined contact) and group (ingroup or outgroup) on children's intergroup bias, as indicated by the measure of stereotyping along the 'warmth' dimension. There were no significant main effects of age, condition and group. There was a statistically significant 2-way interaction between group and condition,  $F(1, 116) = 5.05, p < .05$ , partial  $\eta^2 = .04$ . In order to understand this interaction, simple main effects of 'group' were examined within each condition. Paired sample t-tests revealed a marginally significant difference between the in- and outgroup in the control condition,  $t(58) = 1.77, p = .08$  (see Table 1 for means). Children in the control condition viewed the ingroup as being slightly warmer than the outgroup. There was, however, no significant main effect of group on children's warmth ratings in the imagined contact condition, indicating that intergroup bias was not present.

We also tested the effect of condition on ingroup and outgroup ratings separately. There was a significant main effect of condition on children's outgroup ratings,  $t(120) = 2.28, p < .05$ , with Bonferroni correction. Children in the control condition viewed the outgroup as less warm than those in the imagined contact condition (see Table 1), but condition did not affect ingroup ratings of warmth. Thus, imagined contact reduced intergroup bias by promoting more favorable stereotypes of the outgroup along the 'warmth' dimension, without changing perceptions of the ingroup.

There was also a statistically significant 2-way interaction between group and age  $F(2, 116) = 3.89, p < .05$ , partial  $\eta^2 = .06$ . In order to explore this interaction, paired sample t-tests were carried out to examine the effect of group among the three age groups separately. The t-test showed a marginally significant effect of group among 5-6 year olds,  $t(38) = -1.88, p = .07$ . Children in this age group viewed the outgroup as being significantly less warm than the ingroup (see Table 2). There was no significant effect of group among 7-8 and 9-10 year olds (see Table 2 for means). This suggests that as children get older, they are less biased in their view of the disabled along the warmth dimension.

**Competence stereotype ratings:** A three-way mixed design analysis of variance was conducted in order to explore the impact of age, condition (control vs. imaginary contact) and group on children's intergroup bias along the 'competent-incompetent' dimension. There was a significant main effect of group,  $F(1, 117) = 5.55, p < .05$ , partial  $\eta^2 = .05$ . Overall, children viewed the ingroup ( $M = 2.34, SD = 2.57$ ) as being more competent than the outgroup ( $M = 1.40, SD = 2.99$ ).

However, this main effect was qualified by a statistically significant 2-way interaction between group and condition,  $F(1, 117) = 4.63, p < .05$ , partial  $\eta^2 = .04$ . In order to understand this interaction, simple main effects of group were examined within each condition. There was a significant main effect of group in the control condition,  $t(69) = 3.38, p < .05$ , with Bonferroni correction. Children in the control con-

dition viewed the ingroup as more competent than the outgroup (see Table 1 for means), whereas no such difference emerged in the imagined contact condition. This suggests that intergroup bias on the competent dimension was eliminated as a result of the intervention. The interaction was also examined by testing the main effect of condition within each group. Independent sample t-tests showed that there was no significant effect of condition for ingroup competence ratings, but a marginally significant effect of condition on 'competence' ratings of the outgroup,  $t(121) = 2.00, p = .05$  (adjusted significance level is .025 with Bonferroni correction; see Table 1 for means). Thus, imagined contact appears to reduce children's intergroup bias along the competence stereotype dimension by changing views of the outgroup whilst leaving ingroup attitudes unaffected.

**Table 2:** Means and standard deviations for measures of warmth as a function of age and group

Age group	Group	
	Ingroup	Outgroup
5-6 years	2.62 (3.04)	0.97 (3.46)
7-8 years	2.70 (2.76)	3.17 (2.29)
9-10 years	2.19 (3.14)	3.14 (2.06)

Note: Warmth could range from a minimum of -5 and a maximum value of +5. The higher the children's scores the warmer the ratings.

In contrast with the analysis of children's 'warmth' ratings, for competence ratings there was no significant interaction between age and group. This indicates that intergroup bias along the competence dimension did not change with age, whilst intergroup bias along the warmth dimension reduced with age.

**Table 3:** Means and standard deviations for measures of outgroup intended behavior as a function of age and condition.

Age group	Condition	
	Control	Imagined contact
5-6 years	4.51 (1.83)	5.77 (1.38)
7-8 years	5.18 (1.41)	5.83 (1.12)
9-10 years	5.35 (0.951)	4.94 (1.41)

Note: Intended behavior scores could range from a minimum of 1 to a maximum of 7, with higher scores indicating greater intention to interact with the outgroup.

**Intended behavior:** A two-way between participants analysis of variance was conducted in order to explore the impact of condition and age on intended behavior towards the outgroup. There was a significant main effect of condition,  $F(1, 117) = 4.267, p < .05$ , partial  $\eta^2 = .06$ . Children in the imagined contact condition reported more positive intended behavior than children in the control condition (see Table 1 for means). However, this main effect was qualified by a significant interaction between condition and age group,  $F(2, 117) = 3.84, p < .05$ . Simple main effects of condition were examined within each age group (5-6 years, 7-8 years and 9-10 years), revealing a significant main effect of condition on intended behavior among the youngest age group,  $t(38) = 2.44, p < .05$ , with Bonferroni correction. There were, how-

ever, no significant effects of condition among the 7-8 and 9-10 year olds (see Table 3 for means).

## Discussion

The aim of this research was to advance imagined contact theory by testing imagined contact with children. As expected, we found that children showed intergroup bias on all measures, since children had more favorable general attitudes towards the ingroup compared with the outgroup and thought the ingroup was more warm and competent. However, as expected, and in line with adult findings (Stathi & Crisp, 2008; Turner et al., 2007a; Turner & Crisp, 2010), this bias was reduced in the imagined contact condition for all dependent variables. Compared with the control condition, children who engaged in imagined contact showed less intergroup bias in their general attitudes, warmth and competence ratings and exhibited more positive intended friendship behavior towards the outgroup. The imagined contact improved only the youngest children's intended behavior. Importantly, the imagined contact effects were also driven by more positive outgroup ratings without affecting children's ingroup ratings.

Children in all three age groups benefitted from imagined contact in terms of their general attitudes and warmth and competence ratings of the outgroup. However, the effect of imagined contact was stronger among younger children for intended behavior. One possible explanation for this finding is that the older children in the current research may have experienced intergroup contact with disabled children, and therefore developed robust intergroup attitudes. In contrast, many younger children may have had little prior experience with disabled children, and therefore developed less entrenched attitudes towards the disabled. As such, their attitudes were more likely to change as a consequence of the imagined contact.

This explanation fits with research into extended contact that suggests the effect of this type of contact appears to be limited to individuals with little opportunity for contact with the outgroup (Cameron & Rutland, 2008; Feddes et al., 2009; Turner et al., 2007; Turner, Hewstone, Voci, & Vonofakou, 2008). This is because direct contact effects are thought to supersede the effect of indirect contact (Crisp et al., 2008). In other words, the intergroup attitudes of individuals who already have direct contact experiences with the outgroup are unlikely to show the indirect contact effect.

The finding that imagined contact effects on intended behavior were limited to the youngest age group suggests that imagined contact effects on future behavior may be limited to those with little previous experience of the outgroup. An alternative explanation for this finding is that it is simply more difficult to change children's intended intergroup behaviors than intergroup attitudes as they get older (see Cameron & Rutland, 2008). This is because ingroup and outgroup friendship networks among older children are likely to be more established (Dunn, 2004) and therefore these chil-

dren are less likely to change their intended behavior responses due to imagined contact interventions. Childhood is a period of rapid change in children's friendship networks (Dunn, 2004). With age, children's social and friendship network widens to include not just their own family but also peers, and these friendships with peers have a tendency to be with other children similar to themselves (Aboud et al., 2003).

Our research also illustrates the effect of imagined contact on stereotype content: compared with the control group, children who experienced the imagined contact intervention rated the outgroup as more warm and competent. These findings are important for two reasons. First, although imagined contact has been shown to change general outgroup attitudes before, this is the first demonstration of its effect on stereotype content. This represents a considerable extension to what we know about the *range* of benefits that imagined contact can have, and leaves us more optimistic about its impact on intergroup relations. Moreover, research with adults suggests that holding warm and competent stereotypes are likely to result in more positive emotional and behavioral responses towards the outgroup (Cuddy et al., 2007). Second, there was a potential concern that interventions such as imagined contact could inadvertently lead to paternalistic stereotypes of the outgroup, as indicated by high warmth and low competence outgroup ratings. These findings show that, in fact, imagined contact encourages children to hold a positive, but *not* a paternalistic, stereotype of the physically disabled.

It is important to note that while intergroup bias along the warmth dimension declined with age, children's intergroup bias along the competence dimension remained unchanged. That is, children viewed the ingroup as more competent than the outgroup, and this did not change as children got older. This suggests that, with age, children appear to adopt a paternalistic view of the outgroup, in relation to the ingroup. This may be due to confusion regarding the meaning of the term 'physically disabled'. Our competency measure was based on perceived school performance of a physically disabled child. Children may have been confused by the definition of physically disabled provided, and thought physically disabled children were also less able to complete tasks at school. Nevertheless, this finding suggests future research could examine the development of paternalistic stereotypes in childhood and in particular the importance of 'warmth' and 'competence' ratings in the formation of cross-group friendships in childhood.

These findings have both theoretical and practical value. In terms of theoretical implications, the findings advance intergroup contact theory, and specifically the imagined contact approach, in a number of ways. Firstly, the research provides further evidence of the veracity of the intergroup contact effect, as merely imagining interacting with an outgroup member was sufficient to reduce intergroup bias in young children. Secondly, the research provides further support for the theory of imagined contact (Crisp & Turner, 2009; Crisp

et al., 2008) by demonstrating the imagined contact effect among young children in the context of attitudes towards the disabled and ethnic groups. This is an age group and intergroup contexts that have not previously been examined in the field of imagined contact. Thirdly, the findings suggest that the imagined contact effect may be most effective among those with less experience of the outgroup. Finally, the findings further our understanding of extended contact by showing, for the first time, that it affects not only outgroup attitude, but also perceptions of warmth and competence, and intended behaviour.

In terms of practical implications, the research provides the first evidence that imagined contact could be an effective prejudice-reduction tool for use in schools. Importantly, the findings also show that young children's attitudes are open to change, which highlights the value of designing and implementing prejudice-reduction interventions for this young age group. Currently, this technique is being trialed as a long-term intervention in pre-schools in the UK.

### Limitations and future research

One limitation of these studies is that measures of direct intergroup contact and experience were not obtained, and it was expected that younger children, by virtue of their narrower social network and lesser exposure to different social influences, would be less experienced with the outgroup. However, the schools involved in the research had some disabled children enrolled throughout the school years; therefore it is likely that with age, children would have had more experience with the outgroup, due to cumulative experience and wider social networks that might encompass more disabled children. Nonetheless, it was found that overall both younger and older children showed intergroup bias, which suggests that, although older children most likely had more direct contact with disabled children, this may not necessarily have been positive optimal contact. Therefore, future research should examine the importance of quantity and quality of direct experience with the outgroup when examining the effect of imagined contact.

To date, research has not examined the longevity of the imagined contact effect. In the current study, dependent measures were assessed immediately after the imagination task. However, if imagined contact is to have a powerful impact on attitudes and behaviour, its effects should last beyond completion of the dependent measures. Future research is necessary to identify whether the effect of the intervention remains in the days and weeks following the task, and if not, whether repeated implementation of an imagination task, or other variations on the basic task, would have a longer-lasting effect.

Future research could also examine the underlying mechanisms of the imagined contact effect. To date we know very little about the mechanisms by which imagined

contact influences children's attitudes towards other social groups. Potential mechanisms, derived from intergroup contact and developmental literature, include anxiety about interacting with other groups (Islam & Hewstone, 1993), perceived similarity (Wright & Tropp, 2005) and social and cognitive empathy (Nesdale, Durkin, Maass & Griffiths, 2005). Furthermore, within social psychology there is debate surrounding whether group membership or individual characteristics should be made salient during contact (see Brown & Hewstone, 2005). Although this issue has not yet been examined in the context of imagined contact it may have important implications for the characteristics of this technique. In the style of Cameron et al., (2006), future research should examine different forms of imagined contact in order to develop a technique with optimal effectiveness, and this will also inform intergroup contact theory as different dimensions of intergroup contact will be tested in a new context.

The aim of imagined contact is to increase the likelihood of future intergroup interactions (Crisp & Turner, 2009; Crisp et al., 2008). The current research showed that the youngest children's self-reported *intended* behavior to interact with an outgroup member was improved as a result of the intervention. However, measures of *actual* intergroup behavior subsequent to the intervention were not obtained. This limitation reflects a general methodological limitation of the intergroup contact field, which rarely studies the effects of contact on actual intergroup behavior following contact. In their recent longitudinal study Binder et al. (2009) concluded that the relationship between prejudice and contact is bidirectional, meaning that intergroup attitudes predict subsequent levels of intergroup contact. This implies that children whose intergroup attitudes and intended behavior is improved as a result of imagined contact may go on to have more intergroup contact in the future. However, in order to fully test the imagined contact hypothesis, further research is required to test the effects of imagined contact on subsequent real-life intergroup behaviors.

Currently, 'imagined contact' is being trialed as a long-term intervention that has been embedded in a number of pre-school and primary school settings in the United Kingdom. Although the current research suggests that imagined contact could be an effective prejudice-reduction tool, it is essential that the technique is developed and tested as a long-term interventions embedded in school settings (see Aboud & Fenwick, 1999; Aboud & Levy, 2000; Houlette, Gaertner, Johnson, Banker, Riek & Dovidio, 2004). Careful evaluation and practitioner is necessary in order to ensure that the resultant technique is both practical and effective.

In conclusion, this research illustrates that conducting research with children can enrich developmental and social psychological theories of intergroup contact. The findings of this study advance imagined contact theory by showing the effectiveness of this technique in improving attitudes and stereotypes amongst young children.

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