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**The Role of Multiple Social Categorisation  
in Promoting the Inclusion in the Human Group of  
Outgroup Members**

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*All good people agree  
and all good people say  
All nice people like us are we  
and everyone else is they:  
But if you cross over the sea,  
instead of over the way  
You may end up by (think of it!) looking on we  
as only a sort of they.*

Rudyard Kipling

*Maintaining one's vigilance against biases is a chore  
but the chance to avoid a costly mistake is sometimes worth the effort*

Daniel Kahneman

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## Abstract

This dissertation examines social cognitive processes that promote perceived inclusion of outgroup members in the human group.

The first line of research pursued in this contribution investigates the effectiveness of multiple categorisation as a human-enhancing mechanism towards outgroups considered.

In two studies, using different targets and alternative experimental measures, we analysed whether perceiving others, along multiple social categorisations, predicts not only a reduction of discrimination towards them, but also an enhancement in the perception of their humanness.

Study 1 showed that perceiving members of a rival University along multiple categorical dimensions enhances the tendency to attribute them human traits. Study 2 examined whether the humanisation effect, deriving from multiple categorisation, could be extended to a threatening and distant social group, such as immigrants. Results confirmed an increase of immigrants' perceived inclusion in the human group in all multiple vs. simple categorisation conditions, in terms of both judgments and intentional behaviors to support their health. Furthermore, de-categorisation as well as perceived threat from immigrants explained the relationship between categorisation and their inclusion in the human group. Thus, on the basis of this primary evidence, we summarized that multiple categorisation promotes inclusion of outgroupers in the human group.

The second line of research extends the issue of social inclusion of outgroups, through attribution of humanness, by investigating counter-stereotypical (vs. stereotypical) expectations of others.

In Study 3, participants were exposed to either stereotypical or counter-stereotypical category combinations and then were asked to complete a series of logical problems and to judge others' ambiguous behaviors. Results showed that the process of inconsistency resolution, generated by counter-stereotypical category combination, improved both subsequent unrelated

cognitive and social judgments. In Study 4, participants who had previously thought about a counter-stereotypical target took more time in a task measuring reaction time and also, on the attribution of humanness tasks, they included a variety of discriminated outgroups in the human group to a greater extent than participants who had thought about a stereotypical combination.

Study 5 confirmed the positive effects of counter-stereotypical thinking on cognitive outcomes and on humanisation of outgroups, using alternative experimental materials. On the one hand, being exposed to incongruent category combination led to less reliance on heuristic thoughts in reasoning problems. On the other hand, it favoured the generalisation of humanisation to a variety of social groups. Furthermore, the humanising effect across different outgroups was explained by cognitive flexibility.

Taken together, this coherent set of findings highlights, for the first time, the potential of multiple categorisation in favouring attribution of humanness to others, thus improving intergroup relations.

## General Introduction

The present dissertation addresses the social cognitive processes of multiple categorisation and counter-stereotypical categorisation in favouring perceived inclusion of outgroup members in the human group.

Previous research has shown that perceiving others along multiple and incongruent criteria attenuates social prejudices towards the target at stake, challenging intergroup differences by directing attention to individual instead of categorical characteristics (Crisp, Hewstone, & Rubin, 2001; Crisp, Hewstone & Cairns, 2001; Hall & Crisp, 2005).

However, up to now there is very scarce evidence on the role of social categorisation as a *costruens* device that may lead to the attribution of humanness to outgroups. Since the available evidence showed that multiple categorisation involves a reduction of intergroup differences on which dehumanisation, the tendency to consider outgroups less human than one own's group, relies, the present work intends to explore the role of multiple categorisation in promoting perceived humanity of others.

In order to highlight the relevance of our empirical research, we review the literature on social categorisation, starting from the studies on dichotomous ingroup/outgroup categorisation that lead to intergroup differentiation, discrimination and social conflict, and ending by considering multiple and complex categorisation, as social cognitive processes reducing intergroup prejudice. Then, we review relevant research on dehumanisation, addressing antecedents, contents and multifaceted consequences of this tendency to exclude the "others" from the human group, assessing that research is needed to address the *construens* role of categorisation in including outgroups in the human group.

In two studies, we examine the effectiveness of multiple categorisation (Crisp & Hewstone, 2007) as a humanness-enhancing mechanism that works on the basis of a shift in information processing from categorical to individuating judgments. Specifically, in the first study multiple vs.



simple categorisation is manipulated considering real, rival groups. It demonstrates that multiple categorisation triggers humanising outcomes towards outgroups.

Study 2, involving a highly threatening outgroup, that is, immigrants, goes further beyond previous findings showing that multiple categorisation increases not only attribution of human traits to the target, but also supports for policies in defense of outgroup members' health.

The findings support the contention that perceiving others, through multiple social categories, leads to humanisation outcomes and this phenomenon is explained by the de-categorisation process.

In the third part, we consider more properly the generalisation of humanisation outcomes to emarginated outgroups and its social cognitive mediators. Specifically, across three studies we provide evidence that counter-stereotypical vs. stereotypical category combinations elicit more positive and less stereotypical judgments towards different outgroups and more interestingly, the attribution of higher humanness to unrelated outgroups. Furthermore, the extension of humanising outcomes to different discriminated outgroups is explained by an increase of cognitive flexibility, such as the inhibition of reliance on heuristic thoughts and stereotypical judgments.

In the general discussion, we highlight the relevance of our findings in the context of impression formation, groups perception and intergroup relationships.

**PART I**  
**THEORETICAL INTRODUCTION**

## SOCIAL CATEGORISATION

“The best hope for peace in the world lies in the simple but far-reaching recognition that we all have different associations and affiliations, and we need not to see ourselves as being rigidly divided by a single categorisation of hardened groups, which confront each other”.

This claim of Nobel Prize Amartya Sen found scientific confirmation in the development of social psychology research showing that while categorisation along one dimension increases intergroup prejudice, multiple social categorisation attenuates discrimination towards the target at stake.

This chapter is all about categorisation processes. In line with the development of literature on social categorisation, we first review research showing the ingroup-outgroup dichotomy as being the basis of intergroup prejudice. Then, we consider research focused on positive effects of categorisation, highlighting that increasing the number of categories attributed to others reduces intergroup differentiations and prejudice. In the end, we examine a recent theorization addressing the role of multiple incongruent categorisation on cognitive flexibility and prejudice reduction.

### The origins of intergroup prejudice

#### *Social categorisation process*

Social categorisation is concerned with how we understand similarities and differences amongst human beings. Allport (1954) suggested that categorical thinking may be necessary for human beings to understand their physical and social environment. However, he also acknowledged that excessively rigid categorisation and strong tendencies to view the world in terms of dichotomous categories may lead to social prejudice. Thus, despite the obvious convenience and utility of social categorisation, rigid (vs. flexible) and exclusive (vs. inclusive) categorical thinking

can result in devastating consequences for intergroup relations. Indeed, categorizing the social world into exclusive ingroups and outgroups (e.g., men vs. women; Blacks vs. Whites) often has the effect of isolating different human groups, since they are perceived as separate and fundamentally different from each other (e.g., Allport, 1954; Tajfel & Turner, 1979).

### *Minimal Group Paradigm and the essential base of intergroup prejudice*

In the effort to explain the socio-cognitive origins of intergroup discriminations, Tajfel and colleagues (Tajfel, Billig, Bundy, & Flament, 1971) explored the link between categorisation and prejudice using an experimental procedure known as the minimal group paradigm (MGP; Tajfel et al., 1971). The authors found that by simply being placed into groups, even ones with no apparent meaningful basis, people judge ingroup members more favourably than outgroup members and/or give more resources to ingroup members than to outgroup ones.

Then Tajfel and colleagues stated that mere categorisation, the emphasizing of ingroup-outgroup differentiation and the assimilation of outgroup members are at the basis of intergroup discrimination.

### *Social Identity Theory and the need for positive distinctiveness*

The evidence gathered from the original MGP studies provided the foundation for the development of the social identity theory (SIT; Tajfel & Turner, 1979), which offers a motivational explanation for intergroup differentiation. According to the authors, individuals have a need for positive social identity, a facet of a person's self concept based on his or her group membership. In order to attain a positive social identity, people are motivated to think and act in ways to achieve or maintain a positive distinctiveness between their own group and relevant outgroups (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). It is this need for positive distinctiveness that leads to intergroup differentiation and outgroup derogation. It seems relevant to notice that the need for

positive distinctiveness, that explains intergroup discrimination, is triggered by categorisation along a single and relevant dimension. However, Tajfel and Turner (1979) argued that ingroup favouritism is driven by three important aspects: (a) whether a particular group membership is significant for one's own self-concept; (b) whether the social context allows comparisons between groups; and (c) whether the intergroup comparative dimension is perceived as important.

### *Self-Categorisation Theory*

Self-categorisation theory (SCT) proposed by Turner and colleagues (1987), expanded the application and scope of SIT (Tajfel & Turner, 1979), suggesting a broader explanation of the cognitive mechanisms that activate group instead of individual behaviours. According to this model, there are at least three hierarchical levels of abstraction pertaining to the self-concept, implying the cognitive grouping of the self as identical to one group of stimuli in contrast to some other group of stimuli (Turner, 1999). In particular, the super-ordinate level of human categorisation defines human beings in contrast to other species, the intermediate level of ingroup-outgroup categorisation is based on similarities and differences between human beings as a function of their group membership and the subordinate level of personal categorisation concerns distinctions between oneself as an individual in comparison to others. Interestingly, Turner et al. (1987) set intergroup behavior such as social conflict and discrimination only at the intermediate level of categorisation (i.e., the social identity level), where ingroup-outgroup categorisations are salient and people define themselves as members of a particular group in contrast with outgroup members.

Overall SIT and SCT illustrate a core aspect of intergroup relationships, that is people have a tendency to distinguish human beings between ingroup and outgroup members, and invariably favour the first more than the second. Drawing from this evidence, intergroup discrimination can be reduced by decreasing ingroup-outgroup distinction.

## When can intergroup prejudice be reduced?

### *Crossed-categorisation paradigm as the first attempt to reduce intergroup prejudice*

The crossed-categorisation paradigm (CC; Deschamps & Doise, 1978) represents the first attempt to attenuate intergroup prejudice emphasizing others' multiple social identities. In an effort to promote interaction and cooperation between people, the authors argued that the simultaneous salience of two category dimensions should lead to a decrease in intergroup discrimination, because differentiation on one category dimension will work against assimilation on the other category dimension and vice versa. Drawing from this weakening of category distinctiveness, crossed categorisation involving an ingroup identity should be judged positively, and bias should be therefore reduced.

However, research conducted after the seminal work of Deschamps and Doise (1978) provided contradictory evidence about cross categorisation effectiveness in reducing prejudice (for more detailed reviews see Crisp, Ensari, Hewstone, & Miller, 2002). In particular, Mullen, Migdal, and Hewstone (2001) highlighted that on the basis of different operationalization of intergroup bias and also on the basis of the association of categories at stake (i.e., double outgroup), crossed-categorisation model provides support for a reduction but also an accentuation of intergroup discrimination.

### *Common Ingroup Identity Model and the promotion of intergroup similarities*

According to Sherif (1966), enhancing positive interdependence between groups, through shared goals, improves members' behaviour towards each others. Thus, fostering mutual similarities between groups should improve intergroup attitudes. Drawing from Sherif's notion, the common ingroup identity model (CIIM; Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993) posits that re-categorisation of a two-group representation (i.e. 'us' versus 'them') into a single but common

super-inclusive group (i.e. ‘we’), should reduce intergroup discrimination. Indeed, focusing on a common identity should lead people to extend favouritism and trust they previously reserved to their ingroups to all members of the new super-inclusive category, including former outgroup ones.

Despite an impressive body of (mainly experimental) empirical evidence supporting this model (for a review see Gaertner & Dovidio, 2000), it has been also shown that triggering intergroup similarities in some cases – i.e., intergroup conflict, high ingroup identification - may exacerbate negative intergroup relations and deprive individuals of valued social categories. In fact, as a way of responding to such danger Gaertner and Dovidio (2000) developed the so-called “dual identity model”, which represents a complex form of common ingroup identity, involving the simultaneous identification with nested subgroups and common group membership.

Along this line of thought, in increasingly multicultural and multiethnic societies it is clearly noticeable that more than two non-overlapping categorisations can serve as essential criteria for defining ourselves and others, thus making crossed categorisation paradigm as well as common ingroup identity model a rather simple conceptualization of multiple categorisation (Crisp & Hewstone, 2007).

When can perception of others along multiple criteria improve intergroup relations?

#### *Multiple Social Categorisation theory and de-categorisation process*

Crisp and colleagues (i.e., Crisp et al., 2001; Crisp & Hewstone, 2007; Hall & Crisp, 2005) went beyond artificial simplifications proposed by both CIIM and CC paradigm, with the aim of demonstrating that using more than two categories remove the rigid functionality of categorisation in the evaluative judgments of others. Indeed, according to Vanbeselaere (1987) people are cognitively able to use two crosscutting dimensions of social categorisation under normal processing conditions. Thus, as the number of crosscutting categorisation dimensions increases, the functionality of focusing on any one of those dimensions in forming impression should decrease,

blurring intergroup boundaries and reducing category differentiation. To test this assumption, Crisp et al. (2001) compared judgments towards a target in simple and multiple categorisation conditions. More specifically, participants were asked to compare Cardiff (ingroup) vs. Bristol (outgroup) University students in three different conditions. The first one consisted in a typical ingroup-outgroup dichotomous categorisation. The second condition involved multiple ingroup categorisation with five shared categorical dimensions for both the Cardiff and Bristol University students being added (age, major studied, gender, residence). Finally, in the third condition involving multiple outgroup categorisation five additional categorical dimensions were added that did not pertain to the participants (unshared). Results revealed a reduction of prejudice in the multiple conditions compared to the simple categorisation one. This effect was present irrespectively of whether the additional categories were shared or unshared by the participants, since both conditions implied a reduction of intergroup differentiation. More importantly, results showed that the multiple categorisation effect on prejudice reduction was mediated by de-categorisation, that is an individuated impression of the target considered. Indeed, in forming impressions, people can make use of either top-down heuristics, which focuses on categorical information or bottom-up systematic approach focusing more on individuating information. These two modalities can be seen as representing the extremes of a continuum along which social perception generally occurs (Fiske & Neuberg, 1990) . Thus, according to main models of impression formation, de-categorisation represents the switch in information processing from categorisation to individuation.

In support of this notion, Halford, Baker, McCredden, and Bain (2005) found that people are able to process information which can be decomposed along up to four crosscutting subtask dimensions. Beyond this, further classification is no longer useful because it would render the information process very difficult to handle. Nevertheless, starting from Arcuri's experiment (1982), to Taylor and colleagues' category confusion paradigm (1978), and more recently Crisp & Hewstone's studies on memory recollection (2001), it has been confirmed that people use multiple



categorisations to guide their processing in social contexts. Furthermore, in a later set of studies, Hall and Crisp (2005) extended the paradigm used by Crisp et al. (2001) by showing a decrease of intergroup bias when participants were asked to generate as many alternative categorisations of a university student (study 2) or themselves (study 1) as possible.

In sum, multiple categorisation theory points out first, that people can and do employ a large number of categorisations in everyday social judgments, and second, that de-categorisation process promotes individuated, not stereotypical judgments (Crisp & Hewstone, 2007).

Based on the consistent corpus of evidence on the positive effects of multiple categorisation, some implications are worth to be highlighted in relation to the aims of this dissertation.

First, multiple categorisation challenges the socio-cognitive process at the basis of discrimination by indirectly inhibiting the saliency and search for positive distinctiveness. In other words, the efficacy of multiple categorisation strategy relies on increasing the number of categories simultaneously considered.

Second, the de-categorisation process understood as a shifting of the focus of information processing from categories to individuals may simply lead to target sub-typing (Weber & Crocker, 1983), without generalisation of positive attitudes to the group as a whole. Thus, multiple categorisation may not promote an extended social inclusion. However, a repeated and consistent adoption of de-categorisation may over time lead individuals to develop a processing style whereby automatic categorisation and stereotyping is avoided.

### *Complexity of multiple categorisation*

While multiple categorisation theory concerns observer's perspective and thus perception of others' multiple social identities, social identity complexity model (Roccas & Brewer, 2002) focuses on the actor's perspective and thus the degree of overlap between social categories of which a person is simultaneously a member. The authors identified four alternative forms of identity structure that

reflect different ways in which the relationships among multiple ingroups can be subjectively represented. Intersection specifies the condition in which individuals possess a very simplified identity structure, based on the junction of all their multiple group memberships. Dominance defines high overlap of multiple ingroups, since individuals adopt one primary group identification to which all other potential group identities are subordinated. Compartmentalization concerns a series of equally important but context specific multiple identities, that are activated through a process of differentiation and isolation. Finally, merger represents a more inclusive and more complex identity structure, since people acknowledge, and accept, that membership in multiple ingroups is not fully convergent, nor overlapping. Roccas and Brewer's model relies on the assumption that multiple categorisation augments tolerance towards others (see also Brewer & Pierce, 2005). However, complex identities are not regarded as synonymous of multiple identities. Indeed, Roccas and Brewer argued that what increases outgroup tolerance and reduces intergroup prejudice is not simply the number of group identities an individual has, but rather, the more or less inclusive (i.e., merger) subjective representation an individual has of the interrelations among his/her different self-definitions.

Overall, this evidence underlines the role of complexity among category interrelations, since perceiving multiple and not-overlapping social memberships shapes impression formation about others as well as oneself and thus influences intergroup relations.

#### *Counter-stereotypical category combinations and inhibition of stereotypical attributions*

It is not just the number of categories simultaneously considered but also the level of their inconsistency that triggers a systematic reassessment of the functional relevance of existing stereotypical knowledge involving the attenuation of prejudice attribution. Indeed, when considering others along more than one category dimension, not only the convergence between the

observer's perceived affiliations, but also the degree of category congruency plays a role in impression formation process.

A particular form of multiple categorisation is the incongruent, surprising and non-normative combination of two equally salient constituent categories that form a complex social category conjunction (e.g., female mechanic). In Kunda, Miller, & Claire's famous example (1990), someone who is a Harvard educated carpenter elicits perceivers to produce novel attributions, since the stereotypical features of one category cannot be applied to the other and vice versa. In the example, the "non-materialistic" attribute is unrelated to both categories but it derives from their association. Furthermore, Hastie, Schroeder, & Weber (1990) conceptualized that a process of inconsistency resolution triggered by surprising category combinations implies the emergence of new attributes as well as the inhibition of stereotypical ones. In three studies, comparing incongruent vs. congruent category combinations across different targets (female vs. male mechanics; Oxford-educated bricklayers vs. art critics) Hutter & Crisp (2005, 2006) tested for the first time the production of fewer stereotypical attributes and more emergent ones when participants perceived targets along incongruent criteria. Thus, challenging stereotypical expectations by means of inconsistent and unusual category combination inhibits generalisations on which biased judgments commonly rely. However, the positive evaluation effect of multiple categorisation may be limited to counter-stereotypical single targets only, without extension to the entire group. In addition, engaging in inconsistency resolution is a cognitively depleting process (Hutter & Crisp, 2006). For this reason, people tend to use categories at early stages of impression formation and only when they perceive conflicting category combinations there appears to be a shift to a more individuated and generative mode of thought (Hutter, Crisp, Humphreys, Waters, & Moffitt, 2009).

Thus, the studies described above show that a particular kind of crossed categorisation, namely counter-stereotypical combination, inhibits attribution of social stereotypes and prejudice.

In this vein, it is the nature of the combination instead of the number of the categories considered that improves intergroup judgments and relationships.

### *Cognitive Adaptation to the Experience of Social and Cultural Diversity Model*

The recent model of cognitive adaptation to the experience of social and cultural diversity (Crisp & Turner, 2011) goes beyond research on prejudice reduction offering a broad perspective on the fundamental antecedents and processes that improve both cognitive flexibility and social cohesion. The authors address four distinct subsequent elements such as Categorisation-Processing-Adaptation-Generalisation (CPAG) derived by the enriching experience of diversity. Indeed, in the model they highlight that not only do cognitive processes explain intergroup relationships, as shown by previous research, but also actual intergroup experience affects cognitive processes. More specifically, in increasingly multicultural societies the experience of stereotypically challenging diversity may affect individuals' cognitive style, improving judgments and behaviours across different areas, thus leading to generalised individual and societal transformations. The novelty of CPAG model (Crisp and Turner, 2011) stands in outlining potential antecedents, cognitive and motivational processes and generalised effects implied in the very experience of social and cultural diversity. Furthermore, the model integrates findings from a number of different literatures, including social categorisation research (Tadmor & Tetlock, 2006) and intergroup relations (Crisp and Hewstone, 2007) together with biculturalism (Benet-Martinez, Lee, & Leu, 2006), acculturation (Verkuyten, 2005), and cross-cultural psychology. Four "stages" have been identified, representing the required combination of elements that lead to achieving a generalised cognitive flexibility, based on the experience of social diversity. Before turning to the four different stages it should be necessary to note that the combination presented in the model implicates two distinct perspectives of experiencing diversity, namely perceiving multicultural others and possessing a multicultural identity.

First of all, the authors contend that cognitive adaptation is activated by specific categorisation conditions that challenge stereotypical expectations. Thus, multiple and counter-stereotypical category combinations can explain core mechanisms that underline cross-cultural models (Berry et al., 2006), representing a generalisation of the processes beyond the experience of diversity. In other words, the reconciliation of stereotypical inconsistent categorisations is the first requirement of cognitive adaptation. A number of studies, from self-construal to organizational diversity and creativity provide evidence on the innovative and positive role of dealing with diversity in terms of intergroup relationships, cognition and self-esteem.

Second, to solve stereotypical inconsistency derived by incongruent category combinations, two distinct non interchangeable processing conditions are needed, that is motivation and cognitive ability to engage in understanding the novel and counter-normative situation presented. Third, if both categorisation and processing conditions are met, then an inconsistency resolution process, composed of two elaborative sub-processes, will be activated. According to multiple categorisation studies, these are suppression of stereotypical knowledge and enhancement of generative thought. In the end, repeated engagement in inconsistency resolution processes may lead to cognitive adaptation to diversity, not only in terms of inhibition of stereotypes toward specific social targets, but also as a general cognitive flexibility applied to different domains of judgment and behavior. In support to this assumption, studies on cognitive development have showed a reduction in prejudice toward Blacks as a result of training White children in Piagetian tasks (e.g., conservation of number, reversibility, and super-ordinate classification) with nonsocial targets (e.g., plasticine balls) (Hohn, 1973). In a similar vein, Bigler and Liben (1992) provide evidence of reduction in gender stereotyping as a result of training children to sort pictures of hats and shoes of two different colours into the appropriate cells of a 2 (article of clothing) x 2 (colour) matrix.

In sum, until now evidence has confirmed that perceiving counter-stereotypical category combination decreases prejudice towards the specific target. However, there is no evidence on the possible generalisation on other targets, nor on the processes needed to achieve such an effect.

### *Concluding remarks*

The literature reviewed in this section shows that a clear and exclusive ingroup-outgroup distinction between people (Tajfel et al., 1971; Tajfel & Turner, 1979) may undoubtedly lead to intergroup discrimination and prejudice. On the other hand, given that intergroup prejudice originally relies on mere categorisation, the notion that increasingly complex and differentiated cognitive representations of others can improve intergroup relationships has received consistent scholarly support.

Considering cross-cutting category combination represented the first attempt to reduce intergroup bias (Deschamps & Doise, 1978). In recent years scholars (Crisp, Hewstone & Rubin, 2001; Crisp, Hewstone & Cairns, 2001; Hall & Crisp, 2005) have shown that perceiving more than two categories attenuates intergroup differentiation and prejudice. Further research revealed that it is not the number but the complexity of category combination that inhibits attribution of stereotypes and prejudice (Hutter & Crisp, 2005). Finally Crisp and Turner (2010) theorized that solving incongruent stereotypical expectations leads to cognitive adaptation to diversity, involving an improvement of cognitive style across different areas.

## THE PHENOMENON OF DEHUMANISATION

When does dehumanisation occur?

### *Dehumanising prejudice*

In recent years there has been a growing interest in a “common component of extreme kinds of prejudice” (Brown, 2002, p.195) such as dehumanisation. This phenomenon consists of various forms of denial of the humanity of others and is considered to play a crucial role in the most heinous ways of social discrimination. Dehumanisation has been studied as an antecedent of the genocides of the last and current centuries (i.e., Armenian massacre, Nazi’s Holocaust, ethnic conflict in Rwanda).

Scholars have contended different aspects through which a full definition of human beings can be denied. In particular, the delegitimation of others (Zimbardo, 1969), the denial of their identity and belonging to a community (Kelman, 1973), the exclusion from the moral community (Opatow, 1990), and the lack of prosocial values (Struch & Schwartz, 1989) justify aggressive behaviours towards others, since they are considered expendable and undeserving humane treatment (see Albarello & Rubini, 2008). In this regard, it seems relevant to underline that these assumptions shed light on the multifaceted aspects that contribute to the inclusion/exclusion from the human group of all human beings.

More recent theories have revealed the pervasiveness of dehumanisation at the intergroup level, showing the persistence of the tendency to consider others as less human than us, even in modern and democratic societies. Therefore, dehumanisation may be not only a matter of intergroup conflicts, but also of everyday interpersonal and intergroup relationships. Thus, it seems relevant to consider ways of reducing this particularly dangerous and multifaceted form of prejudice.

*A particular case of everyday dehumanisation: the infrahumanisation paradigm*

In an effort to demonstrate that dehumanisation can occur in everyday interactions and also in absence of extreme intergroup hostility, Leyens et al. (2000, 2001) introduced a subtle concept of dehumanisation, named infrahumanisation. The authors highlighted this phenomenon as “the belief in the ‘less human essence’ of outgroups” (Demoulin et al., 2004, p. 264). According to Leyens and colleagues, people tend to explain intergroup differences in terms of different human essence. Reserving the human essence to their ingroups, they tend to attribute to outgroup members a reduced amount of humanity. More specifically, infrahumanisation concerns the attribution to a lesser extent to outgroups compared to ingroup members of uniquely human features, such as secondary emotions, language, intellectual abilities.

In a series of studies, Leyens and colleagues demonstrated that secondary, but not primary, emotions are attributed to ingroup members more than outgroup members, independent of emotion valence. In addition, it is assumed to be independent of the status of the ingroup or of the outgroup, because all human groups are assumed to be motivated to reserve the human essence to their ingroup. Interestingly, Leyens et al.’s (2000) theorization is drawn from some of the major tenets of social identity theory (SIT; Tajfel & Turner, 1979) assuming that infrahumanisation is an outcome of people’s tendency to achieve positive differentiation of their ingroup. Researchers further assume that denying outgroups essential human emotions justifies their subsequent dehumanising treatment (Leyens, Cortes, Demoulin, Dovidio, et al., 2003). Scholars have contended that the tendency to attribute more prototypical “human” features to ingroup members than outgroup ones can, in the last instance, legitimize the inhuman treatment delivered to certain outgroups. In this regard, Vaes, Paladino, Castelli, Leyens, and Giovannazzi (2003) have showed that individuals tend to display prosociality to a greater extent towards ingroup members that express secondary emotions than towards outgroup members expressing the same emotions. Conversely, there was no difference in prosocial behavior towards ingroup and outgroup members displaying primary not uniquely human emotions (i.e., basic emotions; Ekman, 1992; Epstein, 1984).



To conclude, infrahumanisation may occur in everyday intergroup relations, not only against the backdrop of extreme violence, due to the pervasive and subtle tendency of people to believe that their ingroup possesses the ‘essence of humanity’ to a greater extent than other groups (Leyens et al., 2000; 2001).

*Different from animal group and from inanimate group: dehumanisation theory*

The denial of others’ humanness may be expressed in different ways, since humanness seems to be a complex and multi-comprehensive construct. While evidence on infrahumanisation has shown that the outgroup is implicitly seen as more animal-like than the ingroup (Viki, Winchester, Titshall, Chisango, Pina & Russel, 2006), Haslam (2006) has distinguished animalistic dehumanisation based on the denial of uniquely human traits, from objectification which concerns the denial of human nature (see also Heflick & Goldenberg, 2009; Loughnan & Haslam, 2007; Loughnan, Haslam, & Kashima, 2009). More specifically, this author suggested that while the uniquely human features such as self-control, morality, intelligence, openness and sociability, rest on comparisons between humans and animals, the human nature component of humanness is contrasted with machines or automata, including instinctive behaviors, primary emotions and other features related to what makes humans and animals living organisms.

In a series of studies, Haslam and colleagues established that human nature and human uniqueness are important dimensions of social perception at both the interpersonal (Bastian & Haslam, 2010; Haslam, Bain, Douge, Lee, & Bastian, 2005; Haslam & Bain, 2007; Loughnan et al., 2010) and intergroup level (Bain, Park, Kwok, & Haslam, 2009; Saminaden, Loughnan, & Haslam, 2010).

The human nature traits were found to be relatively emotional, desirable, prevalent, and universal, whereas the uniquely human traits were judged as later developing and culturally specific

(Haslam et al., 2005). When uniquely human characteristics are denied to others, they should be perceived as rude, uncultured, lacking in self-control, and unintelligent. Instead, when human nature is denied to others, they should be perceived as cold, interchangeable, passive, and superficial (Haslam, 2006).

Thus, the conceptualization of humanness seems to rely on two different dimensions, that arguably may evoke two fundamental dimensions of social judgment addressed by Glick & Fiske's stereotype content model (1996; 2001). According to this model, warmth and competence represent central stereotypes on which evaluations of outgroups commonly rely.

However, dehumanisation is assumed to go beyond the negative dimension of stereotypes and prejudice, as out-group members can be dehumanised in terms of positive animalistic attributes (Chulvi & Perez, 2003; Perez, Moscovici, & Chulvi, 2002), or in terms of highly efficient robots, as Loughnan and Haslam (2007) showed, using the Go/No-go Association Task (GNAT; Nosek & Banaji, 2001).

### *Intergroup consequences of outgroups dehumanisation*

Dehumanising others legitimizes the most hideous judgments and behaviors towards them. It is therefore imperative to investigate ways of how to attenuate this phenomenon but also how to enhance the perception of others' humanity.

The link between dehumanisation and negative treatment of others has been robustly established in the context of intergroup violence and aggression. By denying their humanity, people remove others from their circle of moral concern, facilitating direct aggression at the intergroup (Kelman, 1973; Bar-Tal, 1990; Opatow, 1990; Staub, 1989, 1990) and interpersonal levels (Gietermeyer & McLatchie, 2011). In addition to facilitating intergroup conflict, outgroup dehumanisation can also be used to justify ongoing intergroup violence (Struch & Schwartz, 1989) as well as past aggression (Castano & Giner-Sorolla, 2006). While priming ingroup responsibility

for past atrocities increases the dehumanisation of victims (Cehajic, Brown & Gonzàlez, 2009), the same recall negatively predicts empathy and compassion towards victims. Consequently it is not surprising that victims' dehumanisation is negatively related to reconciliatory processes such as support for reparation policies (Zebel, Zimmerman, Viki, & Doosje, 2008). Furthermore, Hodson & Costello (2007) showed that the effect of interpersonal-disgust sensitivity on negative attitudes toward immigrants, foreigners, and socially deviant groups, was explained by dehumanisation of the outgroups, as well as ideological orientations (social dominance orientation, right-wing authoritarianism). Interestingly even the effects of social dominance orientation on group attitudes were mediated by outgroups dehumanisation.

In their studies, Pratto and Glasford (2008) confirmed the role of categorisation in competitive contexts of outgroups dehumanisation, measured in an innovative way. Using decisions taken under risk, they found that Americans valued Iraqi and American lives equally in a non competitive context. In contrast, American lives were more valuable under outcome competition. Importantly, when a large number of lives were at stake, this mattered less for enemy civilians than it did for co-national combatants. Furthermore, Americans who were high on social dominance orientation were more likely to make decisions that protect US interests than decisions that protect the lives of Iraqi innocent civilians (Pratto & Glasford, 2008).

In conclusion, one of the functions of dehumanisation is that of undermining pro-social behavior towards the outgroup members. In extreme settings this helps to facilitate and justify direct violence exerted towards others. In more mundane settings it is linked to a withdrawal of support, decreased empathy and compassion.

#### When can outgroup dehumanisation be reduced?

To date, very few studies have explored ways of reducing intergroup dehumanisation, despite the increasing evidence on the relevance of this phenomenon. The main attempts made to

limit this pervasive tendency concern cognitive and motivational strategies aimed at re-categorizing the arbitrary dichotomous distinction between “us” and “them” into a super-ordinate group.

Gaunt (2008) suggests that outgroup dehumanisation can be reduced by altering social categorisation, exploring the moderating role of common ingroup identity model (Gaertner and Dovidio, 2000) on inhumanisation. This author showed that the more participants identified with a common super-ordinate national group, the less they dehumanised outgroup members. Moreover, the more outgroup members were perceived as highly identified with the super-ordinate national group, the more they were attributed uniquely human emotions. This evidence shows that by reducing intergroup differentiation via common ingroup identification, perceived humanity of outgroups increases.

Albarello e Rubini (submitted) have shown that the combination of multiple categorisation and activation of human categorisation represent the most optimal condition for reduction of dehumanisation towards Blacks. Both attribution of secondary emotions and inalienability of human rights to the target, that is, a novel measure of inclusion/exclusion from one’s human moral ingroup (cf. Opatow, 1990) were considered as main dependent variables. Taken together these studies point out that multiple categorisation including the super-ordinate human group may serve as a socio-cognitive device to reduce dehumanisation.

Similarly, Costello and Hodson (2010) established that the belief that animals and humans are relatively similar results in higher humanisation of immigrants, and that in turns predicts more favourable attitudes towards immigrants. On the contrary, Tam et al. (2008) studies on post-conflict reconciliation in Northern Ireland have shown that intergroup contact does not ameliorate outgroup dehumanisation, even if it plays a role in reducing anger towards outgroup members as well as in improving attitudes towards them.

### *Concluding remarks*

A decade of research on dehumanisation has shown different ways through which people tend to perceive some groups as less human than others. Moreover, dehumanisation is conceived as an intergroup phenomenon, concerning the tendency to consider outgroups members as less human than ingroup ones. Thus, blurring intergroup differences seems to affect dehumanising prejudice. Finally, on the basis of the evidence revealing the role of dehumanisation in the perpetration of atrocious crimes against humanity, it is very relevant to investigate how it can be reduced, and the role that enlarging the perception of outgroups and their inclusion in the human group can play in this regard.

## LIMITATIONS OF THE LITERATURE, OPEN ISSUES AND AIMS OF THE DISSERTATION

The literature reviewed above reveals that the vast majority of studies employing dichotomous ingroup-outgroup classification highlights “the destruens” side of social categorisation processes, that leads to social discrimination, prejudice, social exclusion and dehumanisation of outgroups (Struch & Schwartz, 1989; Tajfel et al., 1971; Tajfel & Turner, 1979; Vaes et al., 2003).

Encouragingly, other studies (Crisp et al., 2001; Crisp & Hewstone, 2007; Hall & Crisp, 2005) revealed that social categorisation, when adopted along multiple dimensions and also in a surprising fashion through the combination of unexpected categorical dimensions, displays its moderating role, leading to prejudice reduction.

However, no studies so far have considered the *construens* side of categorisation, that could lead not only to prejudice reduction or attenuation of dehumanisation, but also to conceive outgroups as worthwhile members of the human group.

Thus, in a novel way, the studies reported in this dissertation are designed to shed light on the role of multiple categorisation and counter-stereotypical category conjunction in promoting the inclusion of outgroups members in the human group.

More specifically, Study 1 addresses multiple categorisation of students belonging to rival Universities in influencing their perceived inclusion in the human group.

Study 2 goes a step further testing the potency of multiple categorisation with immigrants, an outgroup that could be perceived as competitive and threatening (e.g., Duckitt, 2006; Esses, Hodson, & Dovidio, 2003; Esses, Jaskson, & Armstrong, 1998). Moreover, to enlarge the strength of multiple categorisation in both studies this independent variable is also operationalised by mixing shared and unshared categorical dimensions with respect to participants. Finally, analyzing the mediating role of de-categorisation, we intend to clarify whether this socio-cognitive process is at the basis of perceived inclusion in the human group of outgroup members.

The second line of empirical investigation is inspired by the CPAG model and addresses for the first time whether increasing, not just the number, but also the complexity of counter-stereotypical categorisation improves cognitive and social judgments across unrelated domains, such as generalizing its effects to the inclusion of discriminated and emarginated outgroups in the human group.

Study 3 addresses the role of counter-stereotypical categorisation in reducing reliance on heuristic thought in problem solving tasks and stereotypical attributions.

Study 4 investigates the mediating role of reduced reliance on heuristic thoughts as a consequence of exposure to counter-stereotypical targets in generalizing perceived inclusion in the human group of a variety of distant emarginated outgroups.

Study 5 aims to gather convergent validity of the findings of the second study adopting different measures for dissimilar outgroups.

We consider this an important step in order to further understand the positive effects of social categorisation as well as to fill the gap in the literature on socio-cognitive processes and moderators of the tendency to include others in the human group.

Table 1

*Overview of the Present Research*

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	Independent Variables	Measures	Main hypotheses
Study 1	- Target	- Perception of	Multiple vs. Simple
Study 2	- Categorisation	- Inclusion in the Human Group	Social Categorisation leads to an Improvement of target Inclusion in the Human Group
		- Equal Attribution of Human Traits	
		- Human Life Value	
		- Perceived Threat	
Study 3	- Category combination	- Perception of	Counter-Stereotypical
Study 4		- inclusion in the human group	Category Combination vs. Stereotypical
Study 5		- Attribution of secondary emotions	Category Combination leads to a General
		- Attribution of human traits	Inclusion of outgroups in the Human Group
		- Heuristics	through enhance of
		- Stereotypes	Cognitive Flexibility
		- Stroop test	



**MULTIPLE SOCIAL CATEGORISATION AND THE PERCEPTION OF OTHERS'**

**INCLUSION IN THE HUMAN GROUP**

## INTRODUCTION

In “The nature of prejudice” (1954), Gordon Allport claimed that perceiving others along one social category obscures not only all other affiliations they possess, but more importantly their shared belonging to humankind, with the subsequent effect of justifying the lack of tolerance and respect towards people of different gender, status, culture, religion, nationality. If it is true that dichotomous social categorisations divide the social world in “us” and “them”, what factors could reconcile such separation? The research reported in this set of studies examines whether perceiving others along multiple criteria facilitates their inclusion in the human group.

It must be said that after more than five decades from the publication of Allport’s pivotal work (1954), social psychologists have moved much forward in understanding not only the processes underlying social discrimination, but also the crucial factors that may help reduce it. Cross categorisation (Deschamps & Doise, 1978; Vanbeselaere, 1987, 1991), common ingroup identity (Gaertner & Dovidio, 2000), multiple categorisation (Crisp, Hewstone, & Rubin, 2001; Hall & Crisp, 2005), surprising category combination (Hastie, Schroeder, & Weber, 1990; Hutter & Crisp, 2005; Kunda, Miller, & Claire, 1990) are well-established paradigms that capture the psychological processes under which social prejudice and intergroup discrimination can be reduced. Recently scholars have shown that increasing the number of categorical dimensions on which others are perceived reduces the salience of each social category and by so doing categorical differentiation is also reduced (Crisp & Hewstone, 2007). This leads to a de-categorisation effect that mediates the reduction of intergroup bias.

Drawing from the studies on prejudice attenuation, we intended to test whether multiple social categorisation not only reduces prejudice, but also positively affects intergroup relationships facilitating the inclusion of outgroup members in the human group. In particular, we examined whether perceiving others along multiple social identities affects equal attribution of human traits to ingroups and outgroup members. In other words, we explored whether perceiving outgroup

members along multiple criteria can be a valid process in enhancing their humanness. While a growing corpus of evidence shows that the dehumanisation of others is a pervasive phenomenon at both intergroup and interpersonal level, very little is known on the processes that promote the inclusion of others in the human group.

Before introducing the studies, a brief reference to the relevant literature on multiple categorisation and dehumanisation is illustrated.

### Multiple Social Categorisation

We know that people are cognitively able to use two crosscutting dimensions of social categorisation under normal processing conditions (Vanbeselaere, 1987). In recent years, scholars (Crisp et al., 2001; Crisp, Hewstone, & Cairns, 2001; Hall & Crisp, 2005) have argued that perceiving multiple or counter-stereotypical category combinations instigates a systematic reassessment (and inhibition) of the functional relevance of stereotypical knowledge. In particular, Crisp and Hewstone (2007) have explained that perceiving others along multiple criteria decreases usefulness of any one dimension of social comparison in impression formation. This change in processing style leads to classify the target as an individual rather than a group member. In turn, this individuation process implies de-categorisation effects, such as removing relevant category-based biases and improving not only judgments, but also attitudes towards outgroups.

Crisp and colleagues (2001) have also shown that this impression formation process occurs irrespectively of considering multiple ingroup or outgroup bases for categorisation, because of the reduced salience of each social category. In their study, they asked participants to compare Cardiff (ingroup) vs. Bristol (outgroup) University students on the basis of this dichotomous categorisation compared to considering five more bases for categorisation, either shared or unshared by participants (i.e., age, major studied, gender, residence). Interestingly, results showed that in both multiple ingroup and outgroup categorisation conditions there was a de-categorisation effect and a

reduction of intergroup prejudice. Then de-categorisation resulted in greater intragroup differentiation, lower intergroup differentiation in the multiple compared to the simple groups conditions. Furthermore, the de-categorisation effect mediated prejudice reduction.

### Dehumanisation

Interestingly, almost all the studies on dehumanisation have considered exclusively dichotomous categorisation, that is known to be a fundamental condition under which intergroup differentiation and outgroup derogation may increase.

Infrahumanisation (Leyens et al., 2000) denotes a particular form of dehumanisation that consists of attributing a less sophisticated emotional repertoire or intellectual abilities to outgroups than to ingroups members. Traditionally, infrahumanisation research is based on the distinction between secondary and primary emotions. While primary emotions (i.e., anger, happiness) are experienced both by animals and human beings, secondary emotions (i.e., pride, regret) are exclusively expressed by human beings and, in a way, indirectly represent their differentiation from others living beings. Furthermore, Haslam (2006) stated that uniquely human features represent only partially the concept of whole humanness, which includes also human nature characteristics or those traits that, even though shared with animals and other living creatures are typically or essentially human. The author suggested that the denial of one of these two aspects of humanness leads to a particular form of dehumanisation. Denying uniquely humane traits to others increases their association with animals and it is called *animalistic dehumanisation*, while the denial of human nature traits increases the tendency to consider others as robots and it is called *mechanistic dehumanisation*. Culture, refinement, intelligence, and moral responsibility are considered uniquely human aspects, instead human nature refers to emotionality, depth, openness and individuality (Haslam, 2006).

This distinction has been confirmed by an increasing amount of evidence (Bain et al., 2009; Castano & Giner-Sorolla, 2006; Cuddy, Rock, & Norton, 2007; Saminaden, Loughnan, & Haslam, 2010), showing the different ways through which people fail to see others as human beings, and more importantly demonstrating that this process justifies the most heinous form of discrimination. Among the studies considering the intergroup consequences of others' humanity evaluation, Pratto and Glasford (2008) have shown that in intergroup competitive contexts people attribute a lower value to others human lives in comparison to those of their companions, choosing to save the life of a lower number of ingroup members compared to a higher number of outgroup members. This effect implies that social categorisation influences the discrepant attribution of value to human life of ingroup relative to outgroup members.

In contrast, there is very little evidence on the socio-cognitive processes that can inhibit dehumanisation and even better, promote the inclusion of outgroup members in the human group. One exception is the research by Costello and Hodson (2010) who found that heightened beliefs in animal–human similarity predicted an increase in human traits attribution to immigrants, which in turn led to diminished prejudice towards them.

In the following two studies we tested for the first time whether multiple categorisation compared to simple categorisation of outgroup members promotes their perceived inclusion in the human group. More specifically, Study 1 investigated whether simultaneously thinking about more than one social category can affect not only intergroup prejudice, but also the tendency to include outgroup members in the human group. Furthermore, it was examined the role of de-categorisation, as the individuated impression of others, on humanising outcomes. Study 2 addressed whether humanising effects of multiple categorisation may be extended not only to rival but also threatening outgroups such like immigrant communities are commonly considered in many Western countries in actual challenging situations. In addition, we measured humanising effects of multiple

categorisation not only in terms of judgments but also in terms of intentional behaviors towards others.

A novelty of this line of research with respect to the traditional multiple categorisation paradigm is the evaluation of a further condition in which three categorical dimensions are shared and three are not shared between participants and the target group members.

## STUDY 1

This study was inspired by the paradigm of Crisp et al. (2001), who compared groups of students belonging to rival Universities on the basis of simple vs. multiple categorisation conditions. However, differently from Crisp et al.'s study, the phenomenon at stake was not prejudice reduction but attribution of human traits to outgroup members.

In line with Crisp et al. (2001) study we chose to use real groups instead of artificial ones to test the potential of multiple vs. simple categorisation in promoting perceived inclusion in the human group of outgroup members in real life contexts.

Moreover a further multiple mixed categorisation condition was included resulting from the combination of shared (ingroup) and unshared (outgroup) categorical dimensions between participants and targets. This further manipulation of multiple categorisation is meant to enlarge the strength of the multiple categorisation paradigm adding crosscutting complexity to the categorical dimensions at stake. Indeed, one could argue that under this condition there is a stronger continuity between self and others' categorisations.

In all the multiple categorisation conditions, the additional categorical dimensions were unrelated to the target's membership. Indeed, considering overlapping social categories may prime a relevant super-ordinate category differentiation along which to compare subgroups. Specifically, the manipulation we used was meant to test whether overall different types of multiple social

categorisation would promote target inclusion in the human group to a greater extent than simple categorisation.

Moreover, the mediating role of de-categorisation in explaining the expected “humanisation” effects was analysed.

We thus compared a rival group (Padova University students) to the participants (Bologna University students) in multiple and simple categorisation conditions. Psychology Faculties of Bologna and Padova Universities compete for prestige and awards in Italy, so Padova University students represent a contender outgroup for psychology students at the University of Bologna.

Relying upon the strength of multiple categorisation in contrast to simple categorisation in reducing intergroup differentiation, we predicted that in conditions where additional group memberships were added to the initial ingroup-outgroup division (Bologna vs. Padova University students), participants would tend to attribute outgroup members human traits and to include them in the human group to a greater degree than in the dichotomous baseline condition. Moreover, we expected that a de-categorisation process would be active under multiple categorisation conditions independently of whether these resulted from shared, unshared and mixed combinations of categorical dimensions. The de-categorisation effect in turn was expected to mediate the effects of multiple categorisations on perceived humanness of outgroup members.

Finally, as a replication of previous studies we expected that multiple categorisation vs. simple categorisation would reduce prejudice measured in terms of emotional evaluations.

## Method

### *Pilot Studies*

Overall 170 undergraduate students of University of Bologna took part in a two phases pilot study aimed to obtain five equally meaningful affiliations of students. In the first phase, 20

participants were asked to list as many important social groups they belong to that they could think of.

Then, one hundred and fifty participants (73 males, 76 females;  $M_{age} = 20.87$ ,  $SD_{age} = 3.95$ ) rated the importance of the 5 affiliations<sup>1</sup> that turned out to be those most cited in the first phase. This was done on a Likert scale from 1 (*not at all important*) to 7 (*very much important*). A one way ANOVA with repeated measures on affiliations ratings was conducted to test whether there were significant differences in terms of importance among the students' affiliations considered. We did not find significant difference meaning that all the affiliations were considered as equally important  $F(4, 396) = 2.04$ ,  $p = .102$  (Table 2.)

	Age	Residence	Music	Work	Sport
Importance	4.03 (1.89)	3.63 (1.72)	4.10 (1.78)	4.14 (1.80)	3.73 (1.83)

Table 2. *Importance of students' affiliations.*

### *Participants and Design*

One hundred and eighty undergraduate students (51 males, 129 females;  $M_{age} = 21.38$ ,  $SD_{age} = .934$ ) of the Alma Mater Studiorum University of Bologna participated in the main study on a voluntary basis. Within the whole sample, were randomly allocated to one of the experimental conditions. Participants were identified as Psychology students, 19-22 years old, living with parents and same music and sport preference presented in the questionnaire. The design was 4

<sup>1</sup> On the basis of frequencies scores, we selected the most cited social groups. These were: age (cited by 17, representing the 85% of the sample), place of residence (16, 80%), music preference (17, 85%), work experience (15, 75%), sport affiliation (17, 85%). On the contrary, religion (10, 50%), parenthood (2, 10%), political party (6, 30%), favourite football team (11, 55%), University subject (9, 45%) were less cited therefore not considered in the main study.



(categorisation condition: simple, multiple ingroup, multiple outgroup, multiple mixed)  $\times$  2 (target group: Padova University, Bologna University) between participants experimental design.

### *Procedure and Materials*

Before completing the questionnaire, participants indicated some basic information. This was to identify their group memberships and ensure that only those who were ingroup members on all categories were included. Affiliation and type of categorisation of target were experimentally manipulated. Target affiliation was either Bologna University vs. Padova University, respectively corresponding to respondents ingroup vs. outgroup. Type of categorisation were simple vs. multiple (ingroup, outgroup, mixed) category combinations. In particular, four categorisation conditions were employed to examine the effects of making an additional five ingroup vs. five outgroup vs. five mixed memberships salient compared to the simple baseline situation involving just one ingroup vs. one outgroup.

On the second page, participants were presented with the target, who could be either their ingroup (Bologna University students) or their outgroup (Padova University students). In the simple categorisation conditions, this was the only information they received. In the multiple categorisation conditions, the target was qualified by five additional affiliations that could be either shared (ingroup), or unshared (outgroup), or even mixed ones (i.e., half ingroup, half outgroup) with respect to participants' group memberships.

Participants were then invited to think extensively of the target group and to write down few sentences on it. This was done to encourage participants to process the information and form an impression on the target. Following this manipulation, respondents completed the relevant measures of the study.

### *Dependent Variables*

*Attribution of human traits to ingroup and outgroup.* Participants were asked to rate the extent to which typically human and uniquely human traits could be equally attributed to ingroup (Bologna University students) and outgroup members (Padova University students). To do this participants were provided with a random order list used in previous studies of 21 traits (i.e., ambitious, sociable, honest, nervous, analytical, irresponsible, imaginative, deep, insecure, ungenerous, empathic, broadminded, discrete, disorganized, humble, ignorant, rude, efficient, shy, kind, conservative) (Haslam, Bastian, & Bisset, 2004; Haslam et al., 2005; Loughnan et al., 2010). These ratings were made on comparative 7-point bipolar scales used to indicate that the particular trait was “more characteristic of Bologna University students” (-3 to -1) or more characteristic of Padova University students (+1 to +3), with ‘0’ in the middle of the scale meaning that the characteristic was “equally attributed to both social groups”. The scale was adapted from Doosje, Ellemers, & Spears (1995) measure of intergroup variability. Following a procedure adopted by Haslam et al. (2004) a composite index of “humanness” was obtained by averaging all the scores of the traits’ list ( $\alpha = .87$ ).

*Emotional intergroup bias.* Participants rated to what extent they like/ feel empathy towards ingroup and outgroup members on four items presented in a 7-point Likert scale response format (from 1 = *not at all* to 7 = *very much*). Two scores were then computed, one the first on the items concerning the ingroup, Bologna University students ( $\alpha = .90$ ) and other on the items concerning the outgroup (Padova University students) ( $\alpha = .65$ ). An index of intergroup bias was then obtained by subtracting the outgroup index from the ingroup one.

*De-categorisation.* Participants were asked to indicate on 7-point Likert scales ranging from 1 (*not at all*) to 7 (*very much*) the degree to which they perceived ingroup and outgroup as two separate groups of people; the degree to which they perceived ingroup and outgroup as separate individuals; the degree to which they perceived ingroup and as one overall group; and the degree to which they perceived ingroup and as distinct but similar individuals.

After that, participants were thanked and debriefed.

## Results

### *Attribution of human traits to ingroup and outgroup*

A 4 (type of categorisation)  $\times$  2 (target) ANOVA was conducted on the human nature index to test whether multiple categorisation leads to a relatively equal attribution of human traits to ingroup and outgroup targets. Results revealed significant effects of target  $F(1, 172) = 4.66, p = .032, \eta^2 = .026$ , type of categorisation  $F(3, 172) = 17.04, p < .001, \eta^2 = .229$  and also target  $\times$  type of categorisation interaction  $F(3, 172) = 4.37, p = .005, \eta^2 = .071$ .

Analyses of simple main effects were conducted to decompose the interaction. One-way ANOVA on simple categorisation showed an effect of target  $F(1, 43) = 11.10, p = .002, \eta^2 = .205$ , revealing higher attribution of human traits to the ingroup - displayed by higher negative scores - when Padova University students ( $M = -1.29, SD = .17$ ) were the target group in comparison to when Bologna University students ( $M = -.46, SD = .18$ ) were at stake.

A one-way ANOVA on multiple ingroup categorisation revealed no significant effect of target,  $F(1, 47) = .11, p = .75, \eta^2 = .002$ , showing that there was no difference in attribution of human traits irrespectively of whether the ingroup (Bologna University students) or the outgroup (Padova University students) was the target group a ( $M = .07, SD = .07$ ) or Bologna University students ( $M = .038, SD = .070$ ).

Similarly in the condition of multiple ingroup, the one-way ANOVA on multiple outgroup categorisation did not produce a significant effect of target  $F(1, 43) = .09, p = .768, \eta^2 = .002$ .

Consistently, the one-way ANOVA on multiple mixed categorisation showed no significant effect of target  $F(1, 39) = .00, p = .971, \eta^2 = .000$ , meaning that participants who were exposed to

either Padova ( $M = -.13, SD = .13$ ) or Bologna University students ( $M = -.14, SD = .14$ ) attributed human traits to an equal extent to both groups. Thus, as presented in figure 1, findings supported the hypothesis that priming multiple categorisation irrespectively of whether it is shared, unshared or even mixed between perceivers and targets, improves the recognition of others' humanness, enhancing equal attribution of human traits in to ingroup and outgroup members.

### *Emotional intergroup bias*

Since we were also interested in replicating the effects of multiple categorisation on intergroup bias reduction we run a 2 (target)  $\times$  4 (categorisation) ANOVA on the emotional evaluation difference score. The analysis revealed only a main effect of categorisation yielded an  $F$  ratio of  $F(3, 176) = 13.49, p < .001, \eta^2 = .19$  and a (target)  $\times$  (categorisation) interaction  $F(3, 172) = 4.109, p < .01, \eta^2 = .06$ . Post hoc test of Scheffè revealed higher intergroup bias when participants thought about outgroup in simple categorisation condition ( $M = 2.47, SD = .26, p < .001$ ) compared to multiple ingroup ( $M = .43, SD = .25, p < .001$ ), multiple outgroup ( $M = .49, SD = .26, p < .001$ ) and also multiple mixed conditions ( $M = .27, SD = .27, p < .001$ ). In line with previous research studies (Crisp et al., 2001), results showed no significant difference between multiple ingroup and multiple outgroup  $p = .999$ . In addition, there was no significant difference between multiple mixed and multiple ingroup ( $p = .829$ ) as well as multiple mixed and multiple outgroup conditions ( $p = .900$ ).

The interaction was decomposed running two one-way ANOVAs considering the target (Bologna and Padova University students) separately.

The analysis on the outgroup target (Padova students) revealed a main effect of categorisation  $F(3, 89) = 13.95, p < .001, \eta^2 = .320$ . Post hoc analyses showed significant increase in perceived intergroup bias in the simple condition ( $M = 2.43, SD = .31$ ) with respect to the other multiple categorisation conditions ( $M_{m.ingroup} = -.11, SD = .28, p < .001$ ;  $M_{m.outgroup} = .85, SD = .27, p$

$< .001$ ;  $M_{m.mixed} = .05$ ,  $SD = .34$ ,  $p < .001$ ). We found a significant difference between multiple ingroup and multiple outgroup conditions ( $p = .015$ ), but there was no significant difference between multiple ingroup and multiple mixed conditions ( $p = .701$ ), nor multiple outgroup and multiple mixed conditions ( $p = .070$ ).

The analysis on the ingroup target (Bologna students), one-way ANOVA showed again a main effect of categorisation  $F(3, 83) = 6.078$ ,  $p < .01$ ,  $\eta^2 = .180$ . Post hoc analyses revealed a significant increase in perceived intergroup bias in simple condition ( $M = 2.50$ ,  $SD = .40$ ) with respect to the other multiple categorisation conditions ( $M_{m.ingroup} = 1.04$ ,  $SD = .41$ ,  $p = .013$ ;  $M_{m.outgroup} = -.11$ ,  $SD = .47$ ,  $p < .001$ ;  $M_{m.mixed} = 1.34$ ,  $SD = .40$ ,  $p < .05$ ). We found neither significant difference between multiple ingroup and multiple outgroup conditions ( $p = .06$ ), but there was no significant difference between multiple ingroup and multiple mixed conditions ( $p = .60$ ), nor multiple outgroup and multiple mixed conditions ( $p = .02$ ).

### *De-categorisation*

We assumed, in line with previous studies, that multiple categorisation would lead to a reduction of intergroup differentiation. Among the multiple categorisation conditions we were particularly interested in analyzing the role of multiple mixed categorisation, a condition never employed before that represents an increase of category combination complexity in terms of enhancing not just the number but the divergence (less overlapping) among categories simultaneously at stake. Previous multiple category research has advocated the use of contrast analysis to test the subtle, yet complex patterns that may be observed across multiple category groups (Crisp, et al, 2001; Hewstone et al., 1993). Thus, the analytic strategy chosen was simple contrast analysis with respect to the first condition (simple categorisation condition) (Judd & McClelland, 1989; Kirk, 1982). Three sets of orthogonal polynomial contrasts were set to test the differences between categorisation conditions in shaping impressions about others.

The first contrast (1) (simple = -1, multiple ingroup = +1, multiple outgroup = 0, multiple mixed = 0) tested whether there was a difference between simple and multiple ingroup categorisation. The second contrast (2) (simple = -1, multiple ingroup = 0, multiple outgroup = +1, multiple mixed = 0) tested whether there was a difference between simple and multiple outgroup categorisation. The third contrast (3) (simple = -1, multiple ingroup = 0, multiple outgroup = 0, multiple mixed = +1) tested whether there was a difference between the simple and multiple mixed categorisation (there should be a difference between these conditions, since increasing not just the number of categories at stake but the complexity of their combination should reduce perceived intergroup differentiations).

These contrasts were tested on the four de-categorisation measures. More specifically, we predicted that contrasts would be significant, showing a lower intergroup differentiation and higher individuation in multiple categorisation conditions, especially multiple mixed categorisation one with respect to simple categorisation condition.

Four 2 (target)  $\times$  4 (categorisation) ANOVAs were conducted to analyse de-categorisation effects, in terms of target representation as individuals, two groups, an overall group, distinct but similar individuals.

First, scores on Bologna and Padova students' representation as individuals were entered in a 2 (target)  $\times$  4 (categorisation) ANOVA, which showed a main effect of type of categorisation  $F(3, 176) = 4.51, p = .004$  and no effect of target  $F(1, 172) = .95, p = .758$ . As expected, Contrast 1 was significant,  $t(176) = -3.09, p = .002$ , showing that there was a difference between simple and multiple ingroup categorisation ( $M = 4.73; SD = 1.57$ ). Contrast 2 was not significant,  $t(176) = -.68, p = .492$ , showing that there was no difference between simple and multiple outgroup categorisation ( $M = 3.97; SD = 1.58$ ), even if the means were in the expected direction. Contrast 3 was significant,  $t(176) = -2.65, p = .009$ , showing that ratings were higher in simple ( $M = 3.75; SD = 1.35$ ) than multiple mixed categorisation ( $M = 4.63; SD = 1.59$ ).

Second, we run a 2 (target)  $\times$  4 (categorisation) ANOVA on Bologna and Padova students' representation as two separate social groups. Results showed a significant main effect of type of categorisation  $F(3, 172) = 6.47, p < .001$  and no effect of target  $F(1, 172) = .37, p = .542$ . Confirming our hypothesis contrast analyses revealed a significant difference between simple and multiple categorisation conditions. Contrast 1 was significant,  $t(176) = 4.16, p < .001$ , showing that there was a difference between simple and multiple ingroup ( $M = 2.49; SD = 1.47$ ). Contrast 2 was also almost significant,  $t(176) = 1.90, p = .05$ , showing that there was a difference between simple and multiple outgroup categorisation conditions ( $M = 3.20; SD = 1.72$ ). Contrast 3 was significant,  $t(176) = 3.18, p = .002$ , showing that intergroup difference was higher in simple ( $M = 3.82; SD = 1.62$ ) than multiple mixed categorisation ( $M = 2.76; SD = 1.33$ ).

Moreover, a 2 (target)  $\times$  4 (categorisation) ANOVA on the score related to the representation of ingroup and outgroup as an overall group showed neither a significant effect of categorisation  $F(3, 176) = 1.54, p = .206$  nor of target  $F(1, 176) = .477, p = .491$ . In particular, Contrast 1 was not significant  $t(176) = -.62, p = .533$ , Contrast 2 was not significant  $t(176) = 1.43, p = .154$ , Contrast 3 was not significant  $t(176) = .484, p = .629$ . Then, as in previous studies, findings suggest that multiple categorisation does not enhance perception of ingroup and outgroup as members of a super-ordinate group.

Fourth, scores representing Bologna and Padova students as distinct but similar individuals were entered in a 2 (target)  $\times$  4 (categorisation) ANOVA, which showed neither a main effect of type of categorisation  $F(3, 176) = 1.78, p = .152$  nor a main effect of target  $F(3, 176) = .79, p = .373$ . Indeed, neither Contrast 1  $t(176) = .80, p = .422$ , nor Contrast 2  $t(176) = 1.45, p = .146$  were significant. On the contrary, Contrast 3 was significant,  $t(176) = 2.20, p = .029$ , showing that representation of target as distinct but similar individuals was lower in simple ( $M = 4.49; SD = 1.40$ ) than multiple mixed categorisation ( $M = 5.08; SD = 1.02$ ).

Replicating the findings of previous studies, we found that perceiving others along multiple categorisation criteria leads to lower intergroup differences in favour of a more individuated impressions about others. In particular, the de-categorisation effect was found in the multiple ingroup and multiple mixed categorisation. Results were quite incongruent in the multiple outgroup categorisation, showing only a significant difference on reduction of intergroup differentiation.

Indeed, one could argue that multiple outgroup categorisation is the weakest among the multiple conditions in its potential to reduce intergroup bias, because all the categorical dimensions at stake pertain to the outgroup. More importantly, findings consistently showed the effect of multiple mixed categorisation on individuation processes, and in particular on the representation of outgroup members as distinct individuals yet similar to participants. Indeed, this effect was found only for multiple mixed categorisation, indicating that, not only the number but also the combined complexity of self and others' categorical dimensions does play a role in decreasing the salience of intergroup differences.

#### *Mediational analyses*

On the basis of previous evidence on the role of de-categorisation outcomes in mediating between multiple categorisation and prejudice reduction, we intended to extend the potential of this process onto attribution of humanness to outgroups. Thus, we hypothesized that the representation of outgroup members as individuals and not as members of two distinct groups would explain the tendency to include them in the human group.

We used the multiple regression procedure for testing mediation advocated by Baron and Kenny (1986). In the first equation, categorisation (simple vs. multiple) significantly predicted equal attribution of human traits to ingroup and outgroup members,  $\beta = -.23, p = .03$ . In the second equation, the predictor was significantly related to the first mediator (individuation),  $\beta = .35, p <$



.01. Similarly, it was also significantly related to the second mediator (two distinct groups)  $\beta = .23$ ,  $p = .020$ .

In the further equations when controlling for individuation (mediator 1),  $\beta = .32$ ,  $p < .001$  and intergroup differentiation (mediator 2)  $\beta = .09$ ,  $p = .265$ , the predictor was not anymore significantly related to the outcome,  $\beta = -.18$ ,  $p = .075$ . Then only individuation explained humanising outcomes of multiple categorisation. Our analytic approach was informed by Preacher and Hayes (2008) who recommend bias-corrected bootstrapping to measure indirect effect. The indirect effect of individuation was significant ( $Z = -1.93$ ,  $SE = .03$ ;  $p < .05$ ), the indirect effect of intergroup differentiation was not significant ( $Z = 1.01$ ,  $SE = .01$ ;  $p = .30$ ). Thus, individuation mediated the relationship between categorisation and humanising outcome. The confidence interval for the effect size of the indirect path through individuation was  $-.01$  to  $-.11$  and did not include zero, indicating it was indeed a significant mediator. Differently, the indirect effect of intergroup differentiation was not significant ( $Z = 1.01$ ,  $SE = .03$ ;  $p = .30$ ).

## Discussion

Overall the findings of this study showed for the first the role of multiple categorisation in enhancing perceived humanity of outgroups. Interestingly we found that multiple mixed categorisation had even a better effect than the traditional multiple ingroup and multiple outgroup categorisation manipulations in representation of outgroup members as separate but similar individuals, that is de-categorisation effect. Moreover, the relationship between type of categorisation (multiple vs. simple) was explained by de-categorisation, or individuation process in evaluation of others.

## STUDY 2

### Introduction

Study 1 confirmed for the first time that multiple categorisation not only reduces intergroup bias, but also facilitates perceived inclusion of outgroup members in the human group. However, one could argue that the groups considered in the first study, although rival groups on the one hand, can be recategorized at the super-ordinate level into the larger category of University students, on the other. In order to further validate the strength of multiple categorisation in favouring social inclusion of outgroup members in terms of attribution of humanness in this study we considered the immigrants, as an outgroup that is usually regarded as very distant, competitive and threatening in many Western societies (e.g., Duckitt, 2006; Esses et al., 2003; Esses, Jackson, & Armstrong, 1998). Moreover, we were interested in examining whether multiple social categorisation affects the tendency to include others in the human group not only in terms of judgments, but also in terms of intentional behaviours.

#### *Overview and predictions*

In order to answer these questions, Study 2 included different measures to establish humanisation, considering attribution of human traits to outgroup members, evaluation of outgroup members' human life value in a decision making task, and perception of inclusion of outgroups in the human group.

The study adopted an experimental paradigm very similar to the one of study 1. Participants were presented with the description of a target that was either the group of Italians or immigrants. In the simple categorisation condition no further information was added, whereas in the multiple categorisation conditions five additional categorical dimensions either shared, unshared or mixed with respect to participants' ones we used to complete the description.

A further measure of humanness was employed in the Study consisting of a decision making task related to the extent to which public funds for education and culture should be cut to support immigrants' health.

Moreover, we also measured the perceived threat from immigrants and controlled for the specific group of immigrants participants had in mind.

In line with Study 1, we expected that if the effects of multiple categorisation vs. simple categorisation persist even on distant, threatening outgroups, then they would be revealed on the higher attribution of human traits, on the inclusion of them in the human group and on the intentional behavior of cutting public funds in support of immigrants' health and thus life.

As in the previous study, we predicted that a de-categorisation process would be active under multiple categorisation conditions independently of whether these resulted from shared, unshared and mixed combinations of categorical dimensions. The de-categorisation effect in turn was expected to mediate the effects of multiple categorisations on perceived humanness of outgroup members.

Moreover, we predicted that the perceived threat from immigrants would decrease under multiple social categorisation. Furthermore, we hypothesized that perceived threat may mediate the effects of multiple categorisation on attribution of humanness.

Finally, perceived threat would be a further mediator of higher attribution of humanness to outgroups.

## Method

### *Pilot Study*

A pilot study has been conducted in order to choose additional social categories at the same level of salience and importance to the respondent sample. Then, twenty five participants rated the

importance of the 5 social groups on a Likert scale from 1 (*not at all important*) to 7 (*very much important*). A one way ANOVA with repeated measures on social groups ratings was conducted to test whether there were significant differences in terms of importance among the affiliations considered. We did not find significant difference meaning that all the affiliations were considered as equally important  $F(4, 92) = 1.446, p = .246$ . Mean and standard deviations are reported in table 3.

	Age	Gender	Occupation	Parenthood	Residence
Importance	4.83 (.35)	5.16 (.30)	4.79 (.42)	4.20 (.38)	5.20 (.24)

Table 3. *Manipulation check on a 7points Likert scale*

### *Participants and Design*

Two hundred and twenty eight students (140 females, 76 males; age:  $M = 21.5, SD = 3.5$ ) of Bologna University participated in this study on voluntary basis. Participants were randomly assigned to one of the eight cells of a 4 (categorisation condition: simple / multiple ingroup / multiple outgroup / multiple mixed)  $\times$  2 (target group: ingroup /outgroup) between participants experimental design.

### *Procedure and Materials*

The procedure of the study was very similar to study 1. Affiliation and type of categorisation of target proposed were experimentally manipulated.

Before completing the questionnaire, participants reported information on their category belongingness. This was to ensure that only those who were ingroup members on all categories were included. These were being Italians, 19-28 years old, university students, without children, living in the same town and of the same gender with the target. Students received a paper and pencil questionnaire to complete. On the first page they were assured about the anonymity of their answers

and they were informed that the research was aimed at studying how people form impressions of others.

On the second page, participants were presented a target group who was either an ingroup (i.e., Italians) or an outgroup (i.e., immigrants). No other information was added in the simple categorisation condition. In the multiple categorisation conditions, five more categorical dimensions were added in the description of targets. Overall, four categorisation conditions were employed. As in Study 1, these were respectively simple, multiple ingroup, multiple outgroup, multiple mixed categorisations. The additional categories were unrelated to the target memberships. On the basis of the pilot study, in the multiple ingroup categorisation conditions, the target, either Italian or immigrant, was characterized by five additional social categories, corresponding to respondents affiliations such as 19 to 28 years old, students, living in the same town, without children and of the same gender with the participants. On the other hand, in multiple outgroup categorisation conditions, the target consisted of opposite five additional social categories, all corresponding to outgroup memberships, such as 30 to 39 years old, workers, living in countryside, with children and of the opposite gender with the participants. Finally, in multiple mixed categorisation conditions, the target was described by three ingroup and three outgroup memberships with respect to those of the participants. In particular, the gender of the target was paired with that of the respondent in order to avoid making gender an additional salient category. The presentation of the target was pointed out at the top of every page of the questionnaire in order to lead participants to recall it before answering questions. Moreover, to encourage them to form impressions on the target proposed, they were asked to write a description of the target. After that, participants completed the dependent variables and manipulation checks. At the end of the experimental session, participants were debriefed and informed about the aims of the research.

### *Dependent Variables*

*Attribution of human traits to ingroup and outgroup.* As in the first study, a set of 21 personality traits were sampled from dehumanisation research (Haslam et al., 2005; Loughnan et al., 2010). Each trait was rated on comparative 7-point bipolar scales whose ends were “more characteristic of Italian people (-3) and “more characteristic of immigrant people” (+3), with ‘0’ in the middle of the scale meaning that the characteristic was “equally attributed to both social groups”. The scale was adapted from Doosje, Ellemers, & Spears (1995) measure of intergroup variability. At the end of the questionnaire, participants were asked to rate to what extent they considered each human feature as a characteristic of the human group on a scale from 1 (*not at all*) to 7 (*very much*). On the basis of the gathered scores, we selected the 15 human features with mean higher than 4 (ambitious, sociable, honest, nervous, analytical, irresponsible, imaginative, deep, insecure, ungenerous, empathic, broadminded, discrete, disorganized, humble, ignorant, rude) and we collapsed them in one variable ( $\alpha = .65$ ).<sup>2</sup>

*Perceived inclusion of targets in the human group.* As in the first study, in order to test perceived inclusion of outgroup in the human group participants indicated the extent to which the outgroup was perceived as included in the human group. This was done by choosing among pairs of circles ordered in increasing overlapping between the outgroup (small circle) and the human group (large circle).

*Financial support for immigrants’ health.* Drawing from Pratto and Glasford’s study (2008), we set a decision making task to test to what extent participants kept into consideration immigrants’

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<sup>2</sup> The selection of the most human features was based on the mean of participants rates for each characteristic. In particular, features reporting mean above 4 were selected: ambitious ( $M = 5.13$ ,  $SD = .71$ ), sociable ( $M = 6.26$ ,  $SD = 1.56$ ), honest ( $M = 5.11$ ,  $SD = 1.71$ ), nervous ( $M = 5.10$ ,  $SD = .62$ ), analytical ( $M = 4.31$ ,  $SD = 1.62$ ), irresponsible ( $M = 5.02$ ,  $SD = 1.84$ ), imaginative ( $M = 5.60$ ,  $SD = .89$ ), deep ( $M = 4.99$ ,  $SD = 1.01$ ), insecure ( $M = 5.05$ ,  $SD = .87$ ), ungenerous ( $M = 4.73$ ,  $SD = 1.10$ ), empathic ( $M = 5.65$ ,  $SD = 1.49$ ), broadminded ( $M = 5.86$ ,  $SD = 1.17$ ), discrete ( $M = 4.02$ ,  $SD = 1.41$ ), disorganized ( $M = 5.42$ ,  $SD = 1.84$ ), humble ( $M = 5.26$ ,  $SD = 1.14$ ), ignorant ( $M = 5.35$ ,  $SD = 1.16$ ), rude ( $M = 5.47$ ,  $SD = 1.82$ ). Instead, were excluded features with mean under 5: efficient ( $M = 3.65$ ,  $SD = 2.14$ ), shy ( $M = 2.13$ ,  $SD = 1.83$ ), kind ( $M = 3.72$ ,  $SD = 1.21$ ), bold ( $M = 2.73$ ,  $SD = 1.25$ ), conservative ( $M = 3.16$ ,  $SD = 1.18$ ).

health as an indirect measure of their life value. Participants read a short paragraph informing them that immigrants had a higher risk of contagion from the virus A H1N1, very active in Europe at the time in which the study was carried out. Participants had then to decide to what extent they judged feasible to cut Governmental and Regional public funds in support for education and culture policies to finance instead vaccination of immigrants being presented as a high risk social category for getting affected with the virus A H1N1.

Participants chose among five options presented in a random order and varying systematically the amount of public funds to be cut and the number of immigrants that could benefit from the vaccine. The options varied from 1 (5% public funds cutting) to 5 (17% public funds cutting) corresponding to increasing numbers of immigrants from 1 (1000 immigrants who could benefit from the vaccine) to 5 (3400 immigrants who could benefit from the vaccine).

*Intergroup bias.* To attest intergroup bias, participants were asked to indicate on 7-point Likert scales ranging from 1 (*not at all*) to 7 (*very much*): a) how much they think they would/do like immigrants in general, b) how much they think they would/do like Italians in general.

*De-categorisation.* As in the first study, participants were asked to indicate on 7-point Likert scales ranging from 1 (*not at all*) to 7 (*very much*): the degree to which they thought ingroup and outgroup a) as two separate groups of people, b) as separate individuals and c) as one overall group. These items ( $\alpha = .65$ ) were taken from Crisp et al. (2001) questions on de-categorisation process (the first and second items were reverse-coded).

*Outgroup threat.* Drawing from Albarello, Rubini, and Palmonari (2009) indirect measure of perceived threat, participants completed six items ( $\alpha = .83$ ) – “assessing the extent to which they felt worried, afraid and threatened by immigrants (outgroup). Moreover, items concerned the beliefs that the status and economical resources gained by immigrants were likely to damage

Italians. These ratings were expressed on 7-point Likert scales ranging from 1 (*not at all*) to 7 (*very much*).

*Immigrants' origin.* At the end of the questionnaire, participants were asked to report the specific group of immigrants they had in mind when answering the questionnaire.

## Results

### *Immigrants' origin*

In order to control whether thinking about specific groups of immigrants would affect our manipulation, the immigrants original nationalities were entered in a series of 4 categorisation (simple, multiple ingroup, multiple outgroup, multiple mixed) X 6 nationality (none, Tunisia, Albania, Marocco, Senegal, Rumania) ANOVAs on the most relevant dependent measures. Results revealed that there was no main effect of immigrants' origins on attribution of human traits to ingroup and outgroup  $F(6, 56) = .707, p = .645$ . Similarly, we found no main effect of immigrants' origin on perception of outgroup inclusion in the human group  $F(6, 56) = 1.942, p = .090$ , nor with regard to financial support to immigrants' health  $F(6, 56) = .422, p = .861$ . Finally, there was no effect of immigrants' origin on perceived threat  $F(6, 56) = 1.494, p = .197$ , as expected, there was a main effect of categorisation  $F(3, 56) = 5.205, p = .003, \eta^2 = .218$  and no interaction effect  $F(17, 56) = 1.228, p = .275$ .

### *Planned contrast analyses*

To test whether multiple ingroup, multiple outgroup, multiple mixed categorisation vs. simple categorisation lead to a higher attribution of humanness to outgroup members, the analytic



strategy chosen was simple contrast analysis with respect to the first condition (simple categorisation condition) (Judd & McClelland, 1989; Kirk, 1982).

Thus, the first contrast (1) (simple = 1; multiple ingroup = -1; multiple outgroup = 0; multiple mixed = 0) tested whether there was a difference between simple and multiple ingroup categorisation conditions. The second contrast (2) (simple = 1; multiple ingroup = 0; multiple outgroup = -1; multiple mixed = 0) tested whether simple and multiple outgroup categorisation conditions were significantly different. The third contrast (3) (simple = 1; multiple ingroup = 0; multiple outgroup = 0; multiple mixed = -1) tested whether simple and multiple mixed categorisation conditions showed a significant difference. We expected all contrasts to be significant, on the basis of the assumptions that in multiple vs. simple categorisation conditions there should be higher humanisation outcomes, a greater tendency to support immigrants' health, greater individuation (de-categorisation effect), as well as less perceived threat from immigrants.

#### *Attribution of human traits to ingroup and outgroup members*

A 2 (target)  $\times$  4 (type of categorisation) ANOVA carried out on intergroup equal attribution of human traits to immigrants and Italians, showed a significant main effect of categorisation,  $F(3, 206) = 6.05, p = .001, \eta^2 = .08$ , neither effect of target  $F(1, 206) = 1.11, p = .293$  nor (type of categorisation)  $\times$  (target) interaction  $F(3, 206) = .985, p = .401$ . Contrast analyses highlighted a significant difference between simple and all multiple categorisation conditions as predicted. In particular, Contrast 1 revealed that participants in simple condition ( $M = 3.45, SD = .08$ ) attributed human traits more to ingroup compared to outgroup members than participants in multiple ingroup categorisation condition ( $M = 3.73, SD = .07; p = .011$ ). Similarly, Contrast 2 revealed that participants in multiple outgroup categorisation condition attributed human traits equally to target groups more than participants in the simple categorisation condition ( $M = 3.91, SD = .07, p < .001$ ). Contrast 3 was significant showing again a difference between simple and multiple mixed categorisation conditions ( $M = 3.77, SD = .07, p < .001$ ).

### *Perceived inclusion of targets in the human group*

A 2 (target)  $\times$  4 (categorisation) ANOVA was conducted on perceived inclusion of immigrants in the human group. As in study 1, we obtained a perceived inclusion difference score by subtracting the outgroup score from the ingroup one, the higher the difference the lower the perceived inclusion of the outgroup in the human group. The analysis highlighted a significant main effect of categorisation,  $F(3, 204) = 13.68, p < .001, \eta^2 = .17$ , no target effect  $F(1, 204) = 1.32, p = .251$  or (type of categorisation)  $\times$  (target) interaction  $F(3, 204) = 1.55, p = .202$ . As for previous measures, contrast analyses revealed a significant difference between simple and multiple categorisation conditions. Contrast 1 was significant  $p < .005$ , showing that when participants were exposed to simple categorisation, they perceived Italians as more included in the human group than immigrants in comparison to when they were under multiple ingroup categorisations. Contrast 2 was significant  $p < .005$ , showing that there was a difference between ingroup and outgroup inclusion in the human group under simple vs. multiple outgroup categorisation. Contrast 3 was significant  $p < .005$ , showing as expected, that when participants were exposed to immigrants in the simple categorisation condition, the difference between ingroup and outgroup's inclusion in the human group was higher than when they were presented with multiple mixed categorisation of targets. Means are presented in Figure 1.

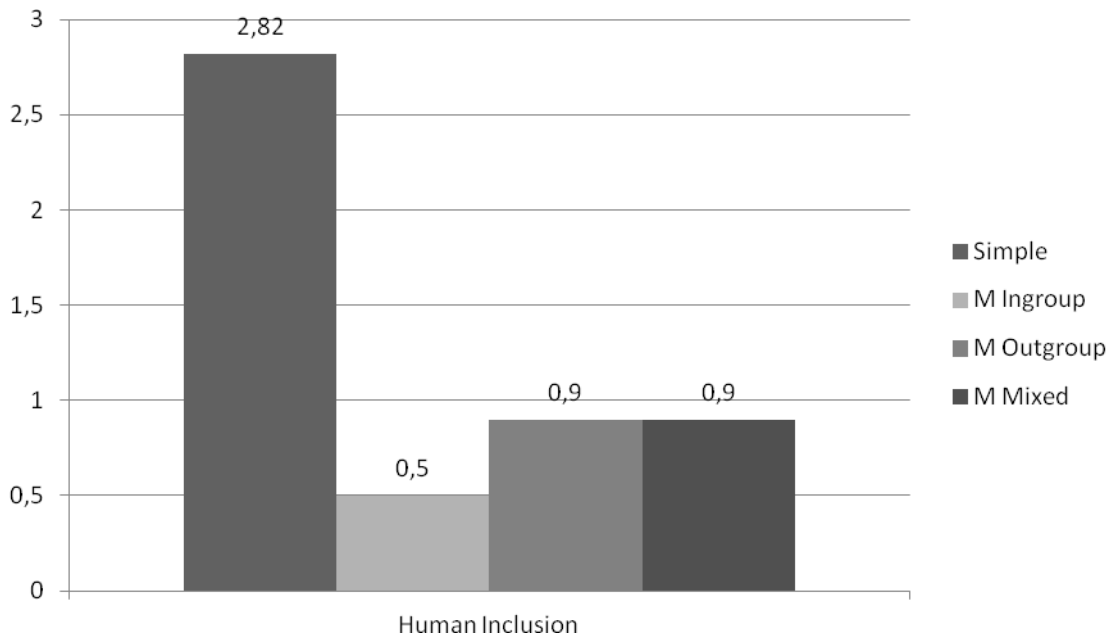


Figure 1. Perceived inclusion of targets in the human group

#### *Financial support for immigrants' health*

A 2 (target)  $\times$  4 (categorisation) ANOVA was conducted on the intentional behaviour to support immigrants' health showed a significant main effect of categorisation  $F(3, 208) = 10.08, p < .001, \eta^2 = .12$  and no target effect  $F(1, 208) = 3.39, p = .06$  and a (categorisation)  $\times$  (target) interaction  $F(3, 208) = 2.67, p = .05, \eta^2 = .04$ .

The interaction was decomposed running two one-way ANOVAs considering the target (Italians and immigrants) separately.

The contrast analysis on the outgroup target (immigrants) revealed a significant difference in participants scores between simple and multiple categorisations. Contrast 1 was significant  $p = .005$ , confirming that participants in the simple categorisation condition ( $M = 2.00, SD = .25$ ) intended to support immigrants' health to a lesser degree than participants in multiple ingroup categorisation ( $M = 3.00, SD = .23$ ). Similarly, contrast 2 was significant  $p = .005$  indicating that there was a significant difference in supporting for immigrants' health between simple and

multiple outgroup categorisation conditions ( $M = 3.60, SD = .23$ ). Contrast 3 was significant  $p = .005$ , showing as expected, significantly less support for immigrants' health when participants were primed with simple conditions compared to multiple mixed categorisation condition ( $M = 3.78, SD = .24$ ).

The contrast analysis on the ingroup target (Italians) showed a similar effect of multiple categorisation conditions compared to simple categorisation.

Contrast 1 showed that participants in simple categorisation ( $M = 2.07, SD = .28$ ) were less favourable to support immigrants' health than those in multiple ingroup categorisation condition ( $M = 3.11, SD = .29; p = .013$ ). Contrast 2 showed that in the simple condition participants displayed less support to immigrants' health than in the multiple outgroup categorisation condition ( $M = 3.24, SD = .30; p = .006$ ). Contrast 3 showed that there was a no significant difference between simple and multiple mixed categorisation condition ( $M = 2.56, SD = .30; p = .246$ ).

#### *Correlations among humanisation measures*

We estimated correlations among humanisation measures, that is perceived inclusion of outgroups in the human group, support for immigrants' health and attribution of human traits. Interestingly, Pearson's correlations analysis revealed a positive correlations between variables (see Table 4) confirming that these three measures are good indicators of humanisation and also that there is a significant relation between explicit and indirect measures of humanisation.

	Perceived Inclusion	Financial Support	Attribution of Human traits
Perceived Inclusion	--	.415**	.178**
Financial Support	.415**	--	.172*
Attribution of Human traits	.178**	.172*	--

Table 4. *Correlations between humanisation measures*

*Intergroup bias*

A 2 (target)  $\times$  4 (categorisation) ANOVA was carried out on the liking difference score. Results showed a significant main effect of categorisation  $F(3, 205) = 5.86, p < .001, \eta^2 = .08$  and no effect of target  $F(1, 205) = 2.17, p = .142$ , nor (categorisation)  $\times$  (target) interaction  $F(3, 208) = 2.67, p = .05$ .

The interaction was decomposed running two one-way ANOVAs considering the target (Italians and immigrants) separately.

As expected, the contrast analysis on the outgroup target (immigrants) revealed higher intergroup prejudice expressed by participants in simple compared to multiple categorisations. Contrast 1 was significant  $p = .010$ , showing a difference between simple ( $M = 4.03, SD = .19$ ) and multiple ingroup categorisation conditions ( $M = 3.33, SD = .17$ ). Contrast 2 was significant  $p = .001$ , showing that intergroup bias was higher in simple than in multiple outgroup categorisation condition ( $M = 3.18, SD = .17$ ). Contrast 3 was significant  $p = .002$ , confirming that there was a significant difference in the liking score between simple and multiple mixed categorisation conditions ( $M = 3.19, SD = .18$ ).

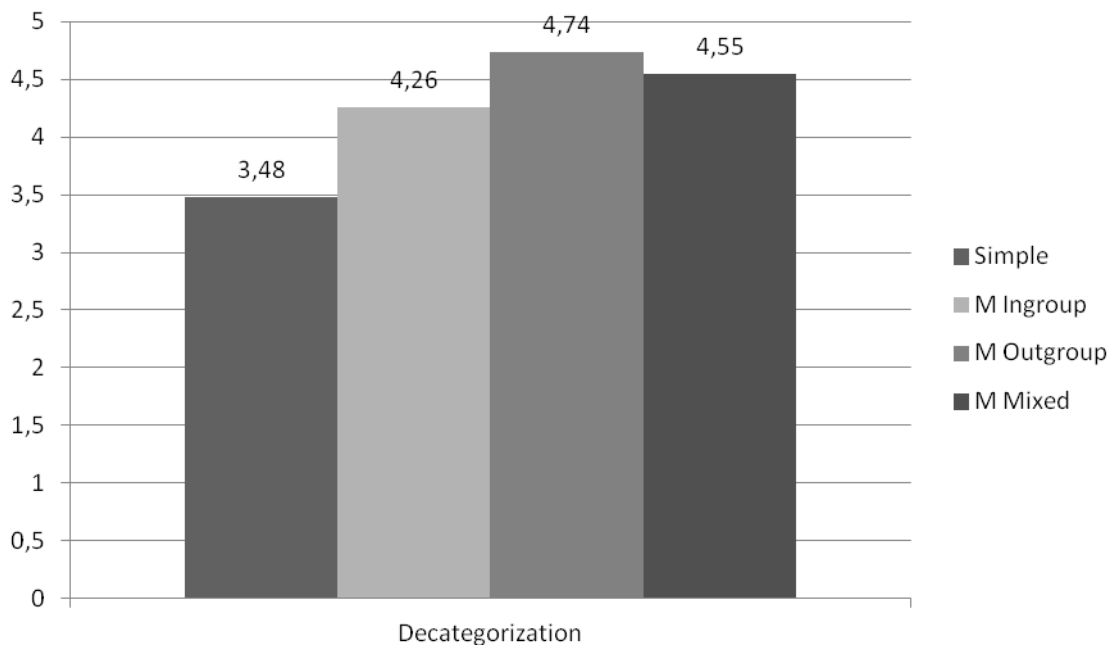
The contrast analysis on the ingroup target (Italians) showed no difference between multiple categorisation and simple categorisation conditions implying that only thinking about outgroup and not ingroup members along multiple criteria attenuated intergroup bias.

Contrast 1 was not significant  $p = .198$ , showing no difference between simple ( $M = 3.36, SD = .20$ ) and multiple ingroup categorisation conditions ( $M = 3.73, SD = .20$ ). Contrast 2 was also not significant  $p = .081$ , showing no difference in intergroup prejudice between participants in simple and those in multiple outgroup categorisation condition ( $M = 2.82, SD = .21$ ). Contrast 3

was not significant  $p = .240$ , confirming that there was no significant difference in the liking score between simple and multiple mixed categorisation conditions ( $M = 3.01$ ,  $SD = .21$ ).

### *De-categorisation*

A 2 (target)  $\times$  4 (categorisation) ANOVA was carried out on representation of targets (immigrants or Italians) as individuals. Results showed a significant main effect of categorisation,  $F(3, 208) = 9.68$ ,  $p < .001$   $\eta^2 = .12$  and neither target effect  $F(1, 208) = .173$ ,  $p = .678$  nor (categorisation)  $\times$  (target) interaction  $F(3, 208) = 1.43$ ,  $p = .23$ . As expected contrast 1 was significant  $p < .005$ , showing an increase of de-categorisation in multiple mixed compared to simple condition. Contrast 2 was significant  $p < .001$  showing that there was a difference between simple and multiple ingroup categorisation conditions. In line with previous findings, contrast 3 was significant  $p < .001$ , showing that participants in multiple mixed categorisation conditions perceived others as individuals to a greater extent than participants in simple condition. Means are presented in Figure 2.



*Figure. 2 De-categorisation effect*

### *Perceived threat*

A 2 (target)  $\times$  4 (categorisation) ANOVA on perceived threat from immigrants showed a significant main effect of categorisation  $F(3, 208) = 11.68, p < .001, \eta^2 = .14$ , an effect of target  $F(1, 208) = 9.96, p = .002, \eta^2 = .05$  and a (target)  $\times$  (categorisation) interaction  $F(3, 208) = 3.11, p = .03, \eta^2 = .05$ .

The interaction was decomposed running two one-way ANOVAs considering the target (Italians and immigrants) separately.

In line with results on intergroup bias, the contrast analysis on the outgroup target (immigrants) revealed a significant difference of perceived threat between simple and multiple categorisation. Contrast 1 was significant  $p = .004$ , confirming that perceived threat was higher in simple categorisation condition ( $M = 4.49, SD = .25$ ) compared to multiple ingroup condition ( $M = 3.51, SD = .23$ ). Contrast 2 was significant  $p = .005$  indicating that there was a significant difference between simple and multiple outgroup condition ( $M = 3.48, SD = .23$ ). Contrast 3 was significant  $p = .605$ , showing as expected less perceived threat when participants were primed with multiple mixed categorisation ( $M = 2.86, SD = .23$ ) compared to simple one. Overall, when people thought about immigrants in multiple categorisation conditions they perceived them as less threatening than in the simple categorisation condition.

For the ingroup target (Italians) contrast analyses showed that Contrast 1 was not significant  $p = .813$ , showing no significant difference between simple ( $M = 4.61, SD = .22$ ) and multiple ingroup categorisation ( $M = 4.54, SD = .22$ ). Contrast 2 was significant  $p = .005$  indicating that there was a significant difference between simple and multiple outgroup conditions ( $M = 3.40, SD = .23$ ). Contrast 3 was significant  $p = .015$ , showing as expected less perceived threat when participants were primed with multiple mixed categorisation ( $M = 3.83, SD = .23$ ) compared to simple one.

### *Mediational analyses*

To test for mediation of perceived threat from immigrants between social categorisation and intergroup bias, we used the Baron and Kenny's (1986) multiple regression procedure. First, the type of categorisation significantly predicted intergroup bias ( $\beta = -.262, p < .002$ ) and it was significantly related to the mediator (perceived threat), ( $\beta = -.481, p < .001$ ). Furthermore, the mediator predicted intergroup bias ( $\beta = .355, p < .001$ ) When controlling for perceived threat from immigrants ( $\beta = -.696, p < .001$ ), the type of categorisation was no longer significantly related to intergroup bias ( $\beta = .321, p = .258$ ). Our analytic approach was informed by Preacher and Hayes (2008) who recommend bias-corrected bootstrapping to measure indirect effect. The indirect effect for perceived threat was significant ( $Z = 3.27, SE = .10; p < .05$ ) then perceived threat fully mediated the relationship between type of categorisation and intergroup bias. The confidence interval for the effect size of the indirect path through perceived threat was .17 to .57 and did not include zero, indicating it was a significant mediator.

Moreover, we also tested whether perceived threat from immigrants and de-categorisation mediate the effects of type of categorisation on the attribution of human traits. First it was considered whether perceived threat from the target was implied in the relationship between the type of categorisation and the tendency to include them in the human group. Type of categorisation significantly predicted attribution of human traits to ingroup and outgroup, ( $\beta = .11, p = .001$ ). Then, type of categorisation was also significantly related to perceived threat from the target (first mediator), ( $\beta = -.42, p < .001$ ). Similarly, the type of categorisation was also significantly related to de-categorisation (second mediator) ( $\beta = .36, p < .001$ ). Both mediators predicted the outcome (attribution of human traits to immigrants), respective de-categorisation ( $\beta = .14, p < .001$ ) and perceived threat ( $\beta = -.17, p = .001$ ).



Then, when controlling for perceived threat, ( $\beta = -.12, p = .002$ ) and individuation ( $\beta = .09, p = .003$ ), the effect of the type of categorisation on the attribution of human traits to ingroup and outgroup members became insignificant, ( $\beta = .03, p = .340$ ). These results indicated that the relationship between categorisation and attributions of humanness to ingroup and outgroup can be explained by perceived threat and individuation of outgroup members. We used Preacher and Hayes (2008) method to assess indirect effect. Indirect effect of perceived threat was significant ( $Z = 3.15, SE = .015; p = .001$ ) and so was that of individuation ( $Z = 2.52, SE = .012; p = .011$ ). Thus, results showed that perceived threat and individuation process fully explain the relationship between the type of categorisation and humanizing outcomes. The confidence interval for the effect size of the indirect path through perceived threat was .02 to .08 and did not include zero, indicating it was a significant mediator. Similarly, the confidence interval for the effect size of the indirect path through individuation was .00 to .06 indicating that the individuation process also explains the relationship between the type of categorisation and humanising outcomes.

## Discussion

This study extended the validity of multiple categorisation not only in reducing prejudice but also in attribution humanness to outgroups usually perceived as very distant, competitive and thus threatening as immigrants. Importantly, the effects of multiple categorisation improves not only evaluations of others, but also intentional behaviors to support their needs and rights as human beings. Furthermore, associating multiple social categories to a threatening outgroup, such as immigrants, reduces perceived threat from them. Interestingly, the reduction of prejudice towards immigrants, promoted by multiple categorisation, is explained by the attenuation of perceived threat from them. Finally, humanising effects of multiple categorisation are explained by the social cognitive process of de-categorisation and the motivational process of perceived threat.

## GENERAL DISCUSSION

Overall the findings of these studies revealed that multiple categorisation not only reduces intergroup bias, but it also favours the attribution of human traits to outgroups.

This evidence was consistent for rival real groups and even more interestingly, for immigrants, a group usually considered as distant, competitive and threatening (Duckitt, 2006).

In particular, we showed for the first time, that perceiving others along multiple criteria, including shared and unshared categorical dimensions between participants and targets, increased perceived outgroups' humanness. This evidence brings further support to the strength of multiple categorisation in reducing intergroup bias and increasing the attribution of humanness to outgroups. Indeed, it can be argued that it is the association of more than two social categories to favour attribution of humanness, independently from the combination of shared and unshared categories between perceivers and targets (mixed categorisation). Moreover, these results suggest that not only the number of categories but also their complexity, in terms of the combination among ingroup and outgroup memberships influences impression formation of outgroups, favouring less discriminative and more inclusive social judgments.

In addition, the de-categorisation process, that is, the representation of outgroup members as separate individuals, explained the humanising effects of categorisation. Perceived threat from outgroup members was lower under multiple categorisation conditions than in simple conditions. In turn de-categorisation and perceived threat mediated the effects of categorisation on intergroup bias and attribution of humanness to outgroups.

Overall this evidence sheds light on the social cognitive processes at the basis of social inclusion in the human group, revealing the role of individuation not only in reducing prejudice, but also in improving judgments about different others.

Another noteworthy implication of findings is that the social-cognitive process of multiple categorisation may ameliorate not only social judgments but also intergroup behaviours (Crisp & Hewstone, 2007). With respect to this, we highlighted that this approach is effective in favouring support for different, distant others, in terms of intentionality of cutting public funds in order to prevent immigrants' health risks. Thus, multiple categorisation represents an important strategy in offering a path to improve social integration in increasingly multicultural societies.

We might conclude that multiple social categorisation, through the de-categorisation process and reduction of perceived threat from outgroups, enlarges social inclusion of outgroups in the human group. On the basis of the evidence we collected through this line of empirical investigation, we can propose that multiple categorisation is a social-cognitive device that enhances the perceived inclusion of others in the human group. What is more, this phenomenon can touch very different human groups, from proximal ones, such as people belonging to rival groups of the same super-ordinate category, to distant ones, such as immigrants. Taken together these findings reveal the human *construens* side of categorisation that will be further tested in our next line of research.

**PART II**

**EXPOSURE TO SOCIAL DIVERSITY REDUCES RELIANCE ON HEURISTIC THOUGHT AND  
PROMOTES SOCIAL INCLUSION**

## INTRODUCTION

The first line of investigation pursued through Study 1 and Study 2 has addressed the role of multiple categorisation in promoting perceived inclusion of outgroup members in the human group.

In this vein, the complexity of others' identity has been conceptualized and tested as the increased number of categorical dimensions defining target groups.

Recently a consistent corpus of evidence has shown that perceiving others along multiple, incongruent and unexpected social categories attenuates social prejudice towards them (for a review see, Crisp & Hewstone, 2007).

Extending these ideas, Crisp and Turner (2011) have proposed that the experience of "stereotypically challenging" diversity, under the right conditions, can affect psychological well-beings of individuals, enhancing not only cognitive flexibility, but also intergroup tolerance. The authors, by reviewing an extended corpus of studies in a variety of areas have suggested that repeatedly perceiving counter-stereotypical characteristics as well as being identified by multiple identities can lead to the suppression of stereotypical knowledge and to the stimulation of generative thought (cognitive flexibility). This process can be learnt (cognitive adaptation) and then applied to a range of judgmental conditions (generalisation) with corresponding benefits at both interpersonal and intergroup levels.

On the basis of these assumptions, we addressed the role of challenging stereotypical expectations, which represent a particular kind of multiple categorisation, in improving cognitive flexibility and thus extending perceived inclusion in the human group of distant and emarginated outgroups. Following this line of reasoning, we designed three studies aimed precisely to test, for the first time, whether thinking about multiple incongruent categorisation favours social inclusion of different outgroups, through reducing reliance on heuristic thoughts. Study 1 aimed at exploring the influence of solving inconsistent expectations due to counter-stereotypical category combinations on attribution of stereotypes and heuristic thoughts. In Study 2, the effects of counter-

stereotypical categorisation on the avoidance of heuristic thoughts in problem solving tasks and on extending social inclusion through humanising outcomes were empirically addressed. Study 3 investigated improvements of both cognitive and humanising outcomes using alternative measures. Furthermore, the mediating role of cognitive flexibility, that is less reliance on heuristics, on the humanising effects of counter-stereotypical categorisation was tested. Before illustrating the studies, a brief review of the relevant literature is reported.

#### Cognitive adaptation to the experience of social and cultural diversity model

The model of cognitive adaptation to the experience of social and cultural diversity (CPAG model, Crisp & Turner, 2011) is based on the assumption that, on the one hand, cognitive processes explain intergroup relationships and on the other, actual intergroup experiences affect cognitive processes. More importantly, changes in individuals' cognitive style should affect judgments and behaviors across different areas, leading to generalised effects on cognitive and social outcomes.

The novelty of CPAG model (Crisp & Turner, 2011) relies on addressing general preconditions, cognitive and social processes and effects implied in the experience of social and cultural diversity. The main idea underlying the model is that challenging stereotypical expectations leads to cognitive flexibility, accurate information processing and prejudice reduction. However, these effects can occur only if perceivers are cognitively able and motivated to engage in inconsistency resolution processing. Furthermore, repeatedly engaging in solving stereotypical inconsistencies can influence multiple domains, from enhancing self-efficacy, to intergroup tolerance, as well as creativity and innovation in problem solving. In particular, the authors have indicated that dealing with stereotypical inconsistencies involves the suppression of stereotypical knowledge and also the stimulation of generative thinking. Studies on the role of surprising or counter-stereotypical category combinations on prejudice reduction provide preliminary evidence for these assumptions (Hutter & Crisp, 2005, 2006, 2009). Specifically, Hutter and Crisp (2005)

have shown that after thinking about surprising, because counter-stereotypical, combinations (“Female mechanics”, “Oxford-educated bricklayers”), individuals generate fewer constituent and more emergent attributes - a qualitatively distinct, new representation - to describe the target, compared to the perception of corresponding stereotypical category combinations (“Female nurses”, “Oxford-Educated art critic”). However, engaging in inconsistency resolution process requires cognitive resources (Hutter & Crisp, 2006). For this reason, perceivers use categories and stereotypes at early stages of impression formation and shift to a more generative mode of thought to judge the target only when stereotypes of combined categories are in conflict (Hutter, Crisp, Humphreys, Waters, & Moffitt, 2009). This evidence is in line with Fiske and Neuberg’s (1990) continuum model, according to which, when the target cannot fit into existing categories, perceivers shift from simply heuristic to systematic individuation of other characteristics. Until now, evidence has confirmed that perceiving counter-stereotypical category combination decreases prejudice towards the specific target, but there is no evidence on the generalisation of this effect. On the basis of the assumptions of the model, one question addressed in this contribution is whether inconsistency expectations elicit less reliance on stereotypes related to both the stimulus considered and different, unrelated targets, implying a generalised inhibition of heuristic thoughts.

### Cognitive Flexibility

Cognitive flexibility concerns the suppression of heuristic thoughts. Indeed, when people make judgments, they rely on a limited number of heuristic principles, which in turn reduce the complex tasks of assessing probabilities and predicting values to simpler judgmental operations. In general, heuristic thoughts are quite useful, but sometimes they lead to severe and systematic errors, which negatively affect judgments and behaviours. According to Tversky and Kahneman (1973), people base their judgments on the ease with which events can be recalled (availability heuristic). Any factor that increases ease of recall, makes an event more available and increases its estimated frequency. For instance, since greater publicity is given to accidents and homicides than to strokes

and suicide, individuals are more likely to recall them when thinking of causes of death, even if actually it is not true (Lichtenstein et al., 1978; Slovic, Fischhoff, & Lichtenstein, 1982). In a similar vein, the vividness with which certain events are reported makes them easily available from memory (Nisbett & Ross, 1980). Another very common heuristic rule is the representativeness bias. People often consider similarity a synonym of probability. Instead, similarity, or representativeness does not concern several factors, that should be taken into account in judgments of probability. This leads people to make serious mistakes. Among heuristics, the fundamental attribution error (Ross, 1977) strongly affects social judgments explaining differences in attribution of responsibility to others and ourselves. Especially in judging unexpected and negative events, individuals usually explain others' behaviors with dispositional attributions, thus enhancing others' responsibility. Conversely, in order to reduce their responsibility, they look for situational explanation of their own behaviors.

Cognitive biases stemming from judgmental heuristics cannot be ascribed to motivational effects, such as wishful thinking or distortion of judgments by payoffs and penalties (Kahneman & Tversky, 1982; Jones & Nisbett, 1971). Indeed, several studies (see, Hogart, 1981) showed that severe errors of judgments occurred although participants were encouraged to be accurate and were rewarded for the correct answers. Thus, we were interested in considering whether solving stereotypical expectations could decrease the reliance on heuristic thoughts. Finally, it should be stressed that several definitions of cognitive flexibility exist (i.e., actively choosing cognitive strategies that fit individuals' goals; wisely adapting to one's environment; creative thinking). However, for the purposes of the present research, we have chosen to focus on one specific aspect of cognitive flexibility, that is, the ability to adopt a systematic and not heuristic way of thinking.

### Social Stereotypes

Stereotypes are a particular kind of heuristic thought, since they concern only social targets. The stereotype content model (Fiske, et al., 2002) distinguishes two universal dimensions of social



perception, such as warmth and competence. Providing evidence on a large number of different groups from numerous national and international studies (Cuddy et al., 2007, 2009; Fiske, Cuddy, Glick, & Xu, 2002; Fiske, Xu, Cuddy, & Glick, 1999, Glick & Fiske, 2001), the model proposes that the attribution of warmth and competence to outgroups explains qualitatively different types of prejudice as a function of the relative status and perceived cooperative/competitive interdependence between groups. Despite this robust and converging evidence, surprisingly no empirical investigation has so far addressed how to inhibit stereotypes towards different discriminated outgroups. Along this line of thoughts, an issue to be addressed in this contribution is which socio-cognitive processes may lead to a generalised reduction of social stereotypes and thus an improvement of social judgments, in particular considering the attribution of humanness to others, as a generalised form of social inclusion.

Therefore, it seems relevant to investigate which socio-cognitive processes may improve cognitive and social judgments, in particular considering the perception of others' inclusion in the human group. Despite the consistent corpus of evidence (Bastian & Haslam, 2010; Haslam et al., 2005; Haslam & Bain, 2007; Kelman, 1973; Loughnan et al., 2010) on consequences of others' dehumanisation, as a specific and extreme form of intergroup prejudice that concerns the denial of others humanness, still no research addresses the issue of how to enhance the inclusion of others in the human group through evaluation of their humanness. In the present set of studies we intended to investigate this open issue exploring social cognitive antecedents, processes and generalised effects of perceiving social diversity.

## Aims of the Studies

On the basis of the above literature review, we investigated the positive effects of multiple incongruent categorizations on the formulation of judgments across different topics, including the benefic extension of the human evaluation also to distant, discriminated, emarginated outgroups.

In Study 3, we analysed the role of thinking counter-stereotypically in the formulation of judgments about others. In particular, we took into account the inhibition of hostile and negative judgments about others' ambiguous behaviors and the fundamental attribution error. We predicted that, after thinking about a counter-stereotypical category combination (female mechanic, male midwife) vs. stereotypical social category combination (female midwife, male mechanic), participants would be more inclined to make favourable vs. negative as well as situational vs. dispositional attributions towards others. In a similar vein, in Study 4 we investigated whether being exposed to a counter-stereotypical target would promote a lower reliance on both heuristic thoughts and social stereotypes (*cognitive flexibility hypothesis*). More specifically, availability and representativeness heuristic tasks were adapted by Tversky and Kahneman (1974) and by Gilovich (2002), presenting participants with dichotomous options in order to measure heuristic thoughts and stereotypical judgments. Furthermore, according to the stereotype content model (Fiske, Cuddy, & Glick, 2006), stereotype measure was considered in terms of the comparison between average ingroup and outgroup members attribution of warmth and competence.

In Study 4 and Study 5, we investigated whether perceiving others, through counter-stereotypical category combination, affects cognitive and social evaluations, not only towards the target at stake, but also towards different outgroups. In this regard, we took in consideration the effects of incongruent category combination on the attribution of human traits to outgroups members (*humanisation hypothesis*).

In Study 5 we extended the validity of results of Study 4 by assessing the effects of counter-stereotypical thinking on the attribution of human traits to emarginated outgroups (*generalisation*

*hypothesis*), that are asylum seekers, homeless, people with schizophrenia, elderly, learning and physically disabled people.

On the basis of CPAG model we also hypothesized that the generalisation of humanisation outcomes can be explained by an increase in cognitive flexibility, measured in terms of less reliance on heuristic thought in solving reasoning problems tasks and probabilistic questions (*mediational hypothesis*).

### STUDY 3

Study 3 aimed to examine whether perceiving social diversity, through evaluation of a counter-stereotypical target, would lead to less reliance on stereotypes and heuristic thought, thus enhancing positive impressions about others. Participants were first required to describe a counter-stereotypical vs. stereotypical target person (Hutter & Crisp, 2005) and then they were asked to solve opposing vs. neutral scrambled sentences (Srull & Wyer, 1979). These were used to elicit participants' hostile emotions and aggressive attributions. We expected that participants would make less negative and hostile judgments about others' ambiguous behaviors in counter-stereotypical category combination compared to stereotypical category combination condition. In addition, we expected that thinking about a counter-stereotypical target would decrease the tendency to make more personal than contextual attribution of causality in judgments about others.

#### Method

##### *Participants*

Eighty students ( $M_{\text{age}}=19.5$ ,  $SD_{\text{age}}=1.2$ ) of Kent University participated in the study on a voluntary basis. Participants (20 male, 60 female) were randomly and equally assigned to one of the two categorisation tasks (counter-stereotypical vs. stereotypical categorisation condition).

### *Procedure and Materials*

Participants completed the questionnaire on-line. On the first page they were assured about the anonymity of their answers and they were informed that the research consisted in two pre-tests regarding an impression formation and a linguistic task. On the second page, participants were asked to think about a female mechanic or male midwife (counter-stereotypical category combinations) vs. female midwife or male mechanic (stereotypical category combinations) and then write down as many adjectives as possible about the target. Subsequently, to elicit participants' hostile or neutral emotions, they were randomly assigned to different conditions of a scramble sentence task. Specifically, they were asked to complete a linguistic task composed by either 25 neutral or hostile scrambled sentences to be unscrambled.

Thus the design was a 2 (category combination: stereotypical vs. counter-stereotypical)  $\times$  2 (emotional prime: neutral vs. hostile) between participants. After that they were required to answer some questions on impression formation. At the end of the experimental session, participants were debriefed and informed about the aims of the research.

*Category combination prime.* On the second page, participants were asked to think about a target, defined by a counter-stereotypical or stereotypical category combination. On the basis of previous studies (Hutter & Crisp, 2005, 2006), the target was described by one of four category combination labels, such as “female mechanic” or “male midwife” corresponding to counter-stereotypical conditions, “female midwife” or “male mechanic” representing stereotypical category conditions (Hutter & Crisp, 2005). To encourage impression formation, they were asked to describe the target with their own words. Participants were required to generate attributes to describe either a “female mechanic”, “male mechanic”, “male midwife” or “female midwife”. Each participant was given two minutes to describe his or her spontaneous thoughts as to what characteristics the person he or she was presented with might possess. Participants then filled in the dependent variables.

*Emotion prime.* After the counter-stereotypical combination prime participants were asked to complete a linguistic task, where they were randomly assigned to either an opposing or a neutral condition, in order to consider the effects of thinking about a counter-stereotypical target on negative judgments elicited by the opposing prime. They were presented with a page of 30 groups of four-or five-word (“The dog hits the telephone”) and asked to form meaningful sentences using only three or four words from each group. In the experimental conditions, 24 of these sentences described aggressive behaviors and 6 described neutral behaviors. In the neutral condition all 24 sentences were neutral. The priming stimuli was adapted by Srull and Wyer (1979) and Stapel et al. (1997).

#### *Dependent Variables*

*Attribution of traits.* After the category combination and emotion primes, participants read the second part of the questionnaire on impression formation. They were asked to read a paragraph describing the events of a day of the target person. This paragraph is the "Donald" paragraph developed by Srull and Wyer (1979, 1980; Bargh & Pietromonaco, 1982). This 12-sentence paragraph portrays Donald engaging in a series of empirically established ambiguously hostile behaviors. For example, Donald demands his money back from a store clerk immediately after a purchase and refuses to pay his rent until his apartment is repainted. After reading the paragraph, participants were asked to make a series of evaluative judgments about Donald. Participants rated Donald on each of 12 randomly ordered trait scales that ranged from 0 (*not at all*) to 10 (*extremely*). Six traits were descriptively related to hostility: three of them were negative (“hostile”, “dislikeable”, and “unfriendly”) and three were positive (“thoughtful”, “kind”, and “considerate”). The remaining six traits were not related to hostility: three of these were negative (“boring”, “narrow-minded”, and “conceited”) and three were positive (“intelligent”, “dependable”, and “interesting”). Items were combined to create four variables on the basis of their fair reliability,

such as negative traits related to hostility ( $\alpha = .77$ ), positive traits related to hostility ( $\alpha = .87$ ), negative traits unrelated to hostility ( $\alpha = .59$ ), positive traits unrelated to hostility ( $\alpha = .41$ ).

*Fundamental attribution error.* Participants were presented with 12 statements describing the occurrence of an event (McArthur, 1972) such as “While dancing, Ralph trips over Joan’s feet”, “Mary is angered at the Psychology Department”, “Bill thinks his teacher is unfair”. In particular, four statements regard actions, four ones consider the expression of emotions and the last four ones concern thinking. Their task was to decide what was the more likely cause of the event between 4 alternatives, from 1 (something about the person caused the event) to 4 (some combination of person, stimulus and circumstances caused the event). In order to test for a difference exclusively between situational and dispositional tendencies, we assigned the value “0” to the response choice “attribution of causality related to a person” and the value “1” to all others response choices, including “stimulus”, “circumstances”, and “some combination of person, stimulus and circumstances caused the event”. Twelve items had good internal reliability with a Cronbach’s alpha of .80 and were collapsed in one variable.

*Manipulation checks.* We included a manipulation check of the category combination following Hutter and Crisp (2005) and we asked participants to indicate on a 5 point scale ranging from 1 (*not at all*) to 5 (*very much*) the extent to which they perceived the target as “surprising”, “familiar”, “complex” and “similar”. The scale had good internal reliability with a Cronbach’s alpha of .75.

## Results

### *Manipulation checks*

Results from paired-sample t-test confirmed that participants who thought about counter-stereotypical category combination perceived the target more counter-stereotypical, original and

complex ( $M_{counter-stereotypical} = 3.75$ ) than participants who thought about stereotypical category combinations ( $M_{stereotypical} = 2.10$ ),  $t(78) = -7.52, p < .001$ .

#### *Attribution of hostile traits*

Since we were interested in understanding the effects of solving inconsistency on hostile attributions when judging others' ambiguous behaviors, in the following analysis we did not consider attribution of neutral traits. We conducted two 2 (category combination: counter-stereotypical, stereotypical)  $\times$  2 (prime: opposing, neutral) ANOVAs on the attribution of hostile traits to Donald, considering positive and negative traits separately.

Results on the attribution of negative traits showed an almost significant interaction,  $F(3,76) = 3.760, p = .056, \eta^2 = .05$ . To break down the interaction, simple comparisons were performed between counter-stereotype vs. stereotype category combination for each opposing prime (opposing vs. neutral). Considering emotional hostile prime, results revealed lower hostile negative attributions to Donald in counter-stereotypical conditions ( $M = 7.21, SD = 1.97$ ) with respect to stereotypical conditions ( $M = 8.41, SD = 1.53$ ),  $t(37) = -2.136, p = .039, \eta^2 = .049$ . Conversely, considering emotional neutral prime, there was no significant difference in hostile negative attributions to Donald between counter-stereotypical ( $M = 7.33, SD = 1.17$ ) and stereotypical condition ( $M = 7.46, SD = 1.40$ ),  $t(39) = -.333, p = .741$ . There was no main effect of category combination,  $F(1, 76) = 2.387, p = .126$ , nor main effect of prime  $F(1, 76) = 1.417, p = .238$ .

The same analysis was conducted on the attribution to Donald of positive hostile traits. Results showed no main effect of counter-stereotypical prime  $F(1, 76) = 1.498, p = .225$ , nor any main effect of opposing manipulation  $F(1, 76) = 1.113, p = .295$ , nor any significant interaction  $F(1, 76) = .931, p = .338$ .

These findings offer first hand evidence of counter-stereotypical category combinations effects, showing an attenuation of negative, but not positive attributions in judging others' ambiguous behavior.

#### *Fundamental attribution error*

We tested whether thinking about counter-stereotypical category combinations enhance the tendency to make dispositional than situational attributions in judgments about others. In doing so, we considered three statements, each one representing a different states, that is an action, an expression of an emotion or a mental state.

In the statement regarding another person' action, the percentage of participants that made situational rather than dispositional attributions in judging others' behavior was higher when the prime was a counter-stereotypical ( $N_{\text{situational}} = 27$ ;  $N_{\text{dispositional}} = 14$ ) than a stereotypical category combination ( $N_{\text{situational}} = 14$ ;  $N_{\text{dispositional}} = 25$ ),  $\chi^2(1) = 7.18, p < .01$ . Similarly, in the statement regarding the expression of a mental state, the percentage of participants making situational rather than dispositional attribution in judging others' behavior was higher when they were primed with counter-stereotypical category combinations ( $N_{\text{situational}} = 30$ ;  $N_{\text{dispositional}} = 11$ ) in comparison to stereotypical category combination ( $N_{\text{situational}} = 20$ ;  $N_{\text{dispositional}} = 19$ ),  $\chi^2(1) = 5.03, p < .05$ . On the contrary, in the statement concerning emotions, participants in counter-stereotypical category combinations ( $N_{\text{situational}} = 31$ ;  $N_{\text{dispositional}} = 10$ ) did not make more situational attributions than participants in stereotypical category combinations ( $N_{\text{situational}} = 25$ ;  $N_{\text{dispositional}} = 14$ ),  $\chi^2(1) = 1.26, p = .26$ .

## Discussion

Study 3 aimed at investigating the effects of counter-stereotypical category combination on impression formation of a specific target and judgments of unspecified others. According to previous studies (Hutter & Crisp, 2005, 2006) pairing conflicting gender and occupation categories (counter-stereotypical conjunctions) attenuates prejudice towards the target via inhibition of stereotypical attributions. Then, we explored whether exposure to stereotypical inconsistency may not only affect impressions about the target at stake, but also subsequent unrelated social judgments.



In particular, we measured the tendency to make negative judgments through the Donald task, as well as the fundamental tendency to make dispositional judgments about others' behavior.

Indeed, when perceivers were exposed to unexpected categorical combinations, there was a significant decrease in hostile and negative traits attributed to Donald. Moreover, situational attributions in judging others' behaviors were more likely after thinking about a counter-stereotypical than a stereotypical category combination. Thus, the process of inconsistency resolution affects subsequent judgments about others, not only in terms of attribution of traits, but also in terms of evaluations of behaviors, in particular of attribution of causality. Evidence from Study 1 enriches the existing findings showing that the inconsistency resolution process activated by considering counter-stereotypical category combination extends beyond the target at stake and affects more general social judgments. On the one hand, it attenuates the tendency to rely on negative stereotypes about others and on the other hand, it reduces heuristic thought, such as fundamental attribution bias in judging others' behaviors.

#### STUDY 4

The aim of Study 4 was to investigate whether thinking about a counter-stereotypical vs. stereotypical social category combination affects humanisation outcomes through the attribution of human traits. We were interested in examining the extended benefits of this way of thinking, considering whether it can influence attribution of human traits to unrelated outgroups. Thus, in this study we selected four discriminated and emarginated outgroups, according to the National Survey on Equality, Diversity and Prejudice in Britain (Abrams & Huston, 2006). Specifically, we considered asylum seekers, homeless, physically disabled people and elderly people. Moreover, we addressed whether thinking about unexpected category combinations is cognitively demanding to the extent that it reduces reaction time in resolution tasks.

## Method

Participants were randomly assigned to think about a stereotypical (female midwife; male mechanic) or counter-stereotypical category combination (female mechanic; male midwife). After that they were asked to accomplish a Stroop test (the reaction time task) and then attribute human traits to four different social groups, namely asylum seekers, elderly people, physically disabled people, homeless people.

### *Participants*

Eighty students (age:  $M = 19.6$ ,  $SD = 2.42$ ) from Kent University participated in the study on voluntary basis. The participants ( $N_{\text{males}} = 16$  and  $N_{\text{females}} = 64$ ) were randomly assigned to one of the two category combination conditions and after reading about the target they were asked to complete a questionnaire.

### *Procedure and Materials*

Participants received a paper and pencil questionnaire to complete. As in the previous study, on the first page they were assured about the anonymity of their answers and they were informed that the research was aimed at studying people's intergroup experience. On the second page, they were presented a counter-stereotypical or stereotypical target, as in previous studies. Then they were asked to form impression on the target and write down a description of a female mechanic or male midwife in counter-stereotypical conditions, and a female midwife or a male mechanic in stereotypical conditions.

After that, participants completed the colour-word Stroop task (Stroop, 1935). This is a widely employed task in studying attention control, in fact it involves naming the ink colour of incongruent or congruent colour words (e.g., the word RED or GREEN printed in green; say "green") or a nonverbal control stimulus (e.g., a series of Xs in green). Participants were seated in front of a

computer. The distance between participants and the screen was approximately 50 cm. Participants were asked to name the colour words as quickly as possible while trying to make no mistakes. A trial started with the presentation of the colour–word stimulus which remained visible for 1.5 s after colour onset. Following stimulus presentation, the screen was blank for 1 second, after which the next trial began.

At the end of the Stroop test, participants were asked to attribute a series of uniquely human and human nature adjectives to different social groups.

### *Dependent Variables*

*Stroop task.* This computer-based task is composed by different sequences of stimuli. At the beginning there were sample trials, so participants could practice, then they were informed about the beginning of their performance. Previous studies have found that response time (RT) is typically longer in the incongruent than the control condition, descriptively called interference, which reflects the processing effect of diverging colour and word information.

We obtain the Stroop interference measure on the basis of the difference between the mean reaction time in incongruent conditions (difference between ink colour and word meaning) and the mean reaction time in control conditions (same ink colour and word meaning) for each participant.

*Traits assessing humanisation.* According to Haslam (2006), we can differentiate two aspects of humanness, which are both essential and make a complete description of human beings. On the one hand, uniquely human (UH) characteristics define the boundary that separates human beings from animals, involving refinement, civility, morality, and higher cognition. On the other, human nature (HN) characteristics distinguish humans from inanimate things, referring more to such aspects as emotional responsiveness, cognitive openness, agency and individuality. In this vein, participants were asked to define how much they think the average member of four discriminated groups (asylum seekers, learning disabled people, people with schizophrenia and

homeless people) possesses a series of characteristics compared to the average person on the basis of a 7 point scale (1= much less than average to 7 = much more than average). On the basis of reliability among measures, we collapsed human traits ratings in one variable for each social group: asylum seekers ( $\alpha = .92$ ), elderly people ( $\alpha = .93$ ), physically disabled people ( $\alpha = .92$ ), homeless people ( $\alpha = .92$ ).

*Manipulation check.* As in previous studies, at the end of the questionnaire we included a manipulation check following Hutter and Crisp (2005) asking to indicate on a 5 point scale ranging from 1 (not at all) to 5 (very much) the extent to which they perceived the target as surprising, familiar, complex and similar. The scale had good internal reliability with a Cronbach's alpha of .77.

## Results

### *Manipulation checks*

Results from paired-sample t-test confirmed that participants perceived a significant difference in stereotypical congruency between the category combination conditions. As in the previous study, data showed that participants who thought about counter-stereotypical category combinations perceived the target more counter-stereotypical ( $M_{\text{counter-stereotypical}} = 3.17$ ,  $SD = .76$ ) than participants who thought about stereotypical category combinations ( $M_{\text{stereotypical}} = 2.02$ ,  $SD = .74$ ),  $t(78) = -6.75$ ,  $p < .001$ .

### *Stroop test*

As expected, t-test analysis revealed a significant impact of counter-stereotypical combinations condition on participants' Stroop test performance. More specifically, after thinking about a counter-stereotypical category combination there was an increase of Stroop test interference time ( $M = 103.78$ ,  $SD = 65.38$ ) compared to stereotypical condition ( $M = 62.458$ ,  $SD = 42.65$ )  $t(79) = -3.163$ ,  $p < .001$ .

### *Traits assessing humanisation*

A 2 (category combination: counter-stereotypical vs. stereotypical)  $\times$  4 (outgroups: asylum seekers, elderly, physically disabled people, homeless) ANOVA with repeated measures on the second factor was conducted to analyse the generalisation of humane attributions after thinking about a (counter)-stereotypical target.

Mauchly's test indicated that the assumption of sphericity had been violated for the main effect of outgroups  $\chi^2(5) = 19.73, p = .001$ . Therefore degrees of freedom were corrected using Greenhouse-Geiser estimates of sphericity ( $\epsilon = .87$  for the main effect of outgroups).

Results showed significant effects of category combination,  $F(1,78) = 7.73, p < .01, \eta^2 = .09$  and neither effect of outgroups  $F(3,243) = 2.54, p = .06$  nor (category combination)  $\times$  (outgroups) interaction  $F(3,243) = .287, p = .81$ . As expected, participants in counter-stereotypical conditions attributed higher level of humanity to all outgroups ( $M = 5.23, SD = .128$ ) than those in stereotypical conditions ( $M = 4.73, SD = .128$ ).

## Discussion

Overall, Study 4 showed the humanising effect of perceiving counter-stereotypical category combination. We found that after solving inconsistency through counter-stereotypical categorisation, participants were more likely to attribute human traits to discriminated outgroups. This evidence confirms an extended social inclusion effect. Indeed, a decrease in the tendency to attribute less human traits to others was extended beyond the target at stake to include different outgroups. Specifically, there was a greater tendency to attribute uniquely human traits and human nature traits to overall outgroups. Drawing from these findings, we can affirm that the resolution of stereotypical inconsistencies affects subsequent social judgment increasing the tendency to include others in the human group.

Furthermore, results on the Stroop test showed that being exposed to a solving stereotypical inconsistency related to a counter-stereotypical target reduces cognitive resources, impairing significantly participants' performance in subsequent attention tasks. However, it did not affect social judgment confirming a decrease in stereotypical attribution as in Study 1 to unrelated targets.

## STUDY 5

Study 5 was aimed to enlarge the potential of counter-stereotypical category combination in improving complex and generative thoughts. More specifically, we investigated whether counter-stereotypical thinking would reduce reliance on heuristic thought, not only with regard to the fundamental attribution error, but also in different problem solving strategies. Second, we considered whether the association of incongruent categories would affect stereotypical judgment towards the target and more generally, towards different unrelated outgroups. Third, we examined the effects of perceiving counter-stereotypical targets on humanising outcomes, in terms of attribution of uniquely human and secondary emotions to outgroups. To those aims, we asked participants to think about either a stereotypical or counter-stereotypical target and then complete a series of problem solving tasks. After that they were asked to rate the ability of four different outgroup members in expressing secondary and primary emotions.

Specifically, we predicted that exposure to a counter-stereotypical prime would lead to greater cognitive flexibility compared to a stereotypical one. In a similar vein, we hypothesized that exposure to a counter-stereotypical target would lead to higher attribution of warmth and competence to unrelated social groups. Furthermore, we hypothesized that after thinking about counter-stereotypical targets participants would attribute more secondary emotions to the given outgroups.

## Method

Participants were randomly asked to think about stereotypical or counter-stereotypical category combinations and then asked to complete a set of 10 logical problems adapted from Tversky and Kahneman (1974). These reasoning problems were composed of 5 tasks based on availability heuristics and 5 tasks based on representative heuristics (see Appendix<sup>1</sup>). Participants were asked to be as accurate as possible in solving the 10 reasoning problems in 10 minutes. After that participants indicated to what extent the average member of each of four discriminated outgroups (“asylum seekers”, “learning disabled people”, “people with schizophrenia”, “homeless”) are characterized by warmth and competence in comparison to British people. Finally, participants were asked to rate the extent to which the average member of the above discriminated social groups is capable of experiencing a series of primary and secondary emotions compared to the average person.

### *Participants*

Eighty students (age:  $M = 19.4$ ,  $SD = 2.28$ ) from Kent University participated in the study on voluntary basis. The participants (18 male, 62 female) were randomly assigned to one of the two category combinations (stereotypical vs. counter-stereotypical).

### *Procedure*

Participants received a paper and pencil questionnaire to complete. As in previous studies, first they were asked to think and describe a counter-stereotypical category combination (“female mechanic”; “male midwife”) or a stereotypical category combination (“female midwife”; “male mechanic”) using as many adjectives as possible. After that, they were asked to complete a series of reasoning problem solving tasks. Then, they had to attribute warmth and competence to different outgroup members (asylum seekers, learning disabled people, people with schizophrenia and

homeless) on a basis of a scale with “0” corresponding to British average of each specific characteristic. Finally, participants were provided a series of human (secondary) emotions and they were asked to indicate to what extent outgroup members possess each traits. At the end of the experimental session, participants were debriefed.

### *Dependent Variables*

*Cognitive flexibility.* A set of 10 reasoning problems based on the availability and representative heuristics were given to the participants. In one of the five representativeness heuristic problems, participants were asked to read carefully a target description such as “Mark is of high intelligence, although lacking in true creativity. He has a need for order and clarity, and for neat and tidy systems in which every detail finds its appropriate place. His writing is rather dull and mechanical, occasionally enlivened by somewhat corny puns and by flashes of imagination of the sci-fi type”. Participants were then asked to guess the probability that Mark was one of the 30 engineers in the sample of 100. The correct answer is 30% but usually people tend to increase it on the basis of the high correspondence of the description with the engineer stereotype.

In one of the five availability heuristic problems, participants were asked to estimate the proportion of words that have the form “- - - - n -” (seven letter words that end with -n-) versus those words that have the form “- - - - ing” (seven letter words that end with -ing). Most English-speaking people could immediately think of many words that end with the form -ing, but it would take a more concentrated effort to think of any words where "n" is the next-to-last letter. Thus the immediate answer would probably be that words that end with the -ing form are more common. The reality is that words that have the letter "n" in the penultimate position include the word ending in -ing form and some more. In fact, there are three times as many words that have the letter "n" in the next-to-last position, as those having the -ing form.



We coded each reasoning problem data attributing the value '1' to correct answers and the value '0' to wrong answers. Then we selected eight out of ten reasoning problems which showed good reliability ( $\alpha = .68$ ) and collapsed into a single measure of heuristic thinking.

*Stereotype Content.* Participants were presented with two diagrams representing the distribution of two apparently fundamental characteristics of British people – *Warmth* and *Competence* (Fiske, Cuddy, Glick, & Xu, 2002). Assuming the average British person falls in the centre of these distributions, they were asked to place a vertical line to indicate where they thought the average person belonging to each outgroup (“asylum seekers”, “learning disabled people”, “people with schizophrenia” and “homeless people”) would fall. The ratings were made on distributions ranging from 1 millimeter (*low warmth/competence*) to 13 millimeters (*high warmth/competence*) with the '7' score indicating that the characteristic is equally attributed to British and outgroup members.

*Emotions Assessing Humanisation.* Emotional terms were chosen from the literature on infrahumanisation (Demoulin, Leyens, Paladino, & Dovidio, 2004). We asked participants to attribute a set of secondary and primary emotions to each target group on a 7-point scale ranging from '1' (*much less than average population*) to '7' (*much more than average population*). Items were collapsed, controlling for valence, in order to obtain measures of secondary and primary emotions for each social group, all of them showing good reliability. In particular, secondary emotions measures included “embarrassment”, “remorse”, “melancholy”, “shame”, “compassion”, “pride” ( $\alpha_{\text{asylum seeker}} = .67$ ;  $\alpha_{\text{learning disabled}} = .75$ ;  $\alpha_{\text{people with schizophrenia}} = .72$ ;  $\alpha_{\text{homeless}} = .76$ ), and primary emotions measures included “pleasure”, “happy”, “desire”, “fear”, “pain”, “hunger” and “rage” ( $\alpha_{\text{asylum seeker}} = .76$ ;  $\alpha_{\text{learning disabled}} = .65$ ;  $\alpha_{\text{people with schizophrenia}} = .55$ ;  $\alpha_{\text{homeless}} = .58$ ).

We analysed primary emotions scores and, in line with infrahumanisation theory, we did not find significant difference between categorisation conditions in the attribution of these

characteristics to any outgroup considered.<sup>3</sup> Since previous studies have demonstrated that inhumanisation involves the denial of outgroups members' ability to express secondary but not primary emotions, in order to test an improvement in humanisation outcomes towards outgroups, we took in consideration only secondary emotions.

*Manipulation check.* As in previous studies, at the end of the questionnaire we included a manipulation check drawn from Hutter and Crisp (2005) asking participants to indicate on a 5 point scale ranging from 1 (*not at all*) to 5 (*very much*) the extent to which they perceived the target as “surprising”, “familiar”, “complex” and “similar”. The scale had good internal reliability with a Cronbach's alpha of .81.

## Results

### *Manipulation Checks*

Participants exposed to a counter-stereotypical category combination perceived the target as more complex and surprising ( $M = 3.19$ ) than participants presented with a stereotypical category combination ( $M = 1.87$ ),  $t(78) = -8.52$ ,  $p < .001$ .

### *Cognitive Flexibility*

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<sup>3</sup> According to infra-humanisation theory, we expected no significant increase in attributing primary emotions to outgroups after thinking about a counter-stereotypical target. Indeed, for asylum seekers, t-test analyses revealed no significant increase of primary emotions when people had previously thought about the counter-stereotypical combination ( $M = 4.94$ ) than stereotypical one ( $M = 4.85$ ),  $t(78) = -.453$ ,  $p = .652$ . Similarly, no significant increase of primary emotions attributed to homeless was verified between conditions ( $M_{\text{stereotypical}} = 5.52$  vs.  $M_{\text{counter-stereotypical}} = 5.63$ )  $t(78) = -.669$ ,  $p = .506$ . Neither there was a significant difference in attribution of primary emotions to learning disabled people between stereotypical ( $M = 4.93$ ) and counter-stereotypical conditions ( $M = 4.79$ ),  $t(78) = .782$ ,  $p = .437$  nor stereotypical ( $M = 4.81$ ) and counter-stereotypical conditions ( $M = 4.75$ ),  $t(78) = .398$ ,  $p = .692$  were significantly different with respect to people with schizophrenia.

A 2 (category combination: counter-stereotypical, stereotypical)  $\times$  2 (heuristics: availability, representativeness) ANOVA within participants factor was conducted on repeated measure on heuristics.

Mauchly's test indicated that the assumption of sphericity had been violated for the main effect of heuristics,  $\chi^2(0) = .000, p < .001$ . Therefore degrees of freedom were corrected using Greenhouse-Geiser estimates of sphericity ( $\epsilon = 1.000$  for the main effect of heuristics). Consistent with our prediction, there was a main effect of categorisation,  $F(1, 77) = 20.52, p < .001, \eta^2 = .21$ . Participants in the counter-stereotypical conditions ( $M = .57$ ) produced more correct answers on reasoning problems based on both types of heuristics (availability and representativeness) compared to participants in stereotypical conditions ( $M = .36$ ). Moreover, a main effect of type of heuristics,  $F(1, 77) = 16.20, p < .001, \eta^2 = .17$  revealed that participants were more likely to solve representativeness heuristics ( $M = .54, SD = .03$ ) than availability ones ( $M = .39, SD = .03$ ). There was no interaction effect between categorisation and type of heuristics  $F(1, 77) = .083, p = .774$ .

### *Stereotype Content*

Although we did not assume systematic variations between the attribution of warmth and competence to the different outgroups at stake, they were included simultaneously in the analysis to check for differences. A 2 (category combination: counter-stereotypical, stereotypical)  $\times$  2 (stereotype content: warmth, competence)  $\times$  4 (outgroups: asylum seekers, learning disabled people, people with schizophrenia, homeless) mixed-model ANOVA was conducted on warmth and competence measures.

Mauchly's test indicated that the assumption of sphericity had been violated for the main effect of stereotype,  $\chi^2(0) = .000, p < .001$ , and outgroup,  $\chi^2(5) = 11.705, p = .039$ . Therefore degrees of freedom were corrected using Greenhouse-Geiser estimates of sphericity ( $\epsilon = 1.000$  for the main effect of stereotype and .904 for the main effect of outgroups). As expected, there was a significant main effect of category combination,  $F(1, 78) = 7.65, p < .01, \eta^2 = .09$  due to higher

attribution ( $M = 5.63$ ,  $SD = .18$ ) of both warmth and competence to outgroups in the counter-stereotypical conditions compared to the stereotypical conditions ( $M = 4.90$ ,  $SD = .18$ ).

There was also a main effect of stereotype content,  $F(1, 78) = 26.78$ ,  $p < .001$ ,  $\eta^2 = .25$ . Raters were more likely to attribute higher warmth ( $M = 5.52$ ,  $SD = .150$ ) than competence ( $M = 5.00$ ,  $SD = .134$ ). Finally, there was a significant main effect of target,  $F(1, 78) = 17.72$ ,  $p < .001$ ,  $\eta^2 = .18$ . Pair-wise comparisons revealed participants' attribution of warmth and competence to asylum seekers ( $M = 5.69$ ,  $SD = .20$ ) and people with learning disabilities ( $M = 6.03$ ,  $SD = .15$ ) were not significantly different from each other ( $p = .653$ ), but both were overall more positive than to people with schizophrenia ( $M = 4.61$ ,  $SD = .20$ ) and the homeless ( $M = 4.73$ ,  $SD = .21$ ; all  $p < .001$ ), which in turn did not differ from each other  $p = 1.000$ .

These main effects were qualified by a significant trivial (outgroups)  $\times$  (stereotype content) interaction,  $F(3, 234) = 25.18$ ,  $p < .001$ ,  $\eta^2 = .25$ .

To decompose this interaction, we run a set of paired-sample t-tests on warmth and competence within each target group. Results revealed significantly higher attribution of warmth ( $M = 7.13$ ,  $SD = 2.00$ ) than competence ( $M = 4.93$ ,  $SD = 1.67$ ),  $t(79) = 8.14$ ,  $p < .005$  to learning disabled people. In contrast, there were no difference between attributions of warmth and competence for all other outgroups. More specifically, results did not show significant difference between warmth ( $M = 5.66$ ,  $SD = 2.12$ ) and competence attributed to asylum seekers ( $M = 5.71$ ,  $SD = 2.02$ ),  $t(79) = -.235$ ,  $p = .81$ . Neither was there any difference in attribution of warmth ( $M = 4.60$ ,  $SD = 1.94$ ) and competence ( $M = 4.71$ ,  $SD = 1.96$ )  $t(79) = -.203$ ,  $p = .83$  to people with schizophrenia. Similarly for the homeless we found no significant difference in attributions of warmth ( $M = 4.71$ ,  $SD = 2.37$ ) and competence ( $M = 4.75$ ,  $SD = 2.10$ )  $t(79) = -.168$ ,  $p = .86$ .

Looking at the interaction in figure 3, this suggests a compensatory effect toward learning disabled people, there is in fact a significantly higher attribution of warmth compared to competence to this outgroup. Differently, warmth and competence ratings are very similar for asylum seekers, people with schizophrenia and the homeless.

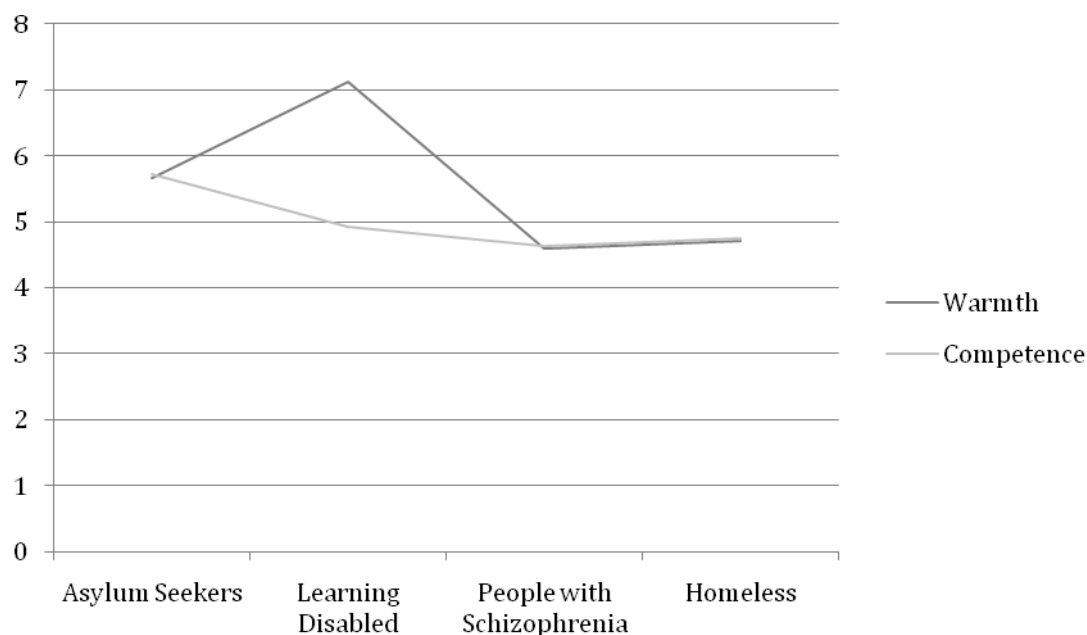


Figure 3. Interaction effect between outgroups and stereotype content.

There were neither a significant (category combination)  $\times$  (stereotype content) interaction,  $F(1, 78) = .26, p = .61$ , nor a (category combination)  $\times$  (outgroups) interaction,  $F(3, 234) = 1.49, p = .22$ . Neither there was a significant interaction between category combination, stereotype and outgroups,  $F(3, 234) = 1.56, p = .20$ . In other words, irrespective of the specific outgroup being evaluated, thinking about a counter-stereotypical target led to positive attributions of warmth and competence.

#### *Emotions Assessing Humanisation*

In order to test for an increase in humanisation outcomes after thinking about a counter-stereotypical combination, we conducted a 2 (category combination: counter-stereotypical vs. stereotypical)  $\times$  4 (outgroups: asylum seekers, learning disabled people, people with schizophrenia, homeless) ANOVA with repeated measures on the second factor considering only secondary emotions, since contrary to primary emotions these are exclusively expressed by human beings.

The analysis yielded a significant main effect of category combination  $F(1,77) = 3.483, p = .05, \eta^2 = .05$ . Participants in counter-stereotypical categorisation conditions tended to attribute higher rates of secondary emotions ( $M = 4.68, SD = .12$ ) to all outgroups with respect to participants in stereotypical categorisation conditions ( $M = 4.13, SD = .12$ ).

We also found a main effect of outgroups,  $F(3, 234) = 4.881, p < .005, \eta^2 = .06$ . Post hoc analysis revealed that participants attributed higher ability to express secondary emotions to the homeless ( $M = 4.62, SD = .11$ ), asylum seekers ( $M = 4.53, SD = .10$ ) and learning disabled people ( $M = 4.49, SD = .12$ ) with respect to people with schizophrenia ( $M = 4.18, SD = .11, p < .01$ ). No other significant difference between outgroups was found. We did not find an interaction  $F(3, 234) = 2.053, p = .107, \eta^2 = .026$ .

Therefore, results revealed that secondary (uniquely human) emotions were attributed to a great extent to some outgroups, thus revealing an improvement in attribution of humanness to unrelated and discriminated outgroups members in counter-stereotypical category conditions.

#### *Mediational Analyses*

To examine the mediating role of cognitive flexibility in the relationship between categorisation condition and humanisation outcomes across outgroups, we conducted a set of mediational analyses considering separately the attribution of secondary emotions to each outgroup.

First, category combination predicted asylum seekers' ability to express secondary emotions ( $\beta = .318, p = .05$ ) and also cognitive flexibility ratings ( $\beta = .130, p < .02$ ). However, when both category combination and cognitive flexibility were entered as predictor, category combination became not significant ( $\beta = .127, p = .478$ ) and cognitive flexibility was significant ( $\beta = .117, p < .01$ ). The confidence interval for the effect size of the indirect path through cognitive flexibility was .02 to .43 indicating it was a significant mediator.

Similarly, category combination predicted the ability of learning disabled people' to express secondary emotions ( $\beta = .498, p = .02$ ) and also cognitive flexibility ratings ( $\beta = .12, p = .02$ ). However, when both category combination and cognitive flexibility were entered as predictor,

category combination ( $\beta = .35, p = .12$ ) became insignificant and so did cognitive flexibility ( $\beta = .08, p = .13$ ). Then the relationship between categorisation and attribution of secondary emotions to learning disabled people was not explained by cognitive flexibility.

Category combination did not predict the ability to express secondary emotions of people with schizophrenia ( $\beta = .200, p = .382$ ), then we did not consider the mediation role of cognitive flexibility in relation to the attribution of humanness to people with schizophrenia.

Finally, category combination predicted the ability of homeless people to express secondary emotions ( $\beta = .550, p = .02$ ) and also cognitive flexibility ratings ( $\beta = .211, p < .005$ ). However, when both category combination and cognitive flexibility were entered as predictor, category combination became insignificant ( $\beta = .246, p = .29$ ) while cognitive flexibility was significant ( $\beta = .187, p < .001$ ). The confidence interval for the effect size of the indirect path through cognitive flexibility was .07 to .59 indicating it was a significant mediator.

## Discussion

Study 5 largely supports the hypothesis that perceiving counter-stereotypical category combination reduces reliance on heuristic thinking, stereotypical judgment and outgroup discrimination. We looked at the cognitive processes implied by the perception of a counter-stereotypical target. Confirming assumptions of CPAG model (2001), in particular the role of categorisation in activating a shift in cognitive style and its generalised effects, participants in counter-stereotypical conditions showed higher cognitive flexibility, through less reliance on heuristics in problem solving, compared to those in stereotypical conditions. Specifically, results revealed that participants were more likely to solve representativeness heuristics than availability heuristics. This is probably due to the fact that representativeness instead of availability heuristics concerns inhibition of social stereotypes which is a process directly activated by perceiving counter-stereotypical categories.

In line with Study 4, this study demonstrates that engaging in counter-stereotypical thinking uniquely goes beyond a specific target, not only reducing stereotypes towards different unrelated outgroups, but more importantly, increasing their perceived humanity. As predicted, exposure to unexpected category combination, made participants more likely to attribute secondary emotions to different discriminated outgroups. Furthermore, independently from the category combination condition, people with schizophrenia were attributed the lowest ability to express secondary human emotions. In addition, there was an increase in attribution of warmth and competence to all the outgroups after thinking about counter-stereotypical category combinations. In line with humanisation findings, there was a significant difference between categorisation conditions only for asylum seekers and the homeless.

Furthermore, perceived inclusion of some outgroups in the human group was mediated by a decrease of reliance on heuristics. Indeed, increased cognitive flexibility improves social judgments towards discriminated outgroups also through improving the perception of their humanness.

Overall results confirmed our predictions of social and cognitive improvements generated by cognitive flexibility through perception of counter-stereotypical category combinations.

## GENERAL DISCUSSION

Our three studies yield a coherent set of findings. We consistently found that thinking in a counter-stereotypical manner improves cognitive and social judgments, not only in relation to the target at stake but across different targets. More importantly, findings showed that multiple incongruent categorisation promotes an extended social inclusion in the human group, and this relationship is explained by cognitive flexibility, that is, less reliance on heuristic thought. We consider this to be a valuable theoretical advance in the research on the role of categorisation processes in improving intergroup relations.



This line of research is based on the CPAG model (Crisp & Turner, 2011), as integrative theory that takes into account interrelations between cognitive and social factors contributing to improve individuals' cognitive style. Drawing from the assumptions of this model, the studies were aimed to show that solving inconsistency expectations through counter-stereotypical exposure has a crucial role in reducing reliance on heuristic thought that in turn decreases stereotypical judgments and favours perceived humanness of outgroups.

In the three studies, we directly manipulated stereotypical vs. counter-stereotypical category combinations and measured reliance on heuristics, attribution of stereotypes and humanising outcomes across different outgroups. Overall, the findings of our studies provided a demonstration of the inconsistency resolution effects on cognitive flexibility and social inclusion in the human group. Thus, these findings demonstrated for the first time that processing counter-stereotypical information attenuates stereotypical attributions not only to the target at stake but also to different, unrelated others. Indeed this evidence extends the heuristic value of the CPAG model, shading light on the impact of social-cognitive processes at its basis on the perception of others' humanity.

More specifically, Study 3 enriches the existing literature demonstrating an increase in cognitive flexibility, as reflected in less stereotypical and negative judgments, when people think about counter-stereotypical targets. Indeed, participants who were exposed to a surprising association of gender and occupation categories were more likely to attribute less negative characteristics to others when judging their ambiguous behaviors, in comparison to participants who were exposed to stereotypical category combinations. In a similar vein, findings revealed a decrease in fundamental attribution error in the conditions of incongruent categorisations, with respect to the stereotypical conditions. Indeed this evidence showed that being exposed to the inconsistency of stereotypical expectations improves judgments through less reliance on heuristics and stereotypes.

In line with these findings, Study 4 investigated cognitive effects as well as humanising outcomes of thinking about a counter-stereotypical target. Results showed that after thinking about a counter-stereotypical target participants took more time on a Stroop task, implying not only that the exposure to stereotypical inconsistency is a cognitively demanding task, but also that it elicits an accurate and thus slow way of thinking. This finding is in line with Kahneman's (2003) contention that while automatic thinking is fast, slow thinking implies accuracy, efficiency and flexibility. Thus, cognitive demand, that dealing with a counter-stereotypical target induces, may favour cognitive flexibility, inhibiting heuristic thoughts and stereotypes in subsequent unrelated judgments on different outgroups. Indeed, findings showed humanisation tendencies and their generalisation, through attribution of uniquely human traits to four different outgroups unrelated to the target. Specifically, participants in counter-stereotypical categorisations tended to attribute uniquely human traits to outgroups to a greater extent than participants in stereotypical categorisation conditions. These findings were consistent across four different and usually emarginated social groups, such as physically disabled people, elderly people, asylum seekers and people with schizophrenia.

Study 5 showed that thinking about counter-stereotypical category combinations predicted a general increase in attribution of uniquely human emotions to discriminated outgroups. Thus, triggering stereotypical inconsistency not only reduces reliance on heuristic and stereotypical judgments, but also enhances humanisation judgments. Thus, experiencing diversity through the perception of others in surprising and unexpected ways influences social inclusion in the human group of unrelated targets. It should be considered that the lowest attribution of secondary emotions was related to people with schizophrenia. This social group may be considered as defined by specific differences in natural, essential and unchangeable characteristics, preventing them from expressing uniquely human emotions. Furthermore, the humanisation effect was mediated by a decrease of reliance on heuristic thoughts. In other words, cognitive flexibility improved humanising judgments of some outgroups. In particular, cognitive flexibility explained the

humanising effects of counter-stereotypical categorisation with respect to asylum seekers and the homeless, while it did not influence the attribution of humanness to people with schizophrenia and people with learning disabilities. It is plausible to advance that the judgments on these social groups are based on biological, genetic and permanent factors that make them extremely resistant to change. In this vein, increased cognitive flexibility under counter-stereotypical conditions did not affect the evaluation of these groups.

In sum, the findings of these studies extend previous research on categorisation processes in two ways. First, they provide evidence that perceiving counter-stereotypical category combination reduces reliance on stereotypes not only for judgments related to the target at stake, but also in a generalised way, that is extended to different, unrelated outgroups. Second, our findings showed that the attribution of humanness is elicited by thinking about unexpected combinations of social categories through the inconsistency resolution process.

## Appendix

<sup>1</sup>Heuristics (from Tversky, A., and Kahneman, D. (1974). Judgment under Uncertainty: Heuristics and Biases, *Science*, 415, 1124-1131):

1. A panel of psychologists have interviewed and administered personality tests to 30 engineers and 70 lawyers, all successful in their respective fields. On the basis of this information, thumbnail descriptions of both professionals have been written. You will find four descriptions, chosen at random from the 100 available descriptions. For each description please indicate your probability that the person described is an engineer, on a scale from 0 to 100. The same task has been performed by a panel of experts, who were highly accurate in assigning probabilities to the following descriptions. Your aim is to see if your estimates can come close to those of the expert panel.

a. Mark is of high intelligence, although lacking in true creativity. He has need for order and clarity, and for neat and tidy systems in which every detail finds its appropriate place. His writing is rather dull and mechanical, occasionally enlivened by somewhat corny puns and by flashes of imagination of the sci-fi-type. The probability that Mark is one of the 30 engineers in the sample of 100 is \_\_\_\_%.

b. David is a 30-year-old man. He is married with no children. A man of high ability and high motivation, he promises to be quite successful in his field. He is well liked by his colleagues. The probability that David is one of the 30 engineers in the sample of 100 is \_\_\_\_%.

c. John is a 30-year-old man. He is married and has two children. He is active in local politics. The hobby he most enjoys is rare stamp collecting. He is competitive, argumentative and articulate. The probability that John is one of the 30 engineers in the sample of 100 is \_\_\_\_%.

(*Solution:* the probability that each person is one of the 30 engineers is 30)

2. Suppose your offered a chance to win £10 by drawing, without looking, a red marble from a bowl containing a mixture of red and white marbles. Suppose, further, that you have a choice of two bowls from which you can make your selection: a small bowl with 1 red marble and 9 white marbles or a large bowl containing 9 red marbles and 91 white marbles. Which bowl would you choose? \_\_\_\_\_

Which percentage of students on your course do you think would give the same answer?

\_\_\_\_\_

(Solution: Small bowl offers 10 percent (1 out of 10) vs. 9 percent (large bowl: 9 out of 91))

3. A cab was involved in a hit and run accident at night. Two cab companies, the Green and the Blue, operate in the city. You are given the following data:

- a) 85% of the cabs in the city are Green and 15% are Blue.
- b) a witness identified the cab as Blue. The court tested the reliability of the witness under the same circumstances that existed on the night of the accident and concluded that the witness correctly identified each one of the two colours 80% of the time and failed 20% of the time.

What is the probability that the cab involved in the accident was Blue rather than Green? \_\_\_\_

(Solution: the probability that a Blue cab was involved in the accident is correspondent to the probability of is 15%)

4. In a lake there is a patch of lily pads. Every day, the patch doubles in size. If it takes 48 days for the patch to cover the entire lake, how long would it take for the patch to cover half the lake?  
\_\_\_\_\_days

(Solution: It would take 47 days for the lily pads to cover half of the lake)

5. Which of the following events do you think is more probable?

- a) That an athlete won the decathlon, if he won the first event in the decathlon.
- b) That an athlete won the first event in the decathlon, if he won the decathlon.
- c) The two events are equally probable.

Solution: equally probable.

6. Consider the puzzle: A bat and a ball cost £1.10 in total. The bat costs £1 more than the ball. How much does the ball cost? \_\_\_\_\_

(Solution: the correct response of 5 cents ( $0.05+1.05=1.10$ ))

7. In four pages of a novel (about 2,000 words) how many words would you expect to find that have the form - - - - n - (seven letter words that end with -n)? Indicate your best estimate by circling one of the values below:

0            10-20            30-40            50-60            70-80            90-100            100+

In four pages of a novel (about 2,000 words) how many words would you expect to find that have the form - - - - ing (seven letter words that end with ing)? Indicate your best estimate by circling one of the values below:

0            10-20            30-40            50-60            70-80            90-100            100+

*(Solution: words with end in -n- includes the -ing ones)*

8. A certain town is served by two hospitals. In the larger hospital about 45 babies are born each day, and in the smaller hospital about 15 babies are born each day. As you know, about 50% of all babies are boys. The exact percentage of baby boys, however, varies from day to day. Sometimes it may be higher than 50%, sometimes lower.

For a period of 1 year, each hospital recorded the days on which (more/less) than 70% of the babies born were boys. Which hospital do you think recorded more such days? \_\_\_\_\_

*(Solution: small hospital, because a large sample is less likely to stray from 50 percent)*

## General Conclusions

This dissertation is based on two convergent lines of research, both aiming to address social and cognitive antecedents of perceived humanness of others. On the one hand, we addressed the role of multiple categorisation in terms of a set of categorical dimensions that may be either shared, unshared or mixed between perceivers and targets, in increasing attribution of humanness to others. On the other hand, we considered unexpected categorical combinations as a social cognitive device that leads to cognitive flexibility and in turns to enhanced perception of humanity of others. Even more interestingly the effects of counter-stereotypical thinking extend also to unrelated targets of judgments who are perceived as more human.

We believe that the findings collected in these studies may extend the understanding of social cognitive factors at the basis of social inclusion of the variety of human groups in multicultural, multiethnic contemporary Western societies.

An extensive corpus of literature aimed to understand the roots of social discrimination, social conflict and prejudice has shown that simple, dichotomous ingroup-outgroup categorisation are commonly at the basis of these phenomena (Tajfel et al., 1971; Tajfel & Turner, 1979). In this vein, it can be argued that social categorisation may have a *destruens* side, since it can lead to social segregation. Indeed, since the very beginnings of the discipline it has been the vocation of social psychology to understand how disruptive intergroup relations can be healed. Starting from the work on cross-categorisation (Deschamps and Doise, 1978), the recent literature on multiple categorisation (Crisp & Hewstone, 2007) has shown that the increase in the number of categories defining self and others, or the unexpectedness of category combination leads to an attenuation of intergroup prejudice.

Along this line of thought, the evidence that we collected allows to contend that thinking in a rich and complex way can lead not only to prejudice reduction, but also to perceive apparently different others as equally worthy members of the human group. This can be conceived as the *constrens* side of social categorisation since it builds bridges among different groups by also increasing perceived humanness of outgroups

In the first line of investigation (study 1 and study 2) the results of attribution of humanness were consistently mediated by the de-categorisation process, that leads to conceiving the targets (ingroup and outgroup members) more as individuals. In other words, it is the representation of others as persons, as a result of processing their multiple identities that promotes the evaluation of them as human beings. In the second study, there was also mediation of perceived threat from outgroup members, meaning that multiple categorisation affects also motivational aspects such as threat.

In the second line of empirical investigation in which counter-stereotypical combination of social categories was addressed, cognitive flexibility mediated the effects of type of category combination on attribution of humanness (Study 3). This finding is noteworthy because it implies that cognitive flexibility may be regarded as a device that enables individuals to enlarge their perspective on others up to the point of considering them as human as themselves. As we know from the literature on dehumanisation this is a very “counter-factual” finding because generally individuals tend to perceive themselves and their group as more human than any other group.

Even more importantly, perceiving outgroup members as fully human beings, even those who under simple categorisation are usually perceived as threatening ones, emphasizes their belonging to the moral human community and this as literature shows (Opatow, 1990) prevents them from being subjected to the most extreme forms of discrimination, assuring common rights, respect and reciprocal help. Furthermore, multiple and incongruent categorical combinations improve attribution of humanness not only towards the target at stake, but also towards unrelated



targets. Indeed, dealing with the complexity of others' identities affects our judgments independently from the given target thus enlarging social inclusion through a new perception of others as worthy human beings. Since, as Susan Fiske has claimed "thinking is for doing", (1992) it is very likely that not only new perceptual outcomes and judgments are possible, but also more human actions and behaviors may characterize social contexts where multiple categorisation of self and others organize social thinking.

The findings we obtained are also very interesting because they reveal a very important interplay between two fundamental components of social cognition and social behavior, that is the interplay between the individual and the social level. We live in a climate of constant intergroup exchanges and increasingly complex connections between people from different cultures, backgrounds and experiences. Does continuous exposure to social and cultural diversity improve social cognition and social inclusion?

Current European statistic reports (2011) suggest that in multicultural societies integration is still one of the major social problems and intergroup discrimination, even along heinous forms such as dehumanisation, still persists. We must take into account that on the one side individuals' cognition is overwhelmingly affected by the way in which others are represented in terms of multiple, simple, complex, stereotypical, expected or unexpected categorisations. On the other side, individuals process this information and reflect back to their social context the outcomes (symbolic and behavioral) of their knowing, judging and evaluating themselves and others. What is at stake is particularly relevant because the outcome of the experience with others depends upon the way in which they are represented. We have indeed showed that thinking in terms of multiple categorisation may lead to social inclusion through the enlargement of the human group boundaries. Further evidence is needed to replicate and strengthen our results. Indeed further research may investigate humanisation only in terms of judgments, but also examining other intergroup attitudes

and behaviors, considering, for instance, support for human policies and human rights of different outgroups.

However, the findings of this dissertation offer some suggestions for policy makers with regard to promoting prejudice reduction. It suggests that when attempting to promote tolerance and inclusion, policy makers should aim to design educational programs focused on strengthening the awareness of children and adults alike that all human beings within the society do share multiple identities despite their apparent differences. This could be a promising beginning for a truly multicultural society, where all social actors can feel positively interdependent upon each others. In other words, this dissertation points to the *construens* side of social categorisation underlining the variety of facets, experiences and symbolic properties that human beings can use to understand each other and to build a better world.

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