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Ng, T.W.; Verkuyten, M.J.A.M.

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Intergroup evaluations, group indispensability and prototypicality judgments: A study in Mauritius

Caroline Ng Tseung-Wong¹ and Maykel Verkuyten²

Abstract

This paper focuses on the superordinate (national)-subgroup (ethnic) association in relation to group identifications, relative ingroup indispensability, relative ingroup prototypicality and their effects on outgroup and ingroup evaluations. Survey data were collected from a large sample of Mauritian adolescents ($N = 1,784$) from three ethnic groups (Hindus, Muslims, Creoles). National and dual identifiers were more positive towards the outgroups than ethnic identifiers. Furthermore, relative ingroup prototypicality and relative ingroup indispensability were empirically distinguishable constructs. The Creoles, who are of lower status, had higher scores on both these measures. Also it turned out that relative ingroup indispensability and relative ingroup prototypicality were independently associated to respectively more negative outgroup evaluation and more positive ingroup evaluation. The findings give a differentiated view of the idea that a complex representation of the superordinate category fosters outgroup acceptance.

Keywords

group identifications, intergroup evaluations, relative ingroup indispensability, relative ingroup prototypicality

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Globally, societies are becoming increasingly diverse. Ethnic, racial and religious differences raise difficult questions about how to deal with cultural diversity. In social psychology the challenge of diversity is viewed in terms of finding the right balance between the need for distinctiveness and the need for similarity (e.g., Brewer, 1991; Dovidio et al., 2006; Hogg & Hornsey, 2006; Hornsey & Hogg, 2000a). Different models on the importance of a superordinate category for intergroup relations have been proposed, such as the common ingroup identity model (Gaertner, Dovidio,

Anastasio, Bachman, & Rust, 1993), the dual identity model (Hornsey & Hogg, 2000a) and the ingroup projection model (Mummendey & Wenzel, 1999). Research has tested these models

¹ University of Mauritius

² Utrecht University

Corresponding author:

Caroline Ng Tseung-Wong, Department of Social Studies,
University of Mauritius, Réduit, Mauritius.

[email: c.ngtseung@uom.ac.mu]

and the conditions under which a superordinate category either has beneficial effects (e.g., Gaertner, Mann, Dovidio, Murrell & Pomare, 1990; Gaertner, Mann, Murrell, & Dovidio, 1989) or leads to increased intergroup tension (e.g., Brown & Wade, 1987; Deschamps & Brown, 1983; Hornsey & Hogg, 2000b).

Experimental research has investigated the role of representations of the superordinate category and of subgroups by manipulating the ideologies and norms that define the nature of these categories (see Wenzel, Mummendey, & Waldzus, 2007). For example, the superordinate category can be represented by several subgroups, and the subgroups can vary in how well-defined they are. The findings show that these representational features affect ingroup perceptions and outgroup evaluations. The current research goes beyond these findings by examining ingroup indispensability and its relationship with group evaluations in a real-world setting and among high- and low-status groups. The setting is Mauritius, which is sometimes viewed as a strong candidate for “truly successful polyethnic societies” (Eriksen, 2004, p. 79). We examined group perceptions and evaluations among the three largest ethnic groups in Mauritius: the Hindus (52% of the population), Creoles (29%) and Muslims (16%). We focus on group evaluations in relation to the perception of relative ingroup prototypicality (RIP) of the superordinate national category and ethnic and national identification. In addition, we propose that not only prototypicality but also the perception of relative ingroup indispensability (RII) for the shared national category is important to consider. When diversity is a defining attribute of the superordinate mosaic, the question is not only whether some subgroups can claim to best represent the national category but also whether subgroups consider themselves to be an indispensable part of the mosaic.

Relative ingroup indispensability and prototypicality

Ingroup projection refers to the perception of “the ingroup’s greater relative prototypicality for

the superordinate group” (Wenzel et al., 2007, p. 337). With ingroup projection, attributes that are relatively distinctive of one’s own group are regarded as prototypical for the inclusive category and thereby serve as criteria for (negative) outgroup evaluation. Ingroup projection is not automatic but depends, for example, on the representational features of the superordinate category. The ingroup projection model (IPM; e.g., Mummendey & Wenzel, 1999) argues that a complex superordinate group representation is a promising avenue for achieving tolerance in intergroup relations. The reason is that in a complex representation “ingroup projection would . . . seem pointless because the superordinate category could not be represented by a single (unitary) subgroup but rather requires multiple differing subgroups that, by implications are equally indispensable and prototypical” (Wenzel, et al., 2007, p. 358). Whereas relative ingroup prototypicality has been empirically tested, the notion of relative ingroup indispensability has not been examined.

The perception of the ingroup’s perceived indispensability and prototypicality for a given superordinate category can be closely related but differ in important ways. The metaphor of a mosaic implies that the nation is made up of different, complementary parts and that none of these parts represent the picture in its entirety. The separate pieces of the mosaic differ from each other and when one piece is missing the picture is incomplete, similar to a missing piece in a jigsaw puzzle. Thus, all the pieces are necessary or indispensable. Maoris in New Zealand might be viewed as less typical New Zealanders by dominant group standards, but it is not denied that they are an intrinsic and indispensable part of New Zealand. Without them, New Zealand would no longer be the same (Sibly & Liu, 2007). And Michael Jackson might have been more representative of the Jackson Five, but all five brothers were members, that is, indispensable for the Jackson Five as a group. Indeed, the replacement of one of the brothers by another one led to renaming the band. Similarly, when a superordinate category is represented metaphorically as

different groups playing on the same team, it implies that the team is incomplete when one position or role is not filled (Gaertner, Rust, Dovidio, Bachman, & Anastasio, 1994). In cognitive psychology there is the contention that category membership is not necessarily defined or graded in terms of prototype similarity (Kamp & Partee, 1995; Rips & Collins, 1993). Furthermore, indispensability as the notion of being necessary *per se* might be more stable across contexts than perceived prototypicality, which tends to depend on the frame of reference (Oakes, Haslam, & Turner, 1998).

We expected that an empirical distinction between RIP and RII could be made. Furthermore, both constructs were expected to be independently related to outgroup and ingroup evaluations. According to the IPM, in situations where the superordinate category is truly inclusive and the subgroups are nested within it, dual identifiers will project their valued subgroup characteristics onto the superordinate category, leading them to hold more negative outgroup and more positive ingroup evaluations (Waldzus, Mummendey, Wenzel, & Weber, 2003; Wenzel, Mummendey, Weber, & Waldzus, 2003). Thus, groups that consider themselves as more indispensable and as more prototypical of the national category can be expected to evaluate outgroups less positively and their ingroup more positively. Furthermore, social identity theory argues that intergroup differentiation contributes to a positive social identity (Tajfel & Turner, 1979). According to the ingroup projection model, group members therefore have a tendency to perceive their ethnic ingroup as relatively prototypical for the national category. The same tendency can be expected for RII. Thus, we expected that the participants of all three ethnic groups would perceive their ethnic ingroup as more indispensable for and as more prototypical of Mauritius than the two outgroups.

Group identifications

According to the common ingroup identity model (e.g., Dovidio, Gaertner, & Saguy, 2007; Gaertner & Dovidio, 2000), a one-group representation has

positive effects on intergroup relations. The reason is that a shared category can reduce negative feelings as, for example, the ethnic outgroup members (i.e., "them") become fellow national ingroup members (i.e., "us") (Gaertner et al., 1989, 1993). This means that national identifiers are expected to show more positive outgroup evaluations than those who identify predominantly with their ethnic ingroup. In addition, Hornsey and Hogg (2000a) have shown that a reduction in negative feelings is particularly likely when the superordinate (national) category membership is combined with a strong (ethnic) subgroup identity (see also Crisp, Stone, & Hall, 2006; Hewstone & Brown, 1986). Such a combination helps to reduce threats to a valued identity that may result from assimilation to the national category.

Wenzel et al. (2007) suggest that the effects of dual identity on group evaluations depend on whether it is the superordinate or the subgroup level which is psychologically more focal. One way to test this proposition is by using a relative identification score: ethnic identification minus national identification. A positive score indicates that the subgroup identity is considered more important than the national one and therefore acts as the figure against a background of the national category. To our knowledge, previous studies have not investigated group identification in this relative manner, although multiple memberships in the collective self are widely acknowledged (e.g., Deaux, Reid, Mizrahi, & Ethier, 1995; Roccas & Brewer, 2002). In line with both theories, a subgroup identity which is the figure against the background of the superordinate identity should lead to less positive outgroup evaluations and more positive ingroup evaluations. This means that higher relative ethnic compared to national identification can be expected to be associated with a more negative evaluation of outgroups and a more positive evaluation of the ingroup.

In addition, we assessed self-identification by asking our participants explicitly to indicate whether they consider themselves to be ethnic, national or dual identifiers. Following the common ingroup identity model and the dual identity

model, we expected national and dual identifiers to show similar and more positive outgroup evaluations than ethnic identifiers.

Furthermore, it can be expected that in Mauritius ethnic identity is not experienced to be in competition with national identity because the national context is explicitly defined by diversity and multiculturalism. Cultural diversity is intrinsic to the Mauritian national self-understanding and pluralism and dual identities represent the national ideal. Various studies have argued for a differential preference of ethnic and national identity by majority and minority group members (see Dovidio et al., 2007; Sidanius & Pratto, 1999). Typically, ethnic minority groups are more concerned about maintaining their subgroup identity. However, this concern will depend on the way that the superordinate category is defined. In the context of Mauritius, we expected few, if any, ethnic group differences in national identification and in self-identification. In a national context explicitly defined by diversity and multiculturalism, all groups can be expected to have a similar sense of belonging to the superordinate category and a similar self-identity. Therefore, we predicted for all three groups a positive association between the measures of national identification and ethnic identification. In addition, for each of the three ethnic groups, we expected that most participants would choose the dual-identity option in the self-identification question.

Status group differences

The great majority of social psychological studies have a rather straightforward understanding of (ethnic) status group differences. For example, it is typically assumed that compared to low-status groups, high-status groups will more strongly identify with the national category, show lower outgroup evaluation and can more easily claim to be prototypical of the superordinate category. However, the ingroup projection model argues that ingroup projection depends on the particular representations of the subgroups and the superordinate category (see Wenzel et al., 2007). A complex representation

is proposed as a promising avenue for intergroup tolerance, and could well be illustrated by a multiethnic nation whose representation is “as one people, as one nation, in peace, justice and liberty” (Mauritian national anthem).

Mauritius is a small island in the south-western Indian Ocean with a population of 1.27 million (Central Statistics Office, 2009). A British colony since 1810, it became independent in 1968.¹ The cultural complexity of Mauritius is substantial. In 1,860 square kilometers, various ethnic groups live together (e.g., Hindus, Tamils, Telegus, Marathis, Muslims, Creoles, Whites, and Chinese), around 15 languages are said to be spoken, and the four world religions rub shoulders (Eriksen, 1994). It is no wonder that the representation of the nation is one of a complex multicultural mosaic in which all of these various ethnic groups are incorporated. In contrast to European or American discourses whereby the nation is tacitly identified with a particular ethnic group—i.e., American = White (Devos & Banaji, 2005)—in Mauritius all ethnic groups are considered to make up the national mosaic (a “rainbow nation”). Tolerance, mutual respect and coexistence are considered to be critical moral values to be instilled in Mauritian citizens (Eisenlohr, 2006).

However, the national ideal cannot hide the fact that Mauritians experience everyday multiethnicity as a source of stress and frustration. Ethnographic work has clearly shown that ethnicity is often the background for entitlement issues, and at the interpersonal level having close relationships outside of the boundaries of one’s ethnic community is often a source of conflict (Carroll & Carroll, 2000; Eisenlohr, 2006; Eriksen, 1995; Nave, 2000). Furthermore, there are clear status differences between the ethnic groups. Two different and competing images of the Mauritian nation exist: the diasporic nation and the Creole nation (Eisenlohr, 2006, 2007). The notion of being a diasporic nation and the related cultural politics of the State encourage the cultivation of “ancestral cultures.” Diversity is based on the recognition of the culture of groups that have clear ancestral origins, like the Hindus and Muslims. The Hindus are powerful in politics and the public

sector and the Muslims form a tight community centered on their religious faith (Hempel, 2009). In contrast, the term “Creoles” is used for a rather diverse population of descendants of African and Malagasy slaves.² Most of them are Catholics and they do not have recognized claims on legitimizing ancestral cultures and ancestral languages with origins outside Mauritius (Laville, 2000). This means that the diasporic ancestral culture policy justifies the position of the Hindus and Muslims and has exclusionist implications for the Creoles (Eisenlohr, 2006). The Creoles are generally faced with negative stereotypes, higher unemployment, less political power and with fewer opportunities than other Mauritians (Eriksen, 1994). For example, they suffer from exclusion because services and other facilities provided by the government—such as the teaching of ancestral language in state schools and the establishment of “cultural centers”—are given only to officially recognized cultural categories (Aumeerally, 2005). The lower status position of the Creoles is recognized by the various ethnic groups in Mauritius (see Hempel, 2009). In agreement with the social psychological literature, and considering the clear group boundaries in Mauritius (see Bettencourt, Dorr, Charlton, & Hume, 2001), it can be expected that the low-status Creoles have higher ethnic group identification and a more positive outgroup evaluation and less positive ingroup evaluation compared to the Hindus and Muslims.

At the same time, however, there is the notion of Mauritius as a Creole nation. For Hindus and Muslims the proposition of diasporic ancestral culture and language defines and legitimizes their place in the Mauritian nation. But this notion also implies a past-oriented commitment to a tradition based in a homeland or around a religion (the *umma*). In contrast, although there has been an attempt towards the Africanization of the Creole identity, the Creoles, as a result of fragmentation and hybridization that occurred under slavery, are actually a culturally diverse group (Boswell, 2005, 2006). They are a mixed group of people living in a context in which ethnic homogeneity and cultural ancestry are recognized and encouraged at the subgroup level. But,

it is also a national context in which cultural diversity is presented as defining the nation and as an end in itself. The heterogeneity of the Creoles mirrors the heterogeneity of the nation. Thus, it is in the interest of the Creoles to consider their subgroup as indispensable and prototypical for the superordinate category, and research has shown that prototypical judgments vary according to instrumental considerations (Sindic & Reicher, 2008).

Furthermore, virtually all Mauritians are fluent in the *Kreol* language that serves as a lingua franca, and symbols of “Mauritian-ness” such as the *Sega*, which is an African-based art form, are largely inherited from colonial times in which slavery dominated (Eriksen, 1994). Hence, it has been argued that Mauritius is a Creole island (Benoist, 1985) and that the Creoles are the only “true Mauritians” of the island (Miles, 1999). The representation of Mauritius as a Creole island, that is, hybrid and mixed, is in the interest of the Creoles and would cease to exist without Creoles. The national representation could more easily withstand the absence of one of the ancestral cultural groups (Hindus, Muslims) that embodies singularity and purity. Therefore, we expected that in comparison to the Hindus and Muslims, the low-status group of Creoles would actually consider themselves as relatively more indispensable for the cultural mosaic of Mauritius and as more prototypical of Mauritius.

Concluding remarks

This study examines the superordinate–subgroup relationship in the real-life context of Mauritius. The focus is on ethnic and national identification and on perceived relative ingroup indispensability and ingroup prototypicality among Hindu, Muslim and Creole participants. We hypothesized that ingroup indispensability and prototypicality are empirically distinct constructs and that RIP and RII are positive for all three groups. Given the specific sociohistorical context of Mauritius, the low-status group of Creoles was expected to show higher RIP and higher RII compared to the

Hindus and Muslims. Furthermore, for all three groups we expected ethnic identifiers to show higher RIP and RII compared to national and dual identifiers.

The representations of the Mauritian nation made us expect for all three groups a higher percentage of dual self-identifiers compared to ethnic and national identifiers. Additionally, for all three groups a positive association between ethnic and national identification was expected. Furthermore, we expected national and dual identifiers to have more positive outgroup evaluations compared to ethnic identifiers. Moreover, for all three groups, higher RIP, higher RII and higher ethnic compared to national identification were expected to have independent negative effects on outgroup evaluation and positive effects on ingroup evaluation.

Method

Participants The study was conducted in 2007 in 23 secondary schools. Across the schools, questionnaires were distributed and answered in classrooms. An introduction to the questionnaire explained that the study was concerned with “how it feels living in Mauritius” from the adolescents’ perspective. The questionnaire took approximately 30 minutes to complete. Mauritian schools are mostly single-sex schools and grouped under four educational zones, so that each zone includes both urban and rural areas. Students can be admitted to any school within the zone, so that for instance, urban schools cater for students coming from both urban and rural areas. The participating schools came from an urban area in each of the educational zones. A total of 2,327 secondary-school students participated in the study. However, for the present purposes, the answers of the participants ($n = 1,784$) who, in an open-ended question, described their ethnic group as Hindu ($n = 844$), Muslim ($n = 630$) or Creole ($n = 310$) were analysed.³ There were 842 males and 942 females aged between 11 and 19 years, with a mean age of 14.8 years.

Measures

Relative ingroup prototypicality An indirect measure for group prototypicality using, for example, generated traits was considered too complex in a questionnaire for adolescents, and for Mauritians in particular because they have very few to none experiences with responding to questionnaires. Furthermore, Waldzus et al. (2003, p. 35) found that asking participants directly how prototypical they thought the ingroup and the outgroup are for the superordinate category, correlated highly with indirect measures. We therefore used a direct, single measure of “relative prototypicality” by asking participants to answer for each of the three ethnic groups, the following question: “_____ are real Mauritians” on a 5-point scale (1 = no, not at all; 5 = yes, certainly!). We used the term “real” for referring to prototypicality because the latter term is unknown to most adolescents in Mauritius.⁴ Following Wenzel et al. (2007), a relative ingroup prototypicality (RIP) score was computed by subtracting the mean of the two outgroup scores from the ingroup score. A higher score indicates higher RIP.

For *relative ingroup indispensability* a similar single direct measure was used.⁵ Using a 5-point scale (1 = not at all; 5 = yes, certainly!) the participants were asked to indicate for each of the three ethnic groups whether “Mauritius, without the _____ will still be Mauritius.” The items were reverse-coded so that a higher score means higher relative ingroup indispensability (RII), in line with the prototypicality measure. A similar procedure as used for RIP was used for computing a relative indispensability score.

Ethnic and national group identifications were assessed by asking the participants to respond to six items (5-point scales). These items measure the importance and feelings attached to one’s ethnic and national group membership and two sample items are “I am proud to be _____”, and “Being _____ is important to the way I see myself.” Both national and ethnic identifications were assessed with the six items ($\alpha = .79$ and $\alpha = .91$ respectively). The differential ethnic to

national score was computed by subtracting the mean national-identification score from the mean ethnic-identification score for each participant.

Self-identification Participants explicitly indicated the relative importance of the national and ethnic identity by ticking their preferred identity amongst five options ranging from “mainly Mauritian” and “both Mauritian and my ethnic group” to “mainly my ethnic group.” Correlation between the 5-point measure and a combined 3-point measure was very high ($r = .94$). Therefore a scale with three discrete self-identifications: “mainly national,” “dual identifiers,” “mainly ethnic,” was used for ease of interpretation.

The *outgroup evaluation* and *ingroup evaluation* scores were based on six positive trait ratings. The participants were asked to indicate the number (1 = almost none, 5 = almost all) of each ethnic group who possessed the relevant attribute. Hence, participants judged all three target groups on the same set of attribute dimensions. The question was formulated as: “In Mauritius, how many _____, do you think are ...” on a 5-point scale (1 = almost none; 5 = almost all). The six positive characteristics, taken from Leach, Ellemers, and Barreto (2007), were honest, trustworthy, capable, competent, friendly, and warm. A mean score⁶ was derived for each ethnic group: the Hindus ($\alpha = .90$), Creoles ($\alpha = .91$) and Muslims ($\alpha = .92$). The outgroup evaluation score was based on the mean of the participant’s ratings of the two outgroups while the ingroup evaluation score was based on the participants’ rating of their ingroup.

Results

Preliminary analysis

To know whether our participants shared the notion of Mauritius being a culturally diverse and complex country in which tolerance and mutual acceptance is endorsed, we asked them about the following statement “In Mauritius, all the ethnic and religious groups should be recognized and respected.” On a 5-point scale the mean score for

this question was high ($M = 4.64$, $SD = .76$) and the mode was 5. For the sample, 76% had the highest score (“strongly agree”) and a further 17% agreed with the statement. Thus, there was a high level of adherence to the positive view of Mauritius as a multicultural society, and this was similar for all three ethnic groups ($p > .10$).

Group indispensability and prototypicality

Maximum likelihood estimation with oblique rotation was used to determine whether indispensability and prototypicality are empirically distinct constructs. A two-factor structure emerged. The first factor explained 40.1% of the variance, and the second factor explained 28%. The items intended to measure indispensability had a high loading on the first factor (>0.70). The highest loading of these items on the other factor was 0.14. On the first factor, the prototypicality items had a high loading (>0.45) with a loading <0.06 on the other factor. Thus, the analysis indicated that an empirical distinction could be made between group prototypicality and group indispensability.

The RIP and RII scores were positively correlated ($r = .44$, $p < .001$; for the Hindus, $r = .53$, $p < .001$; Muslims, $r = .28$, $p < .001$; Creoles, $r = .48$, $p < .001$). The correlations indicate that the two measures are not independent but share no more than 28% of their variance. Paired sample t -tests for each ethnic group showed that scores on RIP and RII differed significantly ($ps < .01$) with the latter being higher than the former. Thus, all three ethnic groups consider themselves as more indispensable than prototypical of Mauritius.

Relative ingroup indispensability

As expected, participants of the three ethnic groups had positive RII scores indicating that they viewed their ethnic group as more indispensable to the nation compared to the outgroups (Table 1). A one-sample t -test on the relative indispensability score for each group showed that the three scores differed from zero ($ps < .001$).

Table 1. Mean scores (and standard deviations) for main variables by ethnic groups

Variables	Hindus	Muslims	Creoles	One-way ANOVA
Ingroup indispensability	3.75 (1.42) ^a	3.69 (1.42) ^a	4.00 (1.26) ^b	$F(2, 862) = 6.11^{**}$
Outgroup indispensability	3.25 (1.37) ^a	3.10(1.39) ^{ab}	3.02 (1.39) ^b	$F(2, 1775) = 3.87^*$
Relative indispensability	0.50 (1.15) ^a	0.58 (1.29) ^a	0.97 (1.51) ^b	$F(2, 759.4) = 12.33^{**}$
Ingroup prototypicality	3.74 (1.22) ^a	3.65 (1.21) ^a	4.35 (1.04) ^b	$F(2, 878.4) = 47.6^{**}$
Outgroup prototypicality	3.36 (1.15) ^{ab}	3.48 (1.14) ^a	3.17 (1.24) ^b	$F(2, 809.2) = 6.76^*$
Relative prototypicality	0.38 (1.02) ^a	0.17 (1.11) ^b	1.18 (1.34) ^c	$F(2, 766.9) = 65.50^{**}$
National identification	3.79 (.69) ^a	3.68 (.73) ^b	3.69 (.76) ^{ab}	$F(2, 1780) = 5.41^*$
Ethnic identification	3.89 (.83) ^a	3.96 (.90) ^{ab}	4.03 (.81) ^b	$F(2, 840.7) = 3.86^*$
Relative ethnic to national	0.09 (.82) ^a	0.28 (.99) ^b	0.34 (.93) ^b	$F(2, 797.2) = 12.57^{**}$
Ingroup evaluation	3.96 (.72) ^a	3.91 (.78) ^a	3.62 (.71) ^b	$F(2, 833.6) = 25.89^{**}$
Outgroup evaluation	2.91 (.83) ^a	2.92 (.70) ^{ab}	3.04 (.79) ^b	$F(2, 828.3) = 3.57^*$
Ingroup bias	1.06 (1.00) ^a	1.00 (.95) ^a	.58 (.96) ^b	$F(2, 1759) = 28.12^{**}$

Note: The F values represent the result of a one-way ANOVA to test for ethnic differences (* $p < .05$; ** $p < .001$). Except for national identification and outgroup indispensability, all F values are Welch F -ratios because of violation of homogeneity of variance. Means within rows not having a common superscript differ at $p < .05$ using Games-Howell procedure.

A 3 (ethnic group: Creole, Hindu, Muslim) \times 3 (self-identification: national, dual, ethnic) analysis of variance yielded a significant main effect for ethnic group, $F(2, 1758) = 11.41, p < .001$. As expected, the Creole participants significantly considered their own ethnic group as relatively more indispensable for the imagined national community than the Hindus and the Muslims (see Table 1). The Hindus and Muslims did not differ on RII. The higher RII score of the Creoles depends on both a significant higher ingroup indispensability score and a lower outgroup indispensability score (see Table 1).

The main effect for the three categories of self-identifications was also significant, $F(2, 1758) = 26.3, p < .001$. Post hoc analyses indicated that there was no significant difference in RII score between the national and dual identifiers. However the ethnic identifiers ($M = .61, SD = 1.28$) had a significantly higher score ($ps < .001$) than the national identifiers ($M = .45, SD = 1.19$) and the dual identifiers ($M = .54, SD = 1.18$). The interaction effect of ethnic group by self-identification was not significant. Furthermore, the ethnic identifiers reported significantly higher scores on ingroup indispensability $F(2, 1767) = 3.71, p < .05$, and lower scores on outgroup indispensability $F(2, 1767) = 9.77, p < .05$, than the dual

identifiers and the national identifiers who did not differ from each other.

Relative ingroup prototypicality

As expected and shown in Table 1, the RIP scores are positive for all three ethnic groups. A one-sample t -test for each group revealed that the three scores were significantly different from zero ($ps < .001$). Thus, the participants viewed their ingroup as more representative of the nation than the outgroups.

To examine differences between the ethnic groups and for the three categories of group identifiers, a 3 (ethnic group: Creole, Hindu, Muslim) \times 3 (self-identification: national, dual, ethnic) analysis of variance was performed on RIP. There was a main effect for ethnic group, $F(2, 1762) = 60.3, p < .001$, with significant differences among all three groups ($ps < .01$). As expected and shown in Table 1, the Creoles considered themselves as the relatively most prototypical group, followed by the Hindus, and the Muslims. In addition, the Hindus considered themselves as relatively more prototypical than the Muslims. The higher RIP score of the Creoles is due to the fact that they had a significantly higher ingroup prototypicality score than

the Hindus and Muslims, and also the lowest outgroup prototypicality score (see Table 1).

There was also a significant main effect for self-identification, $F(2, 1762) = 5.89, p < .01$. The ethnic identifiers ($M = .68, SD = 1.63$) had higher RIP scores compared to the dual identifiers ($M = .47, SD = 1.10$) and national identifiers ($M = .30, SD = .99$). Post hoc tests using Games-Howell procedure showed that all three groups of identifiers significantly differed from each other ($ps < .05$). The interaction between ethnic group and self-identification was not significant.

Group identifications

In line with our expectation, 51.7% of respondents had a dual identity, 32.4% felt more Mauritian than ethnic and 15.5% felt more ethnic than Mauritian. Thus, more than half of the participants chose the dual-identity option. We examined ethnic group differences in self-identification patterns. For the explicit measure of the three categories of identity (national, dual, ethnic), there was a significant difference between the three ethnic groups, $\chi^2(4, 1776) = 31.12, p < .001$. Of the Creoles, 24% felt more Mauritian than ethnic, 58% had a dual identity and 18% felt more ethnic than national. For the Hindus, these percentages are 35%, 54% and 11%, and for the Muslims 35%, 47% and 18%, respectively. Thus, as expected for all three groups, the dual-identity option was chosen most often. Further, a smaller proportion of the Creole participants indicated feeling more Mauritian than ethnic.

Ethnic group differences in the continuous scores for national and ethnic identification are reported in Table 1. The Hindu participants identified somewhat more strongly with the national category compared to the Muslims, but not compared to the Creoles. The Muslims and Creoles did not differ in national identification. In contrast, for ethnic identification, the Creole participants had a somewhat higher score than the Hindus but not higher than the Muslims. The mean scores for the Hindu and Muslim participants did not differ significantly.

Table 1 also shows the means for relative group identification (ethnic identification–national identification). For all three groups, ethnic identification was stronger than national identification. One-sample *t*-tests showed that all three scores differed significant from zero ($ps < .001$). However, there are also significant ethnic group differences with the Hindus favoring less their ethnic over the national category compared to the Muslims and Creoles. For all three groups of participants, and as expected, national identification was significantly and positively related to ethnic identification (see Table 2). This correlation was significantly stronger for the Hindus ($r = .42, p < .01$) compared to the Muslims and the Creoles ($r = .27, p < .01$; $\bar{\kappa} = 3.24, p < .01$, and $r = .29, p < .01$; $\bar{\kappa} = 2.24, p < .05$, respectively).

Group identifications and intergroup evaluations

For all three ethnic groups, national identification was significantly and positively associated with outgroup evaluation and ingroup evaluation (see Table 2). Thus, a stronger commitment to the nation was associated with a more positive evaluation of one's ingroup and of ethnic outgroups. However, for all three groups, ethnic identification was significantly related to ingroup evaluation but not outgroup evaluation.

To examine differences in outgroup evaluation, a 3 (ethnic group: Creole, Hindu, Muslim) \times 3 (self-identification: national, dual, ethnic) ANOVA was performed. There were significant main effects for ethnic group, $F(2, 1752) = 3.27, p < .05$, and for self-identification, $F(2, 1752) = 11.57, p < .001$. The interaction was not significant. Post hoc tests indicated that as expected, the outgroup was evaluated more positively by the Creole participants than by the Hindus and the Muslims (see Table 1). There was no significant difference in outgroup evaluation between the latter two groups. In addition, post hoc analysis showed that there is a significant difference ($p < .001$) between the national ($M = 3.00, SD = .82$) and the dual

Table 2. Correlations amongst the main variables

Variables		1	2	3	4	5	6	7	8	9	10	11
1. National identification	Hindu											
	Creole											
	Muslim											
2. Ethnic identification	Hindu	.42**										
	Creole	.29**										
	Muslim	.27**										
3. Relative ethnic to national	Hindu	-.41**	.65**									
	Creole	-.56**	.63**									
	Muslim	-.49**	.71**									
4. Ingroup indispensability	Hindu	-.03	.08*	.11**								
	Creole	-.04	.01	-.02								
	Muslim	-.02	-.02	-.01								
5. Outgroup indispensability	Hindu	.005	-.05	-.06	.66**							
	Creole	.19**	-.01	-.16**	.35**							
	Muslim	.02	-.07	-.08*	.58**							
6. Relative indispensability	Hindu	-.05	.16**	.20**	.45**	-.37**						
	Creole	-.14**	.02	.13**	.51**	-.63**						
	Muslim	-.04	.06	.08*	.48**	-.44**						
7. Ingroup prototypicality	Hindu	.13**	.16**	.06	.17**	-.006	.21**					
	Creole	.20**	.20**	.01	.10**	-.05	.15**					
	Muslim	.10*	.06	-.02	.12**	.08*	.04					
8. Outgroup prototypicality	Hindu	.14**	.03	-.09**	.06	.26**	-.24**	.63**				
	Creole	.14**	.14**	.006	-.08	.36**	-.39**	.32**				
	Muslim	.19**	.02	-.12**	.01	.23**	-.23**	.55**				
9. Relative prototypicality	Hindu	-.01	.16**	.17**	.13**	-.31**	.52**	.48**	-.38**			
	Creole	.02	.03	.006	.15**	-.37**	.48**	.47**	-.68**			
	Muslim	-.09*	.04	.15**	.12**	-.15**	.28**	.52**	-.42**			
10. Ingroup evaluation	Hindu	.18**	.29**	.14**	.08*	-.13**	.26**	.26**	-.02	.27**		
	Creole	.29**	.26**	-.03	.06*	-.025	.07	.15**	.05	.07		
	Muslim	.14**	.15**	.04	.08*	-.14**	.24**	.07	-.13**	.21**		
11. Outgroup evaluation	Hindu	.20**	.01	-.18**	.07*	.22**	-.36**	-.04	.25**	-.32**	.17**	
	Creole	.36**	.06	-.24**	-.09	.36**	-.41**	.04	.36**	-.30**	.18**	
	Muslim	.29**	.04	-.18**	-.04	.23**	-.29**	.04	.25**	-.20**	.18**	

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

($M = 2.95$, $SD = .76$) identifiers, on the one hand, and the ethnic identifiers, on the other hand ($M = 2.72$, $SD = .74$). As expected, the national and dual identifiers rated the outgroup more positively than the ethnic identifiers, and this result is not moderated by ethnic group.

The same analyses were carried out for ingroup evaluation. There was also a main effect

for ethnic group $F(2, 1751) = 28.13$, $p < .001$, with the same pattern of difference between the ethnic groups as for outgroup evaluation, with the exception that Creoles reported lower ingroup evaluations. Self-identification was not significantly related to ingroup evaluation. However, there was a significant interaction effect between self-identification and ethnic group,

$F(4, 1751) = 3.34, p < .01$. Simple effects analysis revealed that self-identification was associated with ingroup evaluation for the Hindus only, $F(2, 1753) = 4.88, p < .05$. Hindu participants who predominantly identified themselves as nationals had lower ingroup evaluation than dual and ethnic identifiers.

Intergroup evaluations and relative indispensability, prototypicality and identification

Hierarchical regression analysis was used to examine the effects of RII, RIP and relative ethnic to national identity, on outgroup evaluation. All continuous predictor variables were centered and the criterion measure was left uncentered (Aiken & West, 1991). Ethnic group was coded: (a) Hindus = 1, Muslims = -1, Creole = 0, to compare Muslims with Hindus; and (b) Hindus = 0.5, Muslims = 0.5, Creole = -1, to compare Creoles with Muslims and Hindus. The effects of RII, RIP and relative ethnic to national identity and the two ethnic group comparisons were entered in Step 1. The six possible interactions between the three predictor variables and the two ethnic group comparisons were entered in Step 2.

As shown in Table 3, the first model explained 16.1% of the variance in outgroup evaluation, $F_{\text{change}}(5, 1747) = 67.20, p < .001$. Ethnic group was a significant predictor, with the Creoles having more positive outgroup evaluation compared to the Hindus and Muslims. Also, there were significant main effects for all three measures. As expected, RII, RIP and relative ethnic to national identity had independent negative effects on outgroup evaluation (Table 3). Thus, the more the participants viewed their group as relatively prototypical of and indispensable for the nation, the more negative they evaluated the outgroups. Furthermore, participants who consider their ethnic identity relatively more important than their national identity evaluated the outgroup more negatively. The effect of RII was the strongest one and significantly stronger than the effects of the other two measures (χ -value = 3.39, $p < .01$).

As shown in Table 3, the addition of the interactions in Step 2 did not significantly increase the explained variance. Thus, the effects of the different measures did not differ amongst the three ethnic groups.

The same analyses were carried out for ingroup evaluation. As shown in Table 3, the first model explained 9.1% of the variance in ingroup evaluation, $F_{\text{change}}(5, 1746) = 34.78, p < .001$. Ethnic

Table 3. Hierarchical regression analyses for variables predicting outgroup evaluations ($N = 1753$) and ingroup evaluation ($N = 1751$): Standardized regression coefficients (beta)

	Outgroup evaluations		Ingroup evaluations	
	Step 1	Step 2	Step 1	Step 2
Relative indispensability	-.26**		.14**	
Relative prototypicality	-.16**		.15**	
Relative ethnic to national identity	-.14**		-.04	
Ethnic 1 (Creole vs. Muslim/Hindu)	-.15**		.22	
Ethnic 2 (Muslim vs. Hindu)	-.01		.02	
Relative indispensability \times Ethnic 1		.01		.07*
Relative indispensability \times Ethnic 2		-.02		-.02
Relative prototypicality \times Ethnic 1		-.008		.06
Relative prototypicality \times Ethnic 2		-.05		.01
Relative ethnic to national \times Ethnic 1		-.03		.02
Relative ethnic to national \times Ethnic 2		-.005		.03
R ² change	.16	.004	.09	.01
F-change	67.20**	1.38	34.78**	4.09**

group was a significant predictor, with the Creoles reporting lower ingroup evaluation compared to the Hindus and Muslims. Also, there were significant main effects for relative indispensability and relative prototypicality, but not for relative ethnic to national identification. RII and RIP had independent positive effects on ingroup evaluation. Thus, the more the participants viewed their group as relatively prototypical of and indispensable for the nation, the more positive they evaluated their ingroup.

As shown in Table 3, the addition of the interactions in Step 2 increased the explained variance in ingroup evaluation by 1.3%, $F_{\text{change}}(5, 1740) = 4.09, p < .001$. The positive effect of relative indispensability on ingroup evaluation was stronger among the Hindus and Muslims compared to the Creoles.

Discussion

Questions of ethnic, cultural and religious diversity have moved to the center of debates and politics in many countries around the world. It has also attracted increased interest of social psychologists who examine, for example, how superordinate identities play a role in the relations between subgroups. Experimental research has investigated whether a superordinate identity leads to more positive outgroup evaluations (see Dovidio et al., 2007) or rather provides the comparative frame for the differentiation between subgroups that all want to be seen as prototypical for the superordinate category (see Wenzel et al., 2007). The current study has tried to make a contribution to this line of research by focusing on the notion of ingroup indispensability and by examining high-status and low-status groups within the real-life context of Mauritius. Eriksen (2004) viewed this country as a strong candidate for a truly successful multiethnic society. Our results show that despite participants' very strong endorsement of the idea of Mauritius being a multicultural society, ethnic status differences still occur.

The findings indicate that an empirical distinction between ingroup indispensability and ingroup prototypicality can be made. Thus, a

sense of one's group being indispensable for the superordinate category does not appear to be the same as considering one's group as prototypical of the nation. Indispensability taps into the notion of different pieces of a mosaic or puzzle, whereas prototypicality implies the concept of best or ideal exemplar. The empirical distinction between both constructs is also indicated by the fact that participants' scores on the two measures were significantly different. For example, the Muslims saw themselves as relatively more indispensable than prototypical for the nation. This difference reflects the fact that typical Mauritian national markers are rarely Muslim-related, whereas a claim to be an indispensable part of the mosaic per se is legitimate for all the "pieces." In addition, the Hindus scored higher on relative ingroup prototypicality (RIP) than Muslims. The Hindus are the numerical majority and dominate in public services and politics. Moreover Muslims are not very likely to view themselves as more prototypical of the nation because their identity is centered on religious faith. Hindus and Muslims, however, did not differ on relative ingroup indispensability (RII). Furthermore, the relevance of the distinction between indispensability and prototypicality is indicated by their independent effects on outgroup and ingroup evaluations. Similar to RIP, RII can be seen as a form of ingroup favoritism in which there is a bias in favor of ingroup characteristics that cannot be missed in the definition of the superordinate category. Following social identity theory (Tajfel & Turner, 1979), it can be argued that either group will want to see and portray itself as more indispensable and prototypical than others for the superordinate category. It turned out that all three ethnic groups did indeed see their own group as more indispensable for the nation and as representing Mauritius better than the other two groups. In addition, and across the three groups, the ethnic ingroup identifiers had higher RII and RIP compared to the dual and national identifiers. This finding indicates that in a setting in which all groups tend to identify with the superordinate national category, stronger subgroup identification is related to rating one's ethnic

subgroup as more indispensable and prototypical than others. These findings can be viewed as indicating forms of ingroup favoritism (Wenzel et al., 2003).

However, social identity theory with its motivational explanation for RIP and RII does not seem to be the whole story. Social dominance theory (Sidanius & Pratto, 1999) would predict that because societies are rarely composed of equally powerful groups, there will be an asymmetrical ingroup bias; that is, ingroup bias would be stronger among dominant than subordinates groups. In agreement with this theory, the results show that although the low-status group of Creoles had stronger ethnic identification compared to the dominant group of Hindus, the former group nevertheless showed less positive ingroup evaluation and also more positive outgroup evaluation, compared to the latter one. However, the Creoles also had significantly higher scores for RIP and RII. These latter findings contradict the typical argument that the existing intergroup structure makes claims of prototypicality more difficult for low-status groups. Following this argument, majority-group members would tend to see the superordinate identity as representing and promoting their group's norms and values. In contrast, members of low-status groups would perceive less commonality with the superordinate category and are expected to be more likely to think that their group is not adequately represented in this category (Dovidio et al., 2007). Our findings indicate that these perceptions depend on the ways that the superordinate and subgroup identities are understood. In Mauritius, the Creoles' commitment to their place of birth is unequivocal. Due to a past rooted in slavery, they do not have recognized claims on ancestral cultures and languages, as opposed to the Hindus whose commitment to a tradition based on a homeland is strong and the Muslims who can claim allegiance to a pan-religious community (*umma*). Also, the cultural diversity that typifies the national context is mirrored at the subgroup level in the internal heterogeneity of the Creoles. It is therefore in the interest of the Creoles to consider themselves as the "true

Mauritians" of the island (Miles, 1999). This interpretation is in agreement with experimental research that shows that prototypical judgments vary according to instrumental considerations (Sindic & Reicher, 2008).

Thus, the findings reflect the two competing representations of Mauritius. The diasporic ancestral culture policy has exclusionist and social status implications for the Creoles (Eisenlohr, 2006), and the notion of Mauritius as a Creole nation defines the Creoles as the only true Mauritians of the island (Miles, 1999). The ethnic group differences in mean scores do not imply, however, that the associations between RII and RIP and outgroup and ingroup evaluations differ between the three groups. For all three groups there were negative associations with outgroup evaluation and positive associations with ingroup evaluation. In line with Wenzel et al. (2007), a complex representation can be viewed as one where the superordinate identity is defined by the diversity of the subgroups. On the small island of Mauritius a highly diverse population lives, and our participants strongly agreed with the notion of Mauritius being a country where ethnic and religious groups should be recognized and respected. Thus, the understanding of Mauritius as a country defined by diversity was endorsed by our participants. In line with this understanding, the mean scores for both national and ethnic identification indicated positive group identification among all three ethnic groups. Furthermore, both identifications were positively associated and dual identity was the self-category option most often chosen. These results confirm the importance of the "cultural ideal of the social entity" (Dovidio et al., 2007, p. 320). Indeed, in a multicultural mosaic, subgroup (i.e., ethnic) and superordinate (i.e., national) identities are *both* significant in people's sense of their identity, independent of ethnic group status. For instance, both the high-status Hindus and the low-status Creoles preferred the dual identity option and showed a positive association between national and ethnic identification, although this association was stronger for the Hindus compared to the Creoles and Muslims. This finding lends partial

support to the social dominance perspective that argues that the association between national and ethnic identifications should be stronger for dominant than for subordinate groups. However, the related proposition that national attachment should be stronger in dominant than subordinate groups is not borne out in our findings. Creoles and Hindus had not significantly different levels of national identification. Hence, our findings differ from research that indicates that for high-status groups the relationship between ethnic and national identification tends to be positive, whereas for low-status groups it tends to be zero or negative (see Sidanius & Pratto, 1999). This research, however, is predominantly conducted in settings where explicitly or implicitly the dominant ethnic group is equated with the national category, like in “American = White” (Devos & Banaji, 2005). Depending on the national context, the associations between ethnicity and nationhood can be different and do not have to differ between high- and low-status groups. In the context of New Zealand, Sibly and Liu (2007), for example, show that both the majority group (Pakeha) and the minority group of Maori hold the implicit and explicit association of New Zealand = bicultural. In Mauritius, the nation is typically presented as multiethnic and the different ethnic groups are considered to make up the national whole.

The multiethnic representation of Mauritius does not imply, however, that ethnicity is not related to outgroup evaluations. The effects of the superordinate–subgroup relationship on outgroup evaluation were assessed in two ways. First, with the explicit measure of self-identification, it turned out that both dual and national identifiers had more positive outgroup evaluations compared to ethnic identifiers. This finding is in line with the dual identity model (Hornsey & Hogg, 2000a) and the more recent version of the common ingroup identity model (Dovidio et al., 2007). Thus, it appears that national identifiers (dual or single) are more positive than ethnic identifiers and this is found for the high- and low-status ethnic groups. For outgroup evaluation, the critical issue seems to be the extent to which

one identifies with the Mauritian nation in which all ethnic groups are considered to make up the national mosaic (“rainbow nation”). For ingroup evaluation, it turned out that only the Hindu national self-identifiers were less positive about their ethnic ingroup compared to the dual and ethnic self-identifiers.

Second, the three continuous measures of the superordinate–subgroup relationship had independent significant effects on outgroup evaluation. As predicted, across ethnic groups, higher ethnic compared to national identification, RIP and RII, were associated with more negative outgroup evaluations. The ingroup projection model argues that a complex representation of the superordinate category is a promising avenue for intergroup tolerance (Wenzel et al., 2007). Our findings seem to support this view but also point to the limitations of this strategy in real-world settings. A complex superordinate representation does not imply that RIP and RII do not occur. They do, and both are negatively associated with outgroup evaluation and also independently with more positive ingroup evaluation. Furthermore, a complex representation of the superordinate category does not necessarily act as a buffer against status differences. Compared to the Hindus, the lower status group of Creoles showed less positive ingroup evaluation and had a lower, but still positive, association between ethnic and national identification.

Interestingly, for the three ethnic groups, relative ingroup indispensability was the strongest predictor of outgroup evaluation. Social psychological research has focused on prototypicality judgments and, to our knowledge, there is no intergroup research that has examined ingroup indispensability. However, superordinate categories do not only take the form of a collection of subgroups that “go together” and in which some subgroups are “best exemplars.” Superordinate category complexity can also take the form of, for example, organic pluralism (Haslam, 2004) or “team-type” classification (Sacks, 1972), that involve functional interdependence between included subgroups. Furthermore, it can take the form of a cultural mosaic in which all the pieces

are necessary to compose the total picture. And similar to rating one's subgroup as more prototypical or as more functional, it is also possible to rate one's subgroup as more indispensable. Thus, it seems important for future (experimental) studies on ethnic and cultural diversity to focus not only on the issue of relative ingroup prototypicality but also on ingroup indispensability. One possibility is the ways in which immigrant groups in Western countries are defined and define themselves. It is, for example, possible to portray immigrants as being indispensable for the economic functioning of society and this might lead to more positive attitudes towards immigrants, compared to representations that emphasize the threat that immigrants would pose to the country's culture and identity (Sniderman & Hagendoorn, 2007). Future studies could also use and compare different and more elaborate measures of ingroup indispensability and ingroup prototypicality as well as different ways for computing and analyzing ingroup prototypicality and indispensability scores (see Ullrich, 2009).

To summarize, this study has tried to make a contribution to the literature on intergroup relations by focusing on a real-world context, by examining three different ethnic groups, and by considering indispensability, prototypicality and dual identity. It is important to examine models of intergroup relations not only in experimental settings but also in the actual complexities of social life. This allows us to see, for example, to what extent "ideal" experimental conditions can exist in multiethnic societies, to consider additional constructs like relative ingroup indispensability, and to examine how status positions can work out quite differently depending on the superordinate representation. These issues are not only important for understanding social realities but can also offer new and promising ideas for experimental research. The current findings indicate that both dual and national identity can lead to more positive outgroup evaluations. They also indicate, however, that a complex representation of the superordinate category does not rule out the tendency for ingroup projection in terms of prototypicality and indispensability.

Notes

1. Mauritius was first discovered by the Portuguese in 1510 but they did not settle on the island. The Dutch settled for two periods, 1638–1658 and 1664–1710, and named it Mauritius but left no substantial legacy apart from the name. The French were the first to formally colonize the island in 1715 naming it Île de France. Even after the island became a British colony in 1810 and was renamed Mauritius, it retained much of its French colonial past.
2. Officially the Constitution (First Schedule, section 31 3) stipulates that "[The] population of Mauritius shall be regarded as including a Hindu community, a Muslim community, a Sino-Mauritian community and every person who does not appear to belong to one or another of these 3 communities shall be regarded as belonging to the General Population which shall be itself regarded as the fourth community." The term General Population is therefore a generic term in which the Whites (former colonizers and still economically powerful) and Creoles (mainly slaves descendants) are put under the same appellation. In everyday interaction the term General Population does not have ecological validity.
3. The remaining 543 participants were from other smaller minority groups such as Tamils ($n = 159$), Chinese ($n = 125$), Mixed ($n = 146$), Marathi ($n = 24$), Telegou ($n = 46$), White ($n = 4$) and others ($n = 28$) and 11 did not give their ethnic group. We therefore kept the analysis to the three main ethnic groups.
4. In order to verify that the use of the word "real" has a similar meaning as "typical," we conducted an additional study among a sample ($n = 44$) of first-year undergraduate students (35 females and 9 males, average age 20.2) at the University of Mauritius. These participants were asked two questions for each of the three ethnic target groups: "_____ are real Mauritians" with the item "_____ are typical Mauritians." The correlations between these two questions were acceptable: Hindus, $r = .58$; Creoles, $r = .75$; and Muslims, $r = .63$.
5. In line with our prototypicality measure, we further investigated the reliability of the indispensability measure in the sample described in note 4. Specifically, we assessed indispensability with three items measured on a 5-point scale ranging from

“strongly agree” to “strongly disagree” as such: “Mauritius, without the _____, will still be Mauritius” (reversed coded); “_____ are an indispensable part of Mauritius” and “_____ cannot be missed in making Mauritius what it is.” Reliability analysis for the three ethnic target groups yielded satisfactory Cronbach’s alpha: Hindus, $\alpha = .79$; Creoles, $\alpha = .79$; and Muslims, $\alpha = .77$.

6. In line with Leach et al. (2007), we used factor analysis with oblique rotation on the six characteristics in order to see if the traits refer to three distinct components (i.e., warmth, competence and morality). A one-factor solution was obtained, both for the whole sample and for each of the three ethnic groups. Therefore, we computed overall mean scores of group evaluations based on the six characteristics.

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Biographical notes

CAROLINE NG TSEUNG-WONG is a lecturer in Psychology at the University of Mauritius. She is currently pursuing a doctorate in social psychology at Utrecht University. Her research interest involves intergroup relations, multiculturalism and the development of national and ethnic identities.

MAYKEL VERKUYTEN is Professor at the Department of Interdisciplinary Social Science at Utrecht University. He is also Academic Director of the European Research Centre on Migration and Ethnic Relations at the same university. His research interest is in ethnic identity and interethnic relations.