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An empirical investigation of ethnic-cultural procedural fairness effects and their boundary conditions among three societal groups in South Africa

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ABSTRACT

Ethnic-cultural procedural fairness refers to the perception that societal actors use fair and unbiased procedures to make decisions vis-à-vis one's ethnic-cultural group. Prior research using ethnic-cultural minority samples has convincingly shown that such perceptions are associated with a range of desirable outcomes. Yet, this body of evidence has so far limited its scope to European and North American samples. Moreover, more research is needed on the underlying psychological processes. Therefore, the central aim of the present study was to investigate ethnic-cultural procedural fairness effects among three societal groups in South Africa. In Study 1 ($N = 326$ black South Africans), we observed relationships between ethnic-cultural fairness perceptions and positive institutional and intergroup attitudes. Institutional and social trust respectively mediated these associations. Study 2 ($N = 747$) replicated these findings among white ($n = 595$), but not among coloured South Africans ($n = 152$). Notably, across both studies, we also obtained evidence for moderation. That is, procedural fairness effects on institutional attitudes were significantly smaller among socioeconomically burdened black participants, and procedural fairness effects on intergroup attitudes were fully curbed among white participants who reported high levels of perceived group discrimination. Taken together, our results call for enhanced attention to procedural fairness obstacles outside of typical WEIRD settings.

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Ethnic-cultural procedural fairness; non-WEIRD societies; South Africa; institutional trust; social trust

More than ever, the ethnic-cultural composition of twenty-first century nation states can be characterized as 'super-diverse' (Eurostat 2015; U.S. Census Bureau 2014). Consequently, societal decision-makers (e.g. the courts, the police and political actors) are increasingly

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faced with the challenging task of accommodating the needs and demands of a variety of ethnic-cultural groups, each of which have their own heritage, traditions and practices. Fortunately, justice literature has provided legislators with a powerful tool to facilitate such 'living together in diversity' in the form of procedural fairness. Procedural fairness refers to making decisions affecting the individual (or his/her social group, see below) in a correct, unbiased and ethical way (Lind and Tyler 1988; Thibaut and Walker 1975).

Of special relevance for the present research is the focus of a recent strand of literature on a specific type of procedural fairness, namely ethnic-cultural or 'collective' procedural fairness (Valcke et al. 2020a, 2020b). This type of fair treatment applies to decisions that have consequences for entire (ethnic-cultural) groups. Fairness literature has typically focused on fairness that targets the individual (e.g. De Cremer and Tyler 2005), with relatively scant research attention directed at exploring collective fairness. Nevertheless, ethnic-cultural procedural fairness has been related to desirable societal outcomes such as ameliorated relations between minority citizens and societal institutions (Dierckx et al. 2020), and even between minority citizens and other societal groups (Dierckx, Valcke, and Van Hiel 2021). These findings are promising because, in the broader context of society, decision procedures are often not directed towards individuals, but rather towards entire social groups. See, for example, the recent decisions about whether or not to remove confederate symbolism (relevant to the Black American population; Shapiro and Wells 2017), or the 2016 decision of the South African Department of Arts and Culture to try and preserve the history and heritage of the 'native' South African tribes (relevant to the KhoiSan or native South Africans; Phaliso 2016). Thus, ethnic-cultural group-based or collective decisions are frequently made, and procedural fairness theory provides societal actors with an important social engineering tool to deal with such issues.

Unfortunately, to date, the extant research has almost exclusively limited its scope to European and American samples, and empirical work examining ethnic-cultural procedural fairness outside of the WEIRD[1] study context is virtually absent. This lack of scholarly attention for non-WEIRD ethnic-cultural populations can be problematized because the economic and social environments in non-WEIRD societies can differ greatly from their WEIRD counterparts. As we will argue below, these economic and social determinants could represent significant hurdles for procedural fairness effects to materialize, and so the generalization of prior findings in the absence of empirical data should be avoided.

As such, to tackle the aforementioned lacuna in the literature, the present study sought to examine the effects of ethnic-cultural procedural fairness perceptions in a novel, under-researched, non-WEIRD study context. Specifically, we investigated whether similar benign consequences for citizens' institutional and intergroup attitudes could be observed among three different ethnic-cultural groups in South Africa. We further aimed to illuminate the psychological processes underlying these associations. Most importantly, we additionally explored potential non-WEIRD-specific socioeconomic (e.g. socioeconomic status [SES]) and intergroup (e.g. perceived group discrimination) boundary conditions that could theoretically be expected to hinder the emergence of procedural fairness effects. In doing so, the present research heeds recent calls to move away from exclusive reliance on WEIRD populations to make inferences about the foundations of human behaviour (e.g. Heinrich, Heine, and Norenzayan 2010; Tindle 2021). Moreover, by focusing on fairness boundary conditions, our research aligns with recent,

more critical reviews of the consequences of ethnic-cultural procedural fairness (e.g. Dierckx, Valcke, and Van Hiel 2020b, 2023).

Ethnic-cultural procedural fairness: institutional and intergroup outcomes

As noted above, the perception that societal actors treat one's ethnic-cultural group in a procedurally fair way has been shown to yield a variety of relevant societal outcomes. These can be divided into two types. The first set of outcomes is directly related to ethnic-cultural decision-making itself and the societal actors making these decisions; and, as such, we refer to these outcomes as *institutional attitudes*. For example, Dierckx, Valcke, and Van Hiel (2020b) have shown among Black American minority group members that the perceived procedurally fair resolution of an ethnic-cultural issue by a societal decision-maker was positively associated with subsequent institutional compliance (e.g. acceptance of other, unrelated institutional decisions). In a similar vein, these scholars demonstrated a relationship between ethnic-cultural procedural fairness perceptions and enhanced institutional legitimacy (i.e. the extent to which Black Americans believed that the decision-making institution had the right to govern).

A second set of outcomes concerns the evaluations amongst recipients of ethnic-cultural fairness of their position within the larger society and their relationship with other societal groups; and, as such, we refer to these outcomes as *intergroup attitudes*. For example, Valcke et al. (2020a, Study 1) reported a positive association between procedural fairness perceptions vis-à-vis ethnic-cultural issues and minority group members' sense of societal belonging. And, of relevance to the present research, Dierckx, Valcke, and Van Hiel (2021) revealed that ethnic-cultural procedural fairness perceptions were related to intergroup positivity. Specifically, they found that Black Americans who felt that the US institutions strived to treat the Black community in a procedurally fair way were more likely to hold positive attitudes towards the White majority.

In sum, the work reviewed above reveals a relationship between ethnic-cultural procedural fairness and positive institutional and intergroup attitudes. Although the replication of these findings is yet to be demonstrated in non-WEIRD contexts, we nevertheless formulated a series of a priori hypotheses for our own studies, drawing upon the literature undertaken in WEIRD contexts, the first of which are:

> *Hypothesis 1a:* Ethnic-cultural procedural fairness perceptions (with respect to societal actors) are positively related to benign institutional attitudes (e.g. decision acceptance).

> *Hypothesis 1b:* Ethnic-cultural procedural fairness perceptions (with respect to societal actors) are positively related to benign intergroup attitudes.

Institutional and social trust as explanatory process variables

The second aim of the present study was to explore the psychological processes underlying the aforementioned hypothesized relationships. With respect to institutional attitudes, it is noteworthy that trust in the decision-making entity is an important precursor of perceptions of institutional legitimacy and decision acceptance (Hough et al. 2010). This finding leads us to hypothesize that the relationship between ethnic-

cultural procedural fairness perceptions and institutional attitudes could be mediated by enhanced institutional trust. In line with this assumption, prior research has consistently revealed a liaison between (general, i.e. non-ethnic-cultural) procedural fairness perceptions and trust in decision-making authorities (e.g. De Cremer and Tyler 2007; Van Dijke, De Cremer, and Mayer 2010). Relatedly, general procedural fairness delivered by societal actors has been shown to be associated with trust in political actors (Grimes 2006) and trust in the police (Bradford et al. 2014). As such, we formulated the following hypothesis:

Hypothesis 2a: The relationship between ethnic-cultural procedural fairness perceptions and institutional attitudes is mediated by institutional trust.

With respect to intergroup attitudes, previous research has documented the critical role of ethnic-cultural procedural fairness in the creation of social trust, i.e. a form of trust in other people in general (Valenzuela, Park, and Kee 2009). Specifically, Valcke and colleagues (2020a, 2020b) have shown that procedurally fair treatment of one's ethnic-cultural group strengthens minority group members' connectedness with society at large, which translates into more positive attitudes towards other citizens in general. Relatedly, Dierckx, Valcke, and Van Hiel (2021) demonstrated that ethnic-cultural procedural fairness enhances social trust because it curbs perceptions of ingroup discrimination by other societal groups. Furthermore, it stands to reason that such enhanced generalized trust may culminate in more positive attitudes towards other ethnic-cultural groups. In line with this reasoning, Dierckx, Valcke, and Van Hiel (2021) found a positive relationship between Black Americans' social trust and their attitudes towards the White majority. Integrating these findings, we theorize that social trust may help explain the predicted relationship between ethnic-cultural procedural fairness and intergroup attitudes. As such, we formulated the following hypothesis:

Hypothesis 2b: The relationship between ethnic-cultural procedural fairness perceptions and intergroup attitudes is mediated by social trust.

Obstacles for ethnic-cultural procedural fairness in non-WEIRD societies

Taken together, the findings reviewed thus far provide an optimistic outlook on the potential of ethnic-cultural procedural fairness to manage and promote 'living together in diversity'. What dampens our enthusiasm, however, are concerns about the potential lack of generalizability of these findings. Specifically, all the aforementioned results – and, more broadly, the bulk of findings in justice literature – has been obtained in WEIRD settings. There are, however, from a social psychological lens, important challenges for fairness theory in non-WEIRD contexts. Specifically, most of the procedural fairness effects reviewed above are assumed to rely on the installation of psychological trust (Van den Bos, Lind, and Wilke 2001), both towards societal institutions (i.e. *institutional trust*) and towards other people in general (i.e. *social trust*). Thus, any factors that counteract the emergence of these two types of trust can theoretically be expected to constitute obstacles for procedural fairness to yield its effects. In what follows, we list three non-WEIRD-specific stress factors that may hinder trust enhancement.

Firstly, in non-WEIRD societies, economic inequalities are much greater than in WEIRD settings. Given that income inequality is strongly and inversely related to

institutional trust (Cole and Cohn 2016), it can be anticipated that procedural fairness may be less relevant and might not (or to a lesser extent) yield the anticipated beneficial effects under the conditions of extreme economic hardship observed in non-WEIRD societies. Secondly, another noteworthy difference between the non-WEIRD and European and North American context is that order maintenance resources are generally substantially lower in non-WEIRD countries (Bradford et al. 2014), which is reflected in inflated crime statistics (Statista 2021). It stands to reason that apprehensions about the failure of police and the judicial system to protect citizens from various types of crime may significantly impede the potential of procedural fairness to foster institutional trust. Indeed, Bradford et al. (2014) have found that the relationship between perceived procedural fairness of the South African Police Services and their ascribed legitimacy was reduced when their perceived effectiveness in fighting crime was considered. In sum, it can thus be argued that elevated levels of socioeconomic burden (e.g. low income and/or SES, high crime concerns) may present significant barriers for collective procedural fairness enactment to bolster institutional trust, and hence, to promote positive institutional attitudes.

A further complication which arises in non-WEIRD settings is that, at present, violent conflicts between members of different ethnic-cultural groups are far more common than in most WEIRD countries (De Merode et al. 2007; Williams et al. 2012), ranging from intergroup disputes over scarce resources to armed conflicts and genocides (O'Hare and Southall 2007; Williams, 2016). Such current intergroup conflict, or a history of intergroup conflict, has been shown to have detrimental consequences for intergroup trust (Dixon 2001) and it can induce chronic perceptions of group-based discrimination (i.e. the perception that members of one' ethnic-cultural group are frequently discriminated against by members of a rival ethnic-cultural group). These perceptions are particularly exacerbated among individuals belonging to groups with a prominent history of stigmatization and victimization (Williams et al. 2008). Importantly, it has been found that perceived group discrimination is a significant obstacle for the development of social trust (Dierckx, Valcke, and Van Hiel 2021). As such, it can be hypothesized that the elevated levels of perceived group discrimination observed in some contemporary non-WEIRD settings may significantly prevent the creation of social trust. In line with these reflections, we formulated our final hypotheses:

Hypothesis 3a: The relationship between ethnic-cultural procedural fairness perceptions and institutional attitudes is moderated by socioeconomic burden (e.g. income, SES, crime concerns), such that the positive effects of procedural fairness are significantly lower among those reporting high (compared to low) levels of socioeconomic burden.

Hypothesis 3b: The relationship between ethnic-cultural procedural fairness perceptions and intergroup attitudes is moderated by perceived group discrimination, such that the positive effects of procedural fairness are significantly lower among those reporting high (compared to low) levels of group discrimination.

The present studies

In sum, the central aim of the present research was to examine ethnic-cultural procedural fairness effects outside of their pervasively studied WEIRD context. Figure 1 depicts our hypothesized theoretical model.

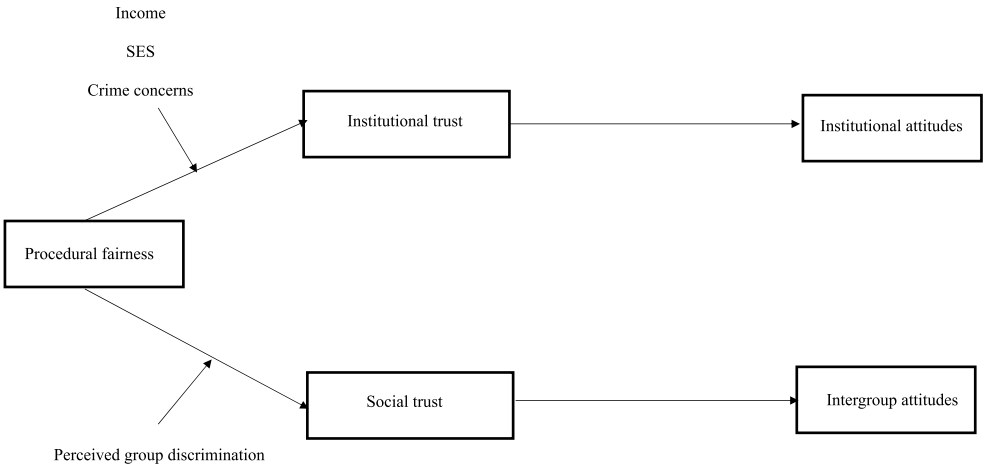

Figure 1. Schematic overview of hypothesized model of ethnic-cultural procedural fairness effects and boundary conditions.

To investigate this model, we focused on South Africa as our research environment. The South African society represents an excellent opportunity to investigate boundary conditions, because it is a prime example of a country that poses substantial challenges for procedural fairness theory. Firstly, and alluding to the barriers for institutional trust creation, social inequalities are significant in South Africa – despite being one of the most highly developed economies with an advanced infrastructure on the African continent (Webster 2019). Moreover, concerns about crime (both worry about crime and the experience of victimization) are highly prevalent (Roberts 2010).

Secondly, South Africa is one of the most complex and diverse countries in the world in terms of population, boasting a rich variety of ethnic groups, the main ones being the *black*, *white*, *coloured*, and *Indian* ethnic-cultural groups.[2] Importantly, bonding and bridging between these various ethnic-cultural stakeholders is particularly complicated by the country's troubled intergroup past (Maylam 1995). In 1948, the (white South African) National Party introduced a system of racial segregation which systematically, institutionally, and economically discriminated the other racial groups in the country. For example, under Apartheid, black, coloured, and Indian South Africans were offered the lowest-paying jobs, they were not allowed to stay longer than 72 hours in 'white-only' regions, and, despite the fact that white South Africans made up only 14% of South Africa's total population, they nonetheless owned 86% of the land (Dubow 2014). Although the system of Apartheid was officially abolished in 1994, the ongoing challenges of intergroup reconciliation in South Africa are still significant (Gibson 2004). That is, empirical evidence shows that since the Apartheid era intergroup attitudes have not improved among all racial groups (Bornman 2011), and perceptions of group discrimination remain at strikingly high levels, particularly among members of historically discriminated groups (e.g. black and coloured South Africans; Williams et al. 2008, 2012). Thus, it appears that there are both socioeconomic and intergroup obstacles in the South African context, which may interfere with procedural fairness effects.

To investigate these potential boundary effects of ethnic-cultural procedural fairness in South Africa, two studies were conducted. In Study 1, we sampled black South African students and gauged their ethnic-cultural procedural fairness perceptions and institutional and intergroup attitudes. In Study 2, we sampled white and coloured South African students and once more measured the focal variables. Apart from being a replication of Study 1, Study 2 thus additionally allowed us to address yet another question. Specifically, previous research has limited its scope to ethnic-cultural groups that were societally disadvantaged both in terms of numbers and in terms of socioeconomic status. In the South African context, the situation is more complex. For example, black South Africans constitute a numerical majority (i.e. 79% of the total population) which has been in political power since the end of the Apartheid era in 1994. Nonetheless, as a societal group they are still very much socioeconomically and structurally disadvantaged. Conversely, white South Africans constitute a numerical minority (i.e. 10% of the total population); yet, on average, they are socioeconomically and structurally advantaged. Coloured South Africans, finally, are both minoritized in numbers and suffering from a deplorable socioeconomic status. Hence, by sampling participants from these three different ethnic-cultural groups, we could investigate whether ethnic-cultural procedural effects differ as a function of numeric minority status and/or socioeconomic disadvantage.

All data, analysis code and research materials are available at our Open Science webpage https://osf.io/grs58/. Studies were approved individually by the institutional review boards of the universities where data collection took place (approval numbers 00663-21-A7, 5131313010282898430 and SBE-21747).

Study 1

Method

Participants

Study 1 was preregistered at https://aspredicted.org/fd8pr.pdf. Prospective participants – i.e. students from two large South African universities – were approached by the leading author in courses taught by his co-authors. In return for participation, students could opt to be entered into a cash prize draw. An initial $N = 388$ black South Africans responded to our survey.[3] We excluded $n = 62$ because they failed our attention check ('Please select the third response for this question'), which resulted in a final sample of $N = 326$ (99 males/222 females/5 non-binary; age: $M = 20.56$, $SD = 2.28$, range = 17-35). Given that sample size was based on availability of voluntary participants, we conducted a series of power sensitivity analyses to calculate the minimum detectable effect size ($\alpha = .05$). Results revealed that our study had 80% power to detect minimal slopes for our mediators of size $b = [0.12\text{-}0.29]$.

The majority of the participants had obtained their high school degree (68.1%; Bachelor's degree = 21.8%; other = 10.1%) and reported a monthly family income of 3201–6400 ZAR[4] (≅ 180€/188USD-361€/376USD; 32.0%< 3201–6400 ZAR < 27.3%; 'I don't know' = 27.0%). Furthermore, on average, participants rated their SES as low ($M = 1.95$, $SD = 1.02$, 1 = lower class, 7 = elite), and their political beliefs as neither liberal nor conservative ($M = 3.51$, $SD = 1.57$; 1 = liberal, 7 = conservative).

Measures

Unless stated otherwise, all items were scored on 5-point Likert scales (1 = completely disagree, 5 = completely agree).

Ethnic-cultural procedural fairness. This variable was measured with nine items, adapted from Naumann & Bennett (2000; $M = 3.09$, $SD = 0.74$; $\alpha = .79$). These items were preceded by an introductory sentence: 'In this study, we are interested in your *general* opinions about the South African institutions. These institutions (e.g. the courts, the government, etc …) need to make decisions on a daily basis. For the current set of questions, we want to find out your opinion about how decisions are made which affect your ethnic-cultural group specifically'. An example of an ethnic-cultural issue was also given: '*An example of such a decision (which affected a specific ethnic group) was the 2016 decision of the South African Department of Arts and Culture to try and preserve the KhoiSan history and heritage by actively involving the KhoiSan leaders into the decision process*'. Sample items included 'Decisions that affect [my ethnic-cultural group] are made ethically' and 'Personal motives or biases influence decisions that affect [my ethnic-cultural group]' [reverse scored].

Institutional trust. Six generic items (three pairs) were implemented to measure this variable. Each pair referred to one of the main South African institutions: 'I have trust in … ', 'I have confidence in … The police/the courts/ governmental officials' ($M = 2.31$, $SD = 0.95$, $\alpha = .91$).

Social trust. This variable was measured with three items, adapted from Valenzuela, Park, and Kee (2009); $M = 2.92$, $SD = 0.76$; $\alpha = .64$), e.g. 'Generally speaking, I would say that people can be trusted'.

Decision acceptance. To quantify the extent to which participants felt inclined to agree with *other* decisions by societal actors (i.e. decisions that were not directly related to their ethnic-cultural group), we implemented three items, adapted from Schweiger, Sandberg, and Ragan (1986): 'I would agree with this decision', 'I would accept this decision', and 'I would reject this decision' [reverse scored] ($M = 3.34$, $SD = 0.89$, $\alpha = .78$).

Perceived corruption. This variable was measured with three items, based on Bradford et al. (2014): e.g. 'How often would you say that the police/the courts/governmental officials in South Africa take bribes?' ($M = 4.13$, $SD = 0.73$, $\alpha = .77$).

Outgroup attitudes. We assessed how participants felt towards the three other main ethnic-cultural groups with three items (1 item per group). These were adapted from Van Assche et al. (2014): 'Please describe your feelings against the following groups, on a scale from 0 = Negative, to 5 = Positive …' 'white South Africans' ($M = 3.24$, $SD = 1.44$), 'coloured South Africans' ($M = 3.45$, $SD = 1.40$), 'Indian South Africans' ($M = 3.38$, $SD = 1.41$).

Other measures. Besides the socioeconomic indicators discussed in the 'Participants' section, we also implemented three items, adapted from Bradford et al. (2014), to

measure *crime concerns*: e.g. 'I often worry about being violently attacked' ($M = 4.22$, $SD = 0.83$, $\alpha = .76$). Furthermore, five items were adapted from Williams et al. (1997) to measure *perceived group discrimination*, e.g. 'People of my ethnic group are treated with less respect than other people are' ($M = 2.79$, $SD = 1.05$, $\alpha = .85$).

Data-Analysis and results

Bivariate correlations

Table 1 represents the bivariate correlations between our focal variables. As expected (*Hypothesis 1a* and *Hypothesis 1b*), procedural fairness perceptions were significantly associated with decision acceptance ($r = .26$, $p < .001$).) and lower perceived corruption ($r = -.17$, $p = .003$) on the one hand, and positive attitudes towards all three ethnic-cultural outgroups on the other hand (white South Africans: $r = .25$, $p < .001$; coloured South Africans: $r = .17$, $p = .003$; Indian South Africans = $r = .16$, $p = .003$). Furthermore, and in line with *Hypothesis 2a* and *Hypothesis 2b* respectively, procedural fairness was also positively related to institutional ($r = .33$, $p < .001$) and social trust ($r = .11$, $p = .039$).

Mediation analyses

To further investigate *Hypothesis 2a* and *2b*, we fitted a structural equation model (SEM) with the Lavaan package (Rosseel 2012) in R (R core team 2023). This model encapsulated all the relations envisaged in Figure 1. The results of our SEM analyses are displayed in Figure 2.

In line with *Hypothesis 2a*, institutional trust was shown to mediate both the relationship between procedural fairness and decision acceptance ($b = 0.07$, 95% Confidence Interval [CI] = [0.018,0.129], $SE = 0.028$, $p = .010$), and the relationship between procedural fairness and perceived corruption ($b = -0.16$ [−0.214,−0.107], $SE = 0.027$, $p < .001$). Furthermore, in line with *Hypothesis 2b*, it was revealed that social trust mediated the relationship between procedural fairness and attitudes towards white South Africans ($b = 0.04$ [0.001,0.087], $SE = 0.022$, $p = .045$), but not the relationship between procedural fairness and attitudes towards the other two groups (all bs < 0.05, all ps > .050).

Table 1. Bivariate correlations between the Study 1 focal variables (95% confidence intervals between square brackets).

	1	2	3	4	5	6	7	8
1. Procedural fairness								
2. Institutional trust	.33*** [.23,.42]							
3. Social trust	.11** [.01,.22]	.22*** [.11,.32]						
4. Decision acceptance	.26*** [.16,.36]	.23*** [.12,.33]	.05 [-.06,.16]					
5. Perc. corruption	-.17** [-.27, −.06]	-.47*** [-.55, −.38]	-.05 [-.16,.05]	-.22*** [-.32, −.11]				
6. Attitudes white South Africans	.25*** [.15,.35]	.17** [.07,.28]	.15** [.05,.26]	.17** [.06,.27]	-.14* [-.24, −.03]			
7. Attitudes coloured South Africans	.17** [.06,.27]	.06 [-.05,.17]	.09 [-.02,.19]	.08 [-.03,.18]	.02 [-.09,.13]	.67*** [.61,.73]		
8. Attitudes Indian South Africans	.16** [.05,.26	.14* [.03,.24]	.09 [-.02,.19]	.09 [-.02,.20]	-.08 [-.19,.03]	.62*** [.55,.68]	.66*** [.59,.72]	

Note. $N = 326$. Perc. Corruption = perceived corruption. *: $p < .05$. **: $p < .01$. ***: $p < .001$.

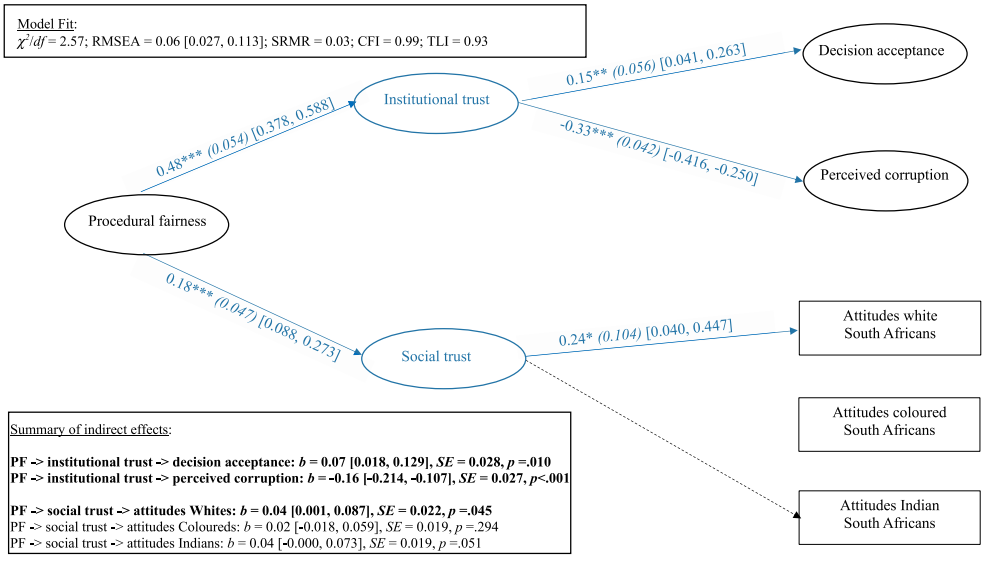

Figure 2. Results of SEM mediation analyses (Study 1). Standard errors are given between parentheses, and 95% CIs between square brackets. Only significant mediation pathways are shown (printed in blue), dashed pathways indicate $p < .10$. *: $p < .05$. **: $p < .01$. ***: $p < .001$.

Moderated mediation analyses

To investigate *Hypotheses 3a* and *3b*, we fitted a series of additional SEM models. Specifically, we assessed the moderating influence of each variable of interest (i.e. monthly family income, SES, crime concerns and perceived group discrimination), by adding each of them separately to the mediation model above, as well as the relevant procedural fairness*hypothesized moderator interaction term. The abbreviated model output of these five models is depicted in Table 2.

It was shown that the two procedural fairness*income interaction terms (DV = decision acceptance: $b = 0.01$ [0.000,0.015], $SE = 0.004$, $p = .036$; DV = perceived corruption: $b = -0.02$ [−0.031,−0.010], $SE = 0.005$, $p < .001$) and the procedural fairness*SES interaction terms (DV = decision acceptance: $b = 0.01$ [0.001,0.020], $SE = 0.005$, $p = .039$; DV = perceived corruption: $b = -0.03$ [−0.042,−0.010], $SE = 0.008$, $p = .002$) reached significance. The procedural fairness*crime concerns interaction terms associated with perceived corruption ($b = 0.01$ [0.001,0.015], $SE = 0.004$, $p = .024$) and with decision acceptance reached significance too ($b = -0.02$ [−0.031,−0.011], $SE = 0.005$, $p < .001$; all other bs < |0.01|, all ps > .203). To break down these interactions, we performed follow-up simple slopes analyses.

The results revealed that, at one standard deviation (*SD*) above the mean of income and SES, there was a significantly stronger positive association between procedural fairness and decision acceptance (i.e. a significantly stronger positive moderated mediation effect via institutional trust; income: $b = 0.10$ [0.020,0.180], $SE = 0.041$, $p = .014$; SES: $b = 0.08$ [0.016,0.142], $SE = 0.032$, $p = .014$), compared to at one *SD* below the mean (income: $b = 0.06$ [0.010,0.100], $SE = 0.023$, $p = .016$; SES: $b = 0.06$ [0.011,0.105], $SE = 0.024$, $p = .015$). In a similar vein, at one *SD* above the mean of income/SES, there was also a

Table 2. Output of moderated mediation models (Study 1).

Model	*b (SE)*	95% CI	*z*	*p*
Model 1: M = income				
DV = Decision acceptance	**0.01 *(0.004)***	**[0.000, 0.015]**	**2.09**	**.036**
DV = Perc. Corruption	**−0.02 *(0.005)***	**[−0.031, − 0.010]**	**−3.78**	**<.001**
Model 2: M = SES				
DV = Decision acceptance	**0.01 *(0.005)***	**[0.001, 0.020]**	**2.06**	**.039**
DV = Perc. corruption	**−0.03 *(0.008)***	**[−0.042, − 0.010]**	**−3.12**	**.002**
Model 3: M = Crime concerns				
DV = Decision acceptance	**0.01 *(0.004)***	**[0.001, 0.015]**	**2.26**	**.024**
DV = Perc. corruption	**−0.02 *(0.005)***	**[−0.031, − 0.011]**	**−4.03**	**<.001**
Model 4: M = Perc. discr.				
DV = Attitudes white South Africans	0.00 *(0.002)*	[−0.002, 0.008]	1.27	.204
DV = Attitudes coloured South Africans	−0.00 *(0.003)*	[−0.005, 0.005]	−0.08	.934
DV = Attitudes Indian South Africans	−0.00 *(0.003)*	[−0.008, 0.003]	−0.87	.386

Note: $N = 362$. Perc. discr. = perceived group discrimination. Each row represents coefficient (+ *SE*, 95% CI, *z* and *p*-value) associated with Moderator (M)*procedural fairness moderated mediation effect on respective outcome variable (DV). For example, the coefficient on line 1 (M = income, DV = decision acceptance) reflects the income*procedural fairness moderated mediation effect (via institutional trust) on decision acceptance. Bolded lines indicate significant moderated mediation effects $p < .05$, italicized lines indicate moderated mediation effects $p < .10$.

significantly stronger negative association between procedural fairness and perceived corruption (income: $b = -0.26$ [−0.344,−0.166], $SE = 0.045$, $p < .001$; SES: $b = -0.20$ [−0.271,−0.130], $SE = 0.036$, $p < .001$), compared to at one *SD* below the mean (income: $b = -0.14$ [−0.195,−0.086], $SE = 0.028$, $p < .001$; SES: $b = -0.15$ [−0.204, −0.093], $SE = 0.028$, $p < .001$).

Conversely, at one *SD* below the mean of crime concerns, there was a significantly weaker positive association between procedural fairness and decision acceptance ($b = 0.07$ [0.014,0.122], $SE = 0.028$, $p = .014$), and a significantly weaker negative association between procedural fairness and perceived corruption ($b = -0.17$ [−0.232,−0.114], $SE = 0.030$, $p < .001$), compared to at one *SD* above the mean of crime concerns ($b = 0.08$ [0.017,0.145], $SE = 0.033$, $p = .013$ and $b = -0.21$ [−0.276,−0.139], $SE = 0.035$, $p < .001$ respectively).

Discussion

In line with *Hypotheses 1a* and *1b*, we found that perceptions of ethnic-cultural group-directed procedural fairness were related to (1) positive institutional attitudes and (2) positive intergroup attitudes. Furthermore, and in line with *Hypotheses 2a* and *2b*, it was found that institutional and social trust, respectively, mediated these effects. Most importantly, some evidence for moderation was also found. Specifically, we found that procedural fairness effects were significantly stronger at high (compared to low) levels of income and SES. It should, however, be stressed that, although these findings align with *Hypothesis 3a*, they are not necessarily indicative of socioeconomic disadvantage as a *boundary* condition of procedural fairness effects in South Africa. That is because even among these black South Africans, who reported the highest levels of socioeconomic burden, an association between procedural fairness and positive institutional attitudes persisted. We will get back to this issue in the General Discussion. Conversely, we also found that procedural fairness effects were significantly stronger at high (compared to low) levels of crime concerns. Lastly, it should be noted that no evidence was obtained for any moderation effects with respect to the social trust pathway.

Study 2 was designed to address three issues. First, we intended to extend our scope to other ethnic-cultural groups. As such, we sampled white and coloured South Africans in Study 2. Secondly, we also aimed to extend our indicators of socioeconomic burden, by including relative group deprivation as an additional moderating variable. Thirdly, it should be noted that outgroup attitudes were measured with a single item per ethnic-cultural group in Study 1. To verify that the observed lack of significant results could not be attributed to validity issues associated with single-item measures (Diamantopoulos et al. 2012), we used multi-item scales for all outgroup attitudes variables in Study 2. Likewise, to ensure the validity of the full social trust pathway, we used the full rather than the abbreviated Study 1 measures of social trust and perceived group discrimination.

Study 2

Method

Participants

Study 2 was preregistered at https://aspredicted.org/3z7is.pdf. Prospective participants – i.e. students from a large university situated in South Africa's Western Cape province – were approached by the third author in one of his courses. In return for participation, students could opt to be entered into a cash prize draw. A total $N = 747$ ($n = 595$ white South Africans, 238 males/353 females/4 non-binary; age: $M = 24.03$, $SD = 8.06$, range = 18-66; $n = 152$ coloured South Africans, 38 males/107 females/4 non-binary; age: $M = 25.14$, $SD = 9.48$, range = 18-64) responded to our survey. Results of sensitivity analyses revealed that our study had 80% power to detect minimal slopes for our mediators of size $b = [0.07\text{-}0.15]$.

The majority of white South African participants reported a monthly family income of 25,601–102,400 ZAR (≅ 1397€/1488USD-5588€/5951USD; 14.3%< 25,601–102,400 ZAR < 15.5%; 'I don't know' = 11.1%) and rated their SES as above average ($M = 3.59$, $SD = 0.82$, 1 = lower class, 6 = elite), and their political beliefs as somewhat liberal ($M = 45.38$, $SD = 18.67$; 1 = far-left, 100 = far-right). Conversely, the majority of coloured South African participants reported a monthly family income of 12,801–51,200 ZAR (≅ 698€/743USD-1397€/1488USD; 27.0%< 12,801–51,200 ZAR < 25.0%; 'I don't know' = 5.9%) and rated their SES as below average ($M = 2.79$, $SD = 0.98$), and their political beliefs as somewhat liberal ($M = 46.36$, $SD = 17.66$).

Measures

Unless stated otherwise, all items were scored on 5-point Likert scales (1 = completely disagree, 5 = completely agree). We used the Study 1 scales to measure *ethnic-cultural procedural fairness* ($\alpha = .80$), *institutional trust* ($\alpha = .86$), and *perceived corruption* ($\alpha = .71$). To quantify *social trust,* we used the full, six-item Valenzuela, Park, and Kee (2009) measure ($\alpha = .72$). Outgroup attitudes were measured with 16 items (4 items per ethnic-cultural group), adapted from Van Assche et al. (2014): 'Please describe your feelings against the following groups [black/white/coloured/Indian South Africans], on a scale from 0 = Negative, to 5 = Positive … .', '0 = Cold, to 5 = Warm', '1 = Hostile, to 5 = Friendly", and '1 = Contemptuous, to 5 = Respectful' (αs = .88,.89,.85 and.85).[5] See Table 3 for an overview of means and standard deviations per ethnic-cultural group.

Table 3. Group Means and SDs for focal variables (white vs coloured South African subsample; Study 2).

Variable	*M* white *(SD)*	*M* coloured *(SD)*
Procedural fairness	2.60 *(0.66)*	2.42 *(0.60)*
Institutional trust	2.25 *(0.71)*	2.33 *(0.81)*
Social trust	2.83 *(0.57)*	2.69 *(0.48)*
Perceived corruption	3.64 *(0.56)*	3.61 *(0.65)*
Outgroup attitudes black SA	3.71 *(0.80)*	3.71 *(0.76)*
Outgroup attitudes white SA	–	3.47 *(0.85)*
Outgroup attitudes coloured SA	3.89 *(0.68)*	–
Outgroup attitudes Indian SA	3.90 *(0.69)*	3.81 *(0.67)*

Note: $N_{white} = 595$. $N_{coloured} = 152$. SA = South Africans.

Besides the socioeconomic indicators discussed in the 'Participants' section, we also implemented one item, adapted from Alexander and Ruderman (1987), to measure *relative group deprivation*: 'Would you say that over the last years people of your ethnic-cultural group have been … economically a lot worse off, worse off, the same, better off, a lot better off … than members of other ethnic-cultural groups living here?' (scaled 1 = *a lot worse off*, 5 = *a lot better off*; $M_{white} = 3.41$, $SD_{white} = 1.11$; $M_{coloured} = 2.80$, $SD_{coloured} = 0.93$). Furthermore, nine items were adapted from Williams et al. (1997) to measure *perceived group discrimination*, e.g. 'People of my ethnic group are treated with less respect than other people are' ($M_{white} = 2.67$, $SD_{white} = 0.71$; $M_{coloured} = 3.70$, $SD_{coloured} = 0.68$; $\alpha = .85$).

Data-analysis and results

Bivariate correlations

Table 4 represents the bivariate correlations between our focal variables. As expected (*Hypothesis 1a*), procedural fairness was significantly associated with perceived corruption (white subsample: $r = -.34$, $p < .001$; coloured subsample: $r = -.32$, $p < .001$). Furthermore, and in line with *Hypothesis 1b*, procedural fairness was also positively related to attitudes towards the three ethnic-cultural outgroups among the white subsample (all rs > .11, all ps < .006) and the coloured subsample (attitudes towards black South Africans: $r = .18$, $p = .023$; white South Africans: $r = .26$, $p = .001$) – except for attitudes towards Indian South Africans which proved to be positive but non-significant ($r = .12$, $p = .137$). Moreover, and in line with *Hypotheses 2a* and *2b*, procedural fairness was also positively related to institutional trust ($r = .41$, $p < .001$ and $r = .57$, $p < .001$ for white and coloured South African participants respectively) and social trust ($r = .30$, $p < .001$ and $r = .16$, $p = .042$, respectively).

Mediation analyses. We fitted a multi-group SEM to investigate *Hypotheses 2a* and *2b*. Measurement invariance analyses showed that our measurement model was equivalent across groups in terms of configural invariance (i.e. the factor structure was the same, meaning that all items loaded on the same respective latent factors in both groups) and in terms of factor loadings (i.e. the strength of each scale item-latent factor relationship was the same in both groups). Consequently, we fitted the same measurement model (with respect to these two properties) for both subsamples. However, given that we did not a priori assume that the relations between our focal constructs would be similar

Table 4. Bivariate correlations between the Study 2 focal variables (95% confidence intervals between square brackets) among white (below the diagonal) and coloured (above the diagonal) South Africans.

Variable	1	2	3	4	5	6	7
1. Procedural fairness		.57*** [.46,.67]	.16* [.01,.32]	-.32*** [-.46, –.17]	.18* [.03,.33]	.26** [.11,.40]	.12 [-.04,.28]
2. Institutional trust	.41*** [.34,.48]		.14 [-.02,.29]	-.62*** [-.71, –.52]	.18* [.02,.33]	.13 [-.03,.29]	.10 [-.06,.25]
3. Social trust	.30*** [.22,.37]	.42*** [.36,.49]		-.17* [-.32, –.01]	.34** [.19,.48]	.10 [-.06,.26]	.19* [.04,.34]
5. Perc. Corruption	-.34*** [-.41, –.27]	-.61*** [-.66, –.56]	-.37*** [-.44, –.30]		-.08 [-.24,.08]	-.05 [-.20,.11]	-.01 [-.16,.15]
6. Attitudes black SA	.25*** [.18,.33]	.22*** [.14,.29]	.32*** [.25,.39]	-.12** [-.20, –.04]		.57*** [.45,.67]	.77*** [.70,.83]
7. Attitudes white/coloured SA	.12** [.04,.19]	.11** [.03,.19]	.26*** [.19,.34]	-.01 [-.09,.07]	.76*** [.73,.79]		.57*** [.45,.67]
8. Attitudes Indian SA	.13** [.05,.21]	.13** [.05,.21]	.22*** [.14,.30]	.01 [-.07,.09]	.74*** [.70,.78]	.80*** [.76,.82]	

Note. $N = 747$. Perc. Corruption = perceived corruption. Attitudes white/coloured South Africans = represents attitudes towards coloured South Africans for white participants, and attitudes towards white South Africans for coloured participants. *: $p < .05$. **: $p < .01$. ***: $p < .001$.

across both groups, we allowed the parameters associated with these pathways to vary freely across groups. For the sake of clarity, the results of our SEM analyses are displayed for each subsample separately, i.e. in Figures 3A (white subsample) and 3B (coloured subsample).

In the white subsample, in line with *Hypothesis 2a*, institutional trust was shown to mediate the relationship between procedural fairness and perceived corruption ($b = -0.48$ [−0.641,−0.316], $SE = 0.083$, $p < .001$). Furthermore, in line with *Hypothesis 2b*, it was revealed that social trust mediated the relationship between procedural fairness and attitudes towards all three ethnic-cultural outgroups (all bs > 0.20, all ps < .001).

In the coloured subsample, in line with *Hypothesis 2a*, institutional trust was analogously shown to mediate the relationship between procedural fairness and perceived corruption ($b = -0.74$ [−1.107,−0.366], $SE = 0.189$, $p < .001$). Furthermore, the indirect effect of procedural fairness on attitudes towards black South Africans (via social trust) reached significance too ($b = 0.21$ [0.005,0.405], $SE = 0.102$, $p = .044$, both other bs < 0.12, ps > .084).

Moderated mediation analyses. To investigate *Hypotheses 3a* and *3b*, we fitted a series of additional SEM models. Specifically, we assessed the moderating influence of each variable of interest (i.e. monthly family income, SES, relative group deprivation, perceived group discrimination), by adding each of them separately to the above mediation model, as well as the relevant procedural fairness*hypothesized moderator interaction term. Note that, for the white South African subsample, we did not a priori anticipate moderation of procedural fairness effects by the hypothesized socioeconomic obstacles, because they did not fulfil the criterion of experiencing elevated levels of socioeconomic burden encapsulated in *Hypothesis 3a*. That is, in contrast to the other subsamples (black South Africans in Study 1 and coloured South Africans in Study 2), this group reported an above-average monthly family income and SES. Nonetheless, for the sake of completeness, we do report the output of the moderation analyses with respect to the socioeconomic indicators for this group. The abbreviated model output of all five models is depicted in Table 5.

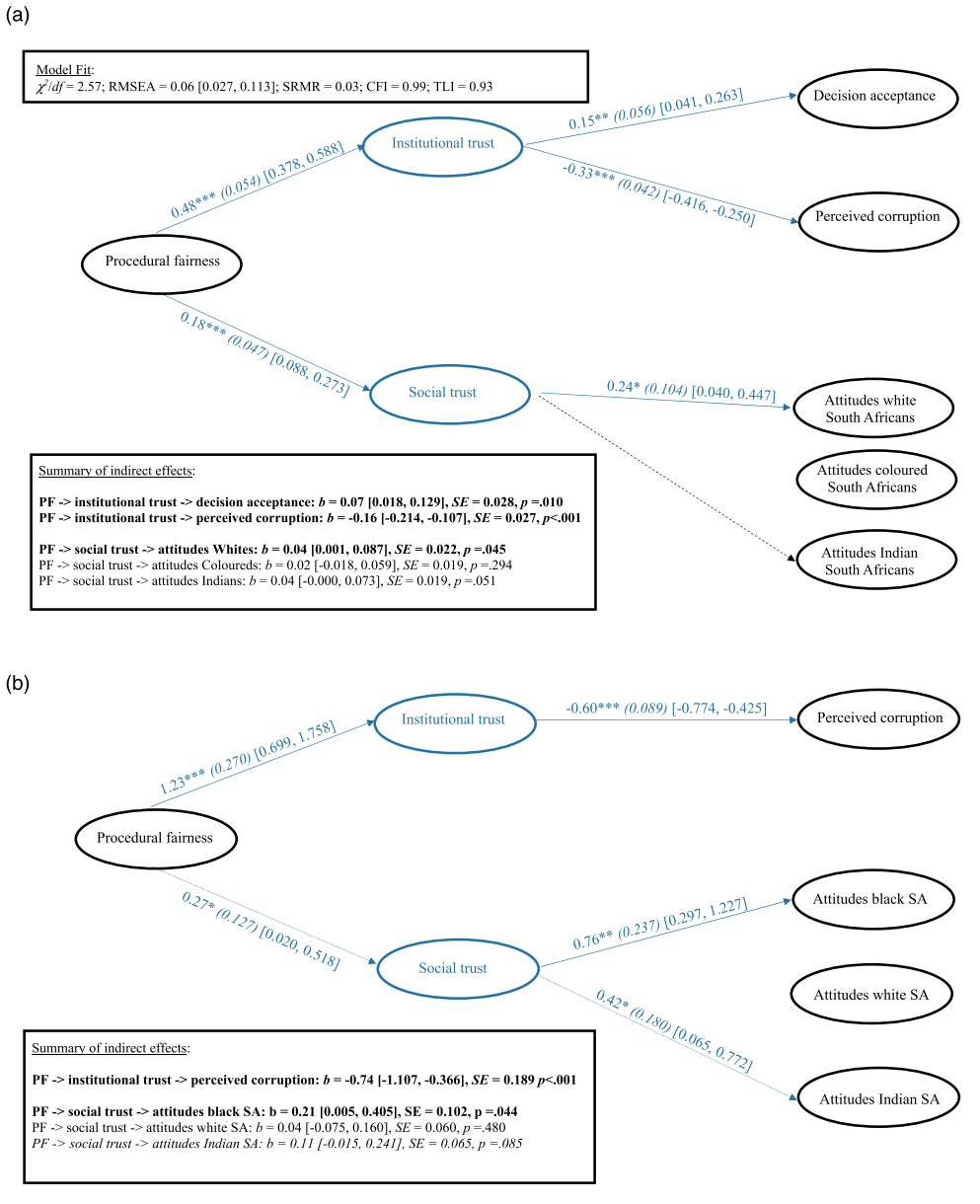

Figure 3. (A) Results of SEM multigroup mediation analyses (Study 2; white sample). Standard errors are given between parentheses, and 95% CIs between square brackets. Only significant mediation pathways are shown (printed in blue). ***: $p < .001$. (B) Results of SEM multigroup mediation analyses (Study 2; coloured sample). Standard errors are given between parentheses, and 95% CIs between square brackets. Only significant ($p < .05$, blue lines) and marginally significant ($p < .10$, dashed blue lines) mediation pathways are shown. *: $p < .05$. **: $p < .01$. ***: $p < .001$.

For the white subsample, it was shown that the three procedural fairness*perceived discrimination interaction terms for the outgroup attitudes outcome variables reached significance (all bs > |0.09|, all ps < .043). To break down these interactions, we performed follow-up simple slopes analyses.

Table 5. Output of moderated mediation models (Study 2).

Model	Sample	*b (SE)*	95% CI	z	*p*
Model 1: M = income					
DV = Perc. Corruption	White	−0.00 *(0.008)*	[−0.015, 0.014]	−0.06	.950
	Coloured	0.05 *(0.040)*	[−0.032, 0.126]	1.17	.243
Model 2: M = SES					
DV = Perc. Corruption	White	−0.03 *(0.027)*	[−0.078, 0.027]	−0.96	.340
	Coloured	0.31 *(0.255)*	[−0.187, 0.811]	1.23	.220
Model 3: M = Relative group deprivation					
DV = Perc. Corruption	White	0.01 *(0.065)*	[−0.118, 0.137]	0.15	.884
	Coloured	0.07 *(0.296)*	[−0.511, 0.651]	0.24	.813
Model 4: M = Perc. discr.					
DV = Attitudes black SA	**White**	**−0.15 *(0.069)***	**[−0.283, – 0.011]**	**−2.12**	**.034**
	coloured	*−0.22 (0.116)*	*[−0.443, 0.013]*	*−1.85*	*.065*
DV = Attitudes white SA	Coloured	−0.05 *(0.066)*	[−0.182, 0.075]	−0.81	.417
DV = Attitudes coloured SA	**white**	**−0.11 *(0.052)***	**[−0.214, – 0.011]**	**−2.17**	**.030**
DV = Attitudes Indian SA	white	**−0.11 (0.050)**	**[−0.203, – 0.009]**	**−2.14**	**.033**
	coloured	−0.11 (0.068)	[−0.243, 0.022]	−1.64	.102

Note: $N = 747$. Perc. discr. = perceived discrimination. Each row represents coefficient (+ *SE*, 95% CI, *z* and *p*-value) associated with Moderator (M)*procedural fairness moderated mediation effect on respective outcome variable (DV). For example, the coefficient on line 1 (M = income, DV = Perc. Corruption) reflects the income*procedural fairness moderated mediation effect (via institutional trust) on perceived corruption among the white subsample. Bolded lines indicate significant moderated mediation effects $p < .05$, italicized lines indicate moderated mediation effects $p < .10$.

The results revealed that, at one *SD* below the mean of perceived discrimination, there was a strong and significant positive association between procedural fairness and attitudes towards black South Africans (i.e. a strong positive mediation effect via social trust; $b = 0.20$ [0.069,0.321], $SE = 0.064$, $p = .002$), between procedural fairness and attitudes towards coloured South Africans ($b = 0.15$ [0.051,0.247], $SE = 0.050$, $p = .003$), and between procedural fairness and attitudes towards Indian South Africans ($b = 0.14$ [0.047,0.234], $SE = 0.048$, $p = .003$). At one *SD* above the mean, however, these associations were not significant anymore (all bs < |0.05|, all ps > .695).

Exploratory analyses. Although the findings of Study 1 and 2 provided converging evidence, it should also be acknowledged that we observed substantial variation in terms of the influence of the moderating variables. In particular, our results revealed that procedural fairness effects on institutional attitudes were conditional on SES and income, but only in the black South African sample (*intergroup difference I*). Relatedly, procedural fairness effects on intergroup attitudes were found to be conditional on perceived group discrimination, but only in the white South African sample (*intergroup difference II*). To gain a more fine-grained understanding of these notable between-group differences, we decided to collapse the Study 1 and 2 samples and ran two exploratory analyses. First, we calculated mean differences in our focal variables and covariates and gauged whether these could help explain the above cross-sample inconsistencies. Secondly, we fitted a multi-group SEM model and estimated between-group differences in the magnitude of all the relevant pathways. Doing so additionally allowed us to assess whether intergroup differences in the relative strength of the observed associations could help explain our divergent findings.

The results of these exploratory analyses are reported in Table 6 and Figure 4. Table 6 displays the group-specific means and *SD*s for the focal variables, and Figure 4 depicts a schematic overview of intergroup differences in the strength of the pathways in our

Table 6. Means and SDs per group for focal variables (black vs white vs coloured South African subsample), as well as *F*-values and Cohen's ds for tests of significance of between-group differences.

Variable	*M* black *(SD)*	*M* white *(SD)*	*M* coloured *(SD)*	*F*	*d*(B-W)	*d*(B-C)	*d*(W-C)
EC procedural fairness	3.20_A *(0.87)*	2.60_B *(0.66)*	2.42_C *(0.60)*	**77.80*** **	0.82***	0.99***	0.28*
Institutional trust	2.31_A *(0.95)*	2.25_A *(0.71)*	2.33_A *(0.81)*	1.01	0.08	0.02	0.11
Social trust	2.92_A *(0.76)*	3.24_B *(0.68)*	3.08_C *(0.60)*	**20.10*** **	0.45***	0.23*	0.23*
Perceived corruption	4.13_A *(0.74)*	3.64_B *(0.56)*	3.61_B *(0.65)*	**59.20*** **	0.79***	0.74***	0.06
Outgroup attitudes black	4.36_A *(1.04)*	3.45_B *(0.95)*	3.51_B *(0.91)*	**91.20*** **	0.94***	0.85***	0.07
Outgroup attitudes white	3.24_A *(1.44)*	3.80_B *(0.88)*	3.26_A *(0.98)*	**33.50*** **	0.50***	0.02	0.60***
			3.72_B *(0.85)*	**4.46***	0.23***	0.22*	0.04
Outgroup attitudes colour	3.45_A *(1.40)*	3.69_B *(0.81)*	3.66_B *(0.79)*	**8.40*** **	0.33***	0.23*	0.08
Outgroup attitudes Indian	3.38_A *(1.41)*	3.72_B *(0.79)*					
Income	4.79_A *(2.38)*	9.47_B *(1.41)*	8.08_C *(2.29)*	**407.00*** **	2.65***	1.41***	0.86***
SES	1.95_A *(1.00)*	4.11_B *(0.97)*	3.11_C *(1.11)*	**489.00*** **	2.18***	1.11***	1.00***
Perceived discrimination	2.79_A *(1.02)*	2.85_A *(0.80)*	3.63_B *(0.71)*	**77.30*** **	0.03	0.88***	1.00***

Note: $N_{black} = 326$. $N_{white} = 595$. $N_{coloured} = 152$. EC procedural fairness = ethnic-cultural procedural fairness. Means with different subscripts in the same row differ significantly from one another ($p < .05$). Pairwise comparisons were Bonferroni-corrected to adjust for multiple comparisons. SES scores were rescaled in the black sample to allow for comparison across groups. *: $p < .05$. ***: $p < .001$.

mediation model. As can be derived from Table 6, our subsamples differed significantly for most variables, with the exception of institutional trust ($F(2, 374) = 1.01$).

Relevant to *intergroup difference I* (i.e. procedural fairness effects on institutional attitudes conditional on SES and income in the black South African subsample), results revealed that black participants reported lower income levels (both ds > 1.40) and perceived a lower personal SES than the other two groups (both ds > 0.99) – a finding which aligns with our moderation expectation, and thus with *Hypothesis 3a*.

Conversely, white South African participants did not differ significantly from their black (African) counterparts in terms of perceived group discrimination ($d = 0.03$), and they even reported significantly less group discrimination than coloured South African participants ($d = 1.00$). Moreover, unlike the institutional trust pathway (all Δs < 0.05, all ps > .180), the strength of the procedural fairness → social trust pathway differed significantly between groups, with white South African participants showing a weaker association between these variables compared to black (Δ = 0.38, $p < .001$) and coloured South African participants (Δ = 0.15, $p < .001$). Taken together, these findings indicate that *intergroup difference II* (i.e. procedural fairness effects on intergroup attitudes conditional on perceived discrimination in the white South African subsample) could unlikely be attributed to elevated levels of perceived group discrimination among white South African participants (compared to black and coloured South African participants).

Discussion

The Study 2 results mainly replicated those of Study 1, but there were also some notable differences. Firstly, it was found that the direct effects of ethnic-cultural procedural fairness were analogous to Study 1. By contrast, whereas the indirect effects of ethnic-cultural procedural fairness mainly mirrored those of Study 1 black South African sample

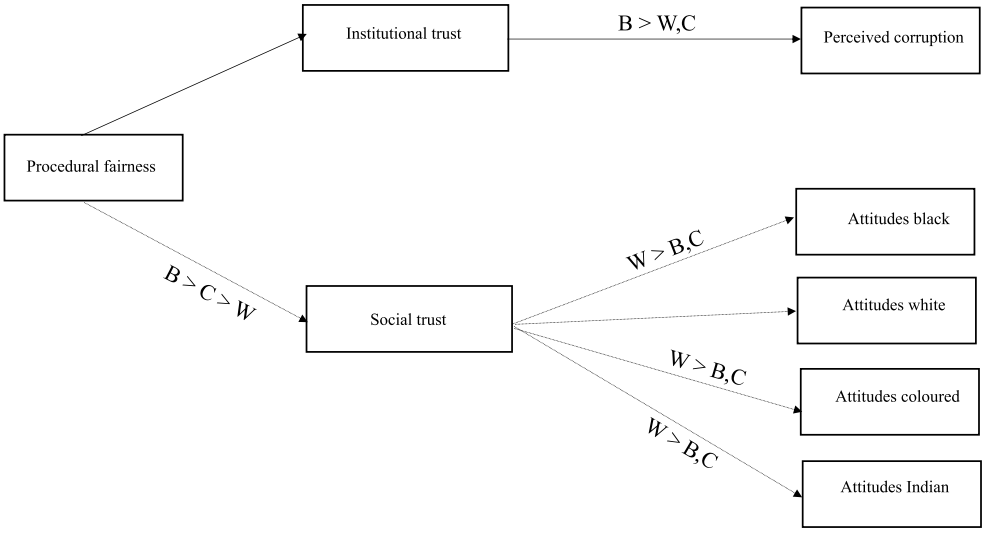

Figure 4. Schematic overview of results of SEM multigroup mediation analyses on collapsed sample. B = black subsample. W = white subsample. C = coloured subsample. Pathway captions indicate between-group differences in the strength of the respective pathway. For example, the caption 'C > B,W' next to the procedural fairness – > institutional trust pathway indicates that this relationship is stronger among the coloured subsample, compared to the black and white samples (and black and white sample do not differ in this respect). The magnitude of pathways without captions does not differ between groups.

among white South African participants, in the coloured South African sample, we only replicated the indirect effect on perceived corruption (via institutional trust) and the indirect effect on attitudes towards black South Africans (via social trust).

Secondly, it should be noted that no evidence was obtained for any moderation effects with respect to the institutional trust pathway. Conversely, significant procedural fairness*perceived discrimination interactions were obtained for the social trust pathway. That is, we found that procedural fairness effects on outgroup attitudes were strong and positive at low levels of perceived discrimination. At high levels, however, these effects diminished. Yet, our exploratory analyses also showed that these findings among white South African participants cannot be explained in terms of disproportionally high levels of discriminatory burden.

General discussion

In the present research, we investigated the relationship between ethnic-cultural procedural fairness perceptions and institutional and intergroup attitudes in South Africa. Based on prior work in WEIRD settings (Dierckx et al. 2020, 2021; Valcke et al. 2020a, 2020b), we hypothesized that perceived procedurally fair treatment of one's ethnic-cultural group would be associated with enhanced acceptance of societal actors' decisions and lower perceived corruption on the one hand, and positive intergroup attitudes on the other hand. We further theorized that these relationships would be mediated by institutional and social trust respectively. The results of two studies provided

converging evidence for our predictions. In Study 1, black South Africans' ethnic-cultural procedural fairness perceptions were indeed shown to be associated with positive institutional attitudes and positive intergroup attitudes (i.e. towards white South Africans; in support of *Hypothesis 1*). Study 2 mainly replicated these direct effects among coloured and white South Africans. Furthermore, in support of *Hypothesis 2a*, it was shown that institutional trust mediated the relationship between ethnic-cultural procedural fairness and institutional attitudes among all three samples. Relatedly, and partially corroborating *Hypothesis2b*, social trust was found to mediate the relationship between ethnic-cultural procedural fairness and intergroup attitudes among black (African) and white South African participants – but not (consistently) among the coloured South African subsample. Importantly, across both studies, we obtained some evidence for moderation. That is, among black South African participants in Study 1, we found that the relationship between ethnic-cultural procedural fairness and institutional attitudes was significantly weaker at lower levels of income and perceived SES (cf. *Hypothesis 3a*). In a similar vein, among our white South African participants in Study 2, the relationship between ethnic-cultural procedural fairness and intergroup attitudes was reduced to non-significance at higher levels of perceived discrimination (cf. *Hypothesis 3b*).

Theoretical contributions

The present research contributes to the growing body of literature on ethnic-cultural procedural fairness in various ways. Firstly, and most importantly, we were able to replicate in the South African context the previously reported associations between ethnic-cultural procedural fairness on the one hand and institutional and intergroup attitudes on the other (Dierckx, Valcke, and Van Hiel 2020b, 2021). To the best of our knowledge, the present contribution is the first to investigate these relationships in a non-WEIRD setting. Our work aligns with recent calls to recognize the full extent of human diversity and broaden the scholarly scope in the field of psychological research towards what drives human behaviour among non-WEIRD populations (e.g. Heinrich, Heine, and Norenzayan 2010; Tindle 2021). As we outlined in the Introduction, such enhanced scholarly attention to non-WEIRD contexts is particularly important for the study of procedural fairness, because non-WEIRD samples are strongly underrepresented in this body of work. Moreover, there are substantial challenges for procedural fairness outside the WEIRD context. For example, economic inequalities are endemic in Sub-Saharan Africa (UNESCO 2016), and citizens of many African nations suffer from extremely low levels of SES (Statista 2022). Consequently, political and institutional trust are notoriously low on the African continent (Gyimah-Boadi and Logan 2020). Nevertheless, despite such WEIRD-specific barriers, we observed that ethnic-cultural procedural fairness perceptions were still strongly and significantly related to an increased willingness to accept societal actors' decisions and lower perceptions of governmental corruption in South Africa.

In a similar vein, it was shown that ethnic-cultural procedural fairness was associated with more positive intergroup attitudes. The latter finding constitutes both a non-WEIRD replication and extension of Dierckx and colleagues' (2021) results. Specifically, these authors observed a liaison between ethnic-cultural procedural fairness and positive attitudes towards the White majority among Black Americans. They interpreted this finding in terms of the 'perceived whiteness' of the US institutions: People think of the

US institutional landscape as dominated by White majority members, and fair institutional treatment therefore inevitably 'trickles down' and ameliorates attitudes towards the people these institutions are believed to represent. Analogous to these scholars' findings, we observed that white and coloured South Africans' ethnic-cultural procedural fairness perceptions were positively related to enhanced attitudes towards the black South African majority (which has dominated the South African political institutions for almost 30 years). Moreover, our results, in fact, revealed positive relations between ethnic-cultural procedural fairness and attitudes towards (almost) all societal groups included in our survey – a finding which 'perceived institutional blackness' cannot account for. A tentative explanation for this intriguing observation can be found in the grou*p*-value model of procedural fairness by Lind and Tyler (1988), and the collective model of procedural fairness by Valcke et al. (2020a, 2020b). Both these theoretical frameworks assert that fair treatment by authorities enhances the bond between the individual and the group represented by the authority. In our studies, we focused on ethnic-cultural decision-making by societal institutions, and obviously the group they represent is society itself. As such, the observed enhanced attitudes towards other societal groups could thus also be interpreted as a natural side-effect of fairness recipients' enhanced bond with society at large. Specifically, the more those groups are considered to share a superordinate common identity of South African, the more they are positively valued.

Secondly, the present contribution also elucidates the psychological mechanisms underlying the reported associations. Specifically, we found that institutional and social trust, respectively, mediated ethnic-cultural procedural fairness effects on institutional and intergroup attitudes. These findings align well with the prominent uncertainty management model by Van den Bos, Lind, and Wilke (2001), which contends that people search for fairness information to reduce the threat of uncertainty emanating from their relations with authorities and their position within groups. Clues of fair procedural treatment are then used as a heuristic to assess the trustworthiness of the decision-maker and, by extension, the group they represent (Van den Bos, Lind, and Wilke 2001). The present findings can be considered a direct illustration of the process of uncertainty management described above: Fair ethnic-cultural procedures were shown to shape not only fairness recipients' trust in the institutions that implement them, but even trust in other people in general.

Thirdly, our research identified a few noteworthy caveats with respect to the non-WEIRD workings of ethnic-cultural procedural fairness. A first remarkable observation is that, among black South Africans, socioeconomic disadvantage (tested with three indicators) was a significant moderator of ethnic-cultural procedural fairness. That is, at low (compared to high levels) of income and perceived socioeconomic status, the effects of procedural fairness on institutional trust and attitudes were significantly smaller. Given that, compared to the other two groups, black South Africans reported the lowest levels of income and SES, this finding thus suggests that socioeconomic disadvantage (but not numerical minority status) can condition procedural fairness effects on institutional attitudes. Nonetheless, it should be acknowledged that, even among the most socioeconomically burdened participants, procedural fairness was still positively – *albeit* to a lesser extent – related to a more positive outlook on the South African authorities. In this regard, it must be acknowledged that in South Africa both procedural

fairness and poor socioeconomic outcomes are delivered by black majority rule (unlike in the US, for example, where poor outcomes for Black people are delivered by White majority rule). In other words, there thus seems to be a conflict among low SES black South Africans between the outcomes they receive and their membership of the group that delivers them ('people like us have inflicted and/or are perpetuating this bad situation'). Hence, we cannot exclude the possibility that socioeconomically burdened black South Africans resolve this cognitive dissonance by responding (weakly) positively to institutional procedural fairness. Of course, the latter explanation is tentative, and cannot be inferred from the present data.

Importantly, it should be acknowledged that our results are in stark contrast with the bulk of WEIRD fairness literature, which has consistently revealed that fair procedures have the most powerful effects when 'distributive justice' – i.e. justice in terms of outcomes – is low (Brockner and Wiesenfeld 2005). In other words, whereas most research has shown that procedural fairness can mitigate the consequences of an unfavourable outcome (McFarlin and Sweeney 1992), the present results imply that, in non-WEIRD settings, disproportionally unfavourable outcomes *curb* the effects of fair ethnic-cultural procedures – with the exception of high crime concerns. Possibly such a pattern of results emerges because the 'distributive fairness perceptions' are just too outspoken, residing beyond a threshold above which people care much less for procedural fairness.

Relatedly, our results revealed that perceived group discrimination was a significant moderator of ethnic-cultural procedural fairness among white South Africans. That is, at low (compared to high) levels of perceived group discrimination, the effects of procedural fairness on social trust and intergroup attitudes were reduced to non-significance. At first sight, this observation seems to indicate that numerical minority status (but not socioeconomic disadvantage) can condition procedural fairness effects on intergroup attitudes. However, in contrast to the findings described above, white South Africans did not report the highest levels of perceived group discrimination – coloured South Africans did. Consequently, the latter finding seems at odds with our a priori explanation of this procedural fairness boundary condition in terms of a 'ceiling effect' of perceiving discrimination. Why, then, is the relationship between procedural fairness and social trust – and hence, intergroup attitudes – broken at elevated levels of perceived group discrimination *among white South African participants only*? A potential explanation for our observations may lie in South Africa's history of intergroup power and dominance relations. Black South Africans have been a powerless societal group for most of the twentieth century, only to be enfranchised in the early 1990s. Moreover, during the Apartheid era, discrimination of black South Africans was institutionalized, and to this day, the collective memory of the black South African population remains imbued with the widespread ostracism and exclusion that they have faced as a group (Bornman 2011). In a similar vein, coloured South Africans have continuously been suffering a marginalized and disadvantaged societal status (Swart et al. 2011) – which reflected in our study in disproportionally high levels of reported group discrimination. We can imagine that these historically high levels of exposure to ostracism may have led black and coloured South Africans to cope with ingroup discrimination by normalizing and/or rationalizing it as a 'part of daily life' – thereby curbing its fairness-attenuating influence. Conversely, white South Africans dominated the societal institutional

landscape until the fall of the Apartheid regime, and they have ever since remained in control of a substantial part of the country's resources and power positions (African Business 2017). It stands to reason that this group's historical lack of discrimination experiences, perhaps combined with feelings of being a numerical minority group 'at the losing end' in post-Apartheid South Africa, may help explain why higher levels of perceived group discrimination more strongly affect white South Africans and why they curtail procedural fairness effects among this group specifically.

Limitations and directions for future research

The present contribution has a few noteworthy limitations. First, we acknowledge that our coloured South African sample size was rather modest (i.e. $N = 152$). In relation to this, it should be noted, for example, that some effects approached statistical significance in this population (e.g. the social trust mediation effect on attitudes towards Indian people: $p = .085$). Because of our modest sample size, it is difficult to assess whether these non-significant results should be attributed to a lack of statistical power, rather than to the true absence of substantial effects at the population level. Sufficiently powered future studies could clarify this issue.

Secondly, we caution against an overly optimistic interpretation of the observed significant – *albeit* reduced – procedural fairness effects at lower levels of income and SES. At first sight, these results are encouraging, as they seemingly demonstrate the usefulness of ethnic-cultural procedural fairness in dealing with populations that are faced with socioeconomic challenges. However, we must highlight that income and SES were still on the high end of the lower range in our samples. Relatedly, our samples consisted exclusively of university students. Although most current-day black and coloured South African students have spent their entire youths in very underprivileged (low SES) neighbourhoods and have thus most likely been exposed to very harsh and poor socioeconomic conditions before entering higher education, they can nonetheless be considered a more privileged group because their educational background offers them the prospect of a better life – in stark contrast to most of their peers. Bearing this in mind, future research could combine university with community samples to provide a more comprehensive test of ethnic-cultural procedural fairness boundary effects.

Third, the operationalization of our central procedural fairness variable warrants attention. Specifically, it should be noted that the concept of ethnic-cultural procedural fairness was introduced to our participants by means of a short description and an example of such an issue.[6] This particular example given in the item preamble may however have prompted or primed respondents in various ways that cannot be inferred from the present data, and it therefore remains to be shown that similar results would have been obtained using different concrete, real-life examples of procedurally fair treatment of specific ethnic-cultural groups.

Fourth, the present investigation relied on two cross-sectional datasets, and the causal pathways envisaged in our models should therefore be interpreted with a degree of caution. For example, prior research has yielded evidence that (perceived) corruption can also be a precursor – rather than a consequence – of institutional trust (e.g. Beesley and Hawkins 2022; Ciziceno and Travaglino 2019). Future studies should employ longitudinal designs to identify reciprocal corruption-trust pathways.

Concluding remarks

The present contribution examined the workings of ethnic-cultural procedural fairness outside the pervasively studied WEIRD context. Among three ethnic-cultural groups in South Africa, varying substantially in terms of socioeconomic (dis)advantage, we consistently found that perceived procedurally fair treatment of one's ethnic-cultural group by societal actors is associated with positive institutional and intergroup attitudes. Most importantly, the results also highlighted economic disadvantage and perceptions of discrimination towards one's ethnic-cultural group as potential hurdles for procedurally fair treatment. More specifically, we found evidence that (1) among socioeconomically disadvantaged ethnic-cultural groups (i.e. black South Africans) institutional procedural fairness effects are weaker and (2) among numerical ethnic-cultural minority groups (i.e. white South Africans) intergroup procedural fairness effects dissipate. Taken together, our results provide some well-needed preliminary evidence for the generalization of and obstacles for ethnic-cultural procedural fairness effects in WEIRD countries. By doing so, the present contribution additionally highlights the need for the South African authorities to implement ethic-cultural procedural fairness, to bolster the future development of their 'rainbow nation'.

Notes

1. i.e., Western, Educated, Industrialized, Rich and Democratic.
2. The labels black (i.e., of African descent), white (i.e., of European descent), coloured (i.e., of mixed [African/European] descent), and Indian are used by the Employment Equity Act (1998) and other relevant legislation for the official categorization of ethnic-cultural groups in South Africa.
3. Note that, in line with our preregistration, we initially sampled students pertaining to *four* ethnic-cultural groups (i.e., black, white, Indian, and coloured South African students). However, due to small sample sizes for the latter three groups (i.e., *N*s ranging from 6-24), we decided to exclude these participants and focus on the black (African) subsample only in all main analyses.
4. As a point of reference, the average monthly family income in South Africa is estimated to be 23,502 ZAR (1,327€/1,380USD, www.businesstech.co.za; Businesstech 2022), a number which was reported by only 0.6% of our sample.
5. Please note that ingroup attitudes were also measured (i.e., attitudes towards white South Africans in the white sample, and attitudes towards coloured South Africans in the coloured sample) and included in the (moderated) mediation models. Because these were not the primary scope of the current research however, we do not report any results related to these variables below.
6. Note that this has become the standard or 'default' way to measure ethnic-cultural procedural fairness (see, for example, Dierckx et al. 2020a, 2020b, 2021, 2023; Valcke et al. 2020a, 2020b).

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