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Priming Race: Does the Mind Inhibit Categorization by Race at Encoding or Recall?

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Abstract

Recent research shows that racial categorization can be reduced by contexts in which race does not predict how people interact and get along—a manipulation with little to no effect on sex and age. This suggests that our minds attend to race as an implicit cue to how people are likely to get along. However, the underlying mechanism of how these contexts reduce race is not yet known. Is race not encoded? Or, is race encoded, but then inhibited? The present study arbitrates between these possibilities. Results demonstrate that the reduction in racial categorization is happening at recall. Participants are still encoding targets' race, but this information is locked away or inhibited. This clarifies how the mind switches away from previously relevant, but now irrelevant, social cues: it does not immediately abandon them, rather, it encodes them but inhibits their use.

Keywords

race, coalitional psychology, evolutionary psychology, social categorization

The Psychology of Coalitions and Alliances

From an evolutionary perspective, the ability to perceive and engage with social groups is made possible by cognitive adaptations designed around coalitional interactions over evolutionary time (e.g., Byrne & Whiten, 1988; Pietraszewski, 2013). Coalitions are sets of three or more individuals who cooperate over time, often in competition with other such sets; are central to the daily lives of humans and other primates; and are powerful determinants of important and fitness-relevant outcomes (e.g., Manson & Wrangham, 1991; von Rueden, Gurven, & Kaplan, 2008).

One function of coalitional adaptations is to predict patterns of social interaction before they occur (Harcourt, 1988; Pietraszewski & German, 2013). This requires monitoring the world for coordination, cooperation, and competition behaviors and attending to any cues in the environment—such as location, dress, behavior, and so on—that happen to correlate with these behaviors and therefore help predict them ahead of time. To generate the right inferences at the right time, coalitional adaptations must also retrieve and activate those cues that are most likely to be relevant for understanding and predicting behavior within a particular situation (Pietraszewski, Cosmides, & Tooby, 2014).

Evidence for each function has been found: People are spontaneously and implicitly categorized by patterns of coordination and cooperation, and when external cues (such as clothing differences or badges) happen to correlate with these patterns, they also become a strong basis for categorization (Pietraszewski et al., 2014; Pietraszewski, Curry, Petersen, Cosmides, & Tooby, 2015). The activation of coalitional categories (which are the mental representations of the cues that help predict patterns of coordination, cooperation, and competition) is also sensitive to manipulations of contextual relevance, such that when experimental stimuli cue the relevance of a particular coalition category, categorization by that category is upregulated and the nonrelevant coalition category downregulated (Pietraszewski et al., 2014).

Racial Categorization

Evidence suggests that the mind implicitly treats the social category [race] as an instance of a coalitional category and that the spontaneous and apparently automatic categorization of others by their race is a reducible by-product of coalition detection, rather than being an unalterable product of cognitive adaptations for attending to race, as once thought (Cosmides, Tooby, & Kurzban, 2003; Hamilton, Stroessner, & Driscoll, 1994; Kurzban, Tooby, & Cosmides, 2001; Messick & Mackie, 1989; Pietraszewski et al., 2014).[1]

Experimental evidence shows that people are spontaneously and implicitly categorized by their race when no alternative coalitional information is provided, and that racial categorization does not change in response to manipulations that do not convey coalitional information. These include priming race,

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priming a dimension that crosscuts race, manipulating contextual relevance (i.e., showing people discussing race relations or some other topic), and explicit instructions to either attend or not attend to race (e.g., Bennett & Sani, 2003; Hewstone, Hantzi, & Johnson, 1991; Stangor, Lynch, Duan, & Glass, 1992; Susskind, 2007; Taylor, Fiske, Etcoff, & Ruderman, 1978).

However, when an experimental context *does* contain coalitional information, such that an alternative coalition dimension is presented and race no longer correlates who is allied with whom, spontaneous and implicit categorization by race is reduced, both in cooperative contexts (Pietraszewski et al., 2014; Pietraszewski & Schwartz, 2014b) and, most recently, in political contexts (Pietraszewski et al., 2015). Moreover, other chronically activated categories, such as sex, age, or accent, are not effected by these very same manipulations. Racial categorization is also upregulated and downregulated by the same contextual relevance manipulations that upregulate and downregulate other coalitional categories (Pietraszewski et al., 2014; see also Cabecinhas & Amâncio, 1999; Maddox & Chase, 2004; Pietraszewski & Schwartz, 2014a, 2014b; van Bavel & Cunningham, 2009; Weisman, Johnson, & Shutts, 2014; Wilson, See, Bernstein, Hugenberg, & Chartier, 2014 for complementary evidence).

The coalitional account of racial categorization is an account of both the *social context* and the *information processing* that leads to racial representation (see Tajfel, 1981): In cultures where physical features become associated with patterns of association, cooperation, and competition through historical and sociological processes (Sidanius & Pratto, 1999; Telles, 2004), coalitional adaptations will encode and store these physical features as probabilistic cues of social interaction, boost their experienced salience; cause them to be encoded, stored, and retrieved more readily; and become the basis of person perception and categorization (Cosmides et al., 2003; Pietraszewski et al., 2014).

Consistent with this, accumulating evidence shows that (1) racial perception, categorization, and information storage processes all respond to social rather than to biological or visual interventions and (2) biological and visible properties are not sufficient on their own to produce racial perceptions without additional social and linguistic inputs (e.g., Hirschfeld, 1996; Peery & Bodenhausen, 2008; Sack, 2005; Sidanius & Pratto, 1999; Stangor et al., 1992; van Bavel & Cunningham, 2009; Wilson et al., 2014).[2] These results also converge with sociological, historical, and genetic analyses of race—that perceptions of race are grounded in social experiences not in biological reality or visual salience (e.g., Graves, 2001; Tishkoff & Kidd, 2004).

Current Studies

Although prior studies show that racial categorization is reduced, the mechanism of the reduction is not presently known. There are two possible ways that race could be reduced by these manipulations: (1) at the point of encoding, such that when participants see that race is not predictive of coalitional patterns, racial category information is not taken in as strongly or (2) at the point of recall, such that participants still encode targets' race, but this category information is inhibited at the point of recall (i.e., when the dependent measure is being collected, which in the real world would map onto making inferences and generating expectations). Although the proposal that racial categorization is a by-product of coalitional categorization does not in itself directly speak to this issue, knowing which of these two is happening is important because it reveals how the mind handles switching away from a previously relevant, but now irrelevant, social cue: Does it ignore it completely or does it attend to it but then inhibit it?

To test between these two possibilities—that the change in race is happening either at encoding or at recall—the current study reverses the coalitional manipulation after the encoding phase but before the collection of the dependent measure. If the coalitional manipulation had caused participants to not encode race in the first place, then this additional information cannot not have any effect, because there is no racial category information in participants' minds to re-prime and thus raise. However, if the coalitional manipulation causes participants to encode but inhibit race, then this information should have a reversal effect, raising racial categorization back up to near baseline levels (i.e., to levels of categorization when no crosscutting alliance information is provided).

Method

Categorization was measured using the Who Said What? memory confusion paradigm, which unobtrusively measures whether a shared dimension is implicitly noticed and remembered by looking at patterns of memory errors. The paradigm features three phases: (1) an initial presentation phase, during which speakers are shown making statements, (2) a 1-min distractor task, and (3) a recall phase in which all of the speakers seen previously are presented in a randomized array and participants try to assign each statement to the correct speaker (see Pietraszewski et al., 2014, for details).

Three between-subject conditions were compared: a *noncoalitional baseline*, a *nonprime* coalitional condition, and a *race prime* coalitional condition.[3] In the *noncoalitional baseline*, different race targets were presented in a neutral, noncoalitional context. This provided a measurement of racial categorization for the particular stimuli used (photos, statements lengths, etc.) in the absence of any coalitional information. The *nonprime* and *race prime* coalitional conditions both featured the different race targets within a coalitional context, such that race was crossed with membership in one of two different charity groups, and group membership was marked with shared shirt colors (this manipulation reduces race categorization and has no effect on sex categorization; Pietraszewski et al., 2014). The presentation and recall phases of both of the conditions were identical. The only difference was the 1-min distractor task. In the *nonprime* coalitional condition, the distractor task was neutral. Participants were shown an outline map of the United States and asked to think of as many state capitals as possible (this was also the distractor task in the noncoalitional baseline). In the race prime coalitional condition, the distractor task was changed to prime the coalitional relevance of race. Participants were shown a collection of racially charged photos and instructed to think of "all the racial conflict and inequality you have been exposed to or are aware of"[4] (see Figure 1).

This manipulation of the distractor task will diagnose how race is being reduced. If categorization by race remains low after being primed in the distractor task, race is being reduced at encoding. If categorization by race increases back to baseline levels, however, race is being reduced at recall.

Methodological details of the *noncoalitional baseline* and *nonprime* conditions can be found in Pietraszewski et al., 2014 (studies 1 and 5). The methodological details of the *race prime* condition are described below.

Participants

Sixty-five undergraduate students participated in the race prime conditions (32 females, 33 males; mean age = 20.4 years, SD = 1.49), either for research credit in introductory psychology, or anthropology classes, or for pay (US$12).

Design

There were two between-subject *race prime* conditions. Male participants viewed all-male targets and female participants all-female targets. Race was crossed with charity group membership, which was marked by shirt color, and the statements presented during the recall phase contained no coalition diagnostic information (to prevent strategic guessing when shirt colors are present[5]). These conditions were chosen because they were expected to produce some of the lowest levels of categorization by race and because the two hypotheses being tested predict either no change or an increase in categorization by race. Therefore, starting with low levels of racial categorization provides the clearest and most sensitive test between the two. Sample sizes were the same as in Pietraszewski, Cosmides, and Tooby (2014). No pilot testing was conducted.

Material and Procedure

Materials and procedure were identical to the *coalitions-irrelevant*[6] conditions of Pietraszewski et al. (2014, study 5). Race was crossed with charity group membership, and group membership was marked by shirt color (see Figure 1).

Results

The results of the *noncoalitional baseline*, *nonprime*, and *race prime* conditions are first reported, then the race prime results are compared with the *baseline* and *nonprime* results.[7] The critical question is whether the *race prime* result will be more similar to the *nonprime* result or to the *noncoalitional baseline* result. Categorization is quantified by the degree to which within-category errors exceed between category errors (see Pietraszewski et al., 2014 for details).

What is the level of categorization by race in the noncoalitional baseline conditions? Strong categorization by race occurred. Male participants viewing male targets in the noncoalitional baseline condition made substantially more within-race errors (M = 6.39, SD = 1.87) than between-race errors, M = 3.91, SD = 1.35, $t(31) = 5.13$, $p < .001$, $r = .68$. Female participants viewing female targets in the noncoalitional baseline condition also made substantially more within-race errors (M = 5.19, SD = 1.81) than between-race errors, M = 3.75, SD = 1.59, $t(35) = 3.35$, $p = .002$, $r = .49$.

What is the level of categorization by race in the nonprimed coalition conditions? Categorization by race was substantially reduced by the coalitional manipulation. Male participants viewing male targets did not significantly categorize targets by their race (within-race errors: M = 5.65, SD = 1.42; between-race errors: M = 5.08, SD = 1.46, $t(32) = 1.37$, p = .180, $r = .24$), and female participants viewing female targets did not significantly categorize targets by race (within-race errors: M = 5.48, SD = 1.69; between-race errors: M = 5.13, SD = 1.29, $t(51) = 1.00$, $p = .321$, $r = .14$). In the coalitional condition not involving a prime, there was no significant categorization by race.

What is the level of categorization by race in the race prime conditions? Male participants viewing male targets made substantially more within-race errors (M = 6.62, SD = 1.63) than between-race errors, M = 4.53, SD = 1.65, $t(32) = 4.25$, $p < .001$, $r = .60$. Female participants viewing female targets also made substantially more within-race errors (M = 6.63, SD = 1.86) than between-race errors, M = 5.11, SD = 1.10, $t(31) = 3.16$, $p = .004$, $r = .49$. In the coalitional condition with a race prime, there was significant categorization by race.

The critical question is how does this categorization in the *race prime* condition compare with the levels found in the *noncoalitional baseline* and in the *nonprime* coalitional condition?

How does this level of categorization by race compare with the nonprimed coalition conditions? A linear regression revealed that categorization by race was higher in the *race prime* condition than in the *nonprime* condition, for both male participants (*race prime*: M = 2.09, SD = 2.83; *nonprime*: M = .58, SD = 2.41, $t(64) = 2.34$, $p = .022$, $r = .28$) and female participants (*race prime*: M = 1.52, SD = 2.72; *nonprime*: M = .36, SD = 2.56, $t(82) = 1.97$, $p = .052$, $r = .21$).

How does this level of categorization by race compare with the noncoalitional baseline conditions? A linear regression revealed that categorization by race in the *race prime* condition was not different from the *noncoalitional baseline* condition, neither for male participants (*race prime*: M = 2.09, SD = 2.83; *noncoalitional baseline*: M = 2.48, SD = 2.74, $t(63)$ = .57, $p = .571$, $r = .07$) nor for female participants (*race prime*: M = 1.52, SD = 2.72; *noncoalitional baseline*: M = 1.44, SD = 2.59, $t(66) = .11$, $p = .912$, $r = .01$).

In sum, categorization by race strongly increased in the *race prime* conditions (for both male and female participants) and was very similar to the levels found in the *noncoalitional baselines* (see Figure 2).

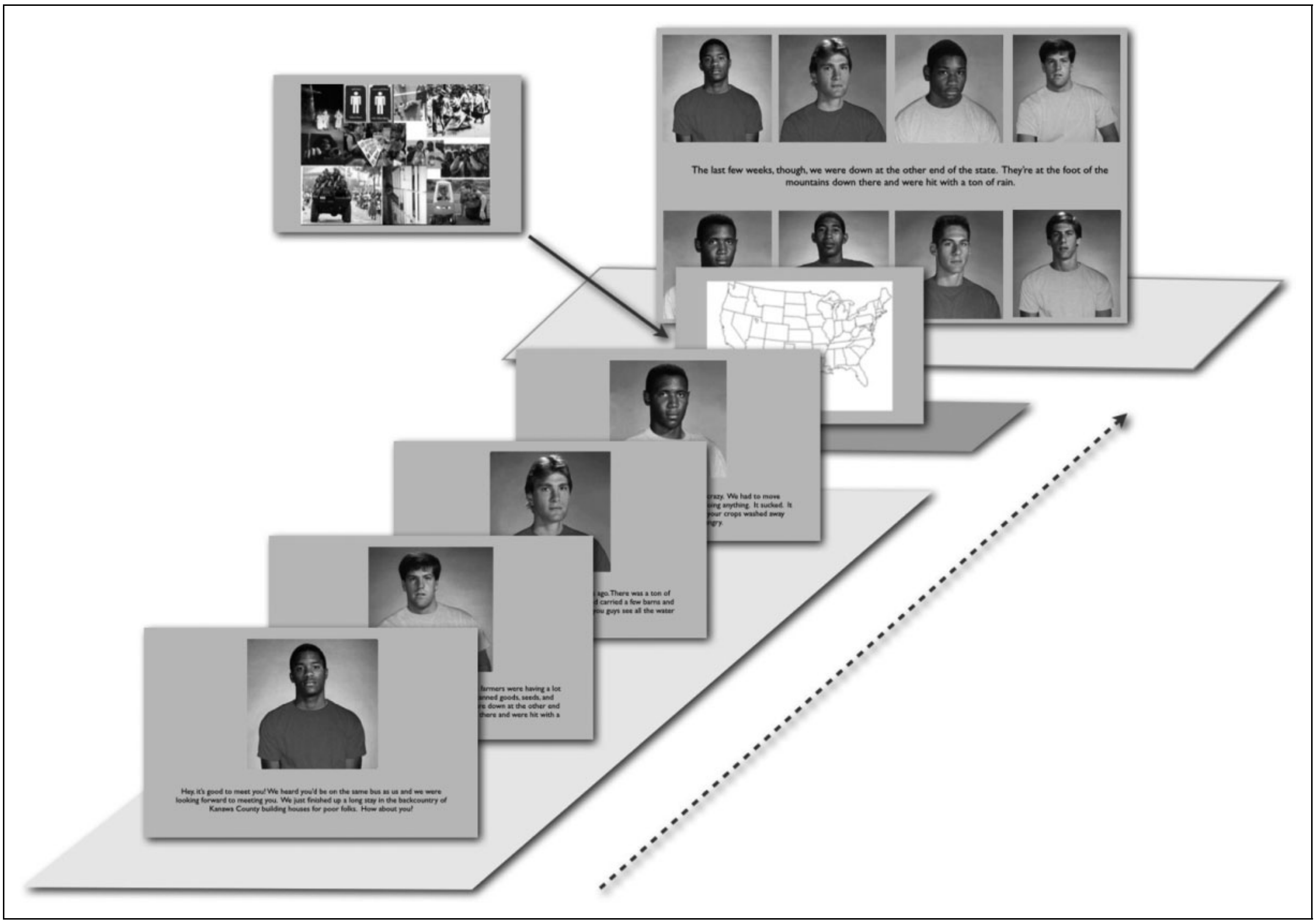

Figure 1. Paradigm design (left to right): Participants first see a sequence of target photos and statements (encoding phase), a 1-min distractor task (depicted on darkened base), and then an array of all of the face photos they had seen previously and are asked to attribute each statement to the correct speaker (recall phase). The only difference between the between-subject prime and nonprime conditions was the 1-min distractor task. In the nonprime condition, this was a neutral task: to think of the capitals of the 50 U.S. states (accompanied by map photo). In the race prime condition: to think of racial conflict and inequality (accompanied by racial conflict photo). Male targets are depicted.

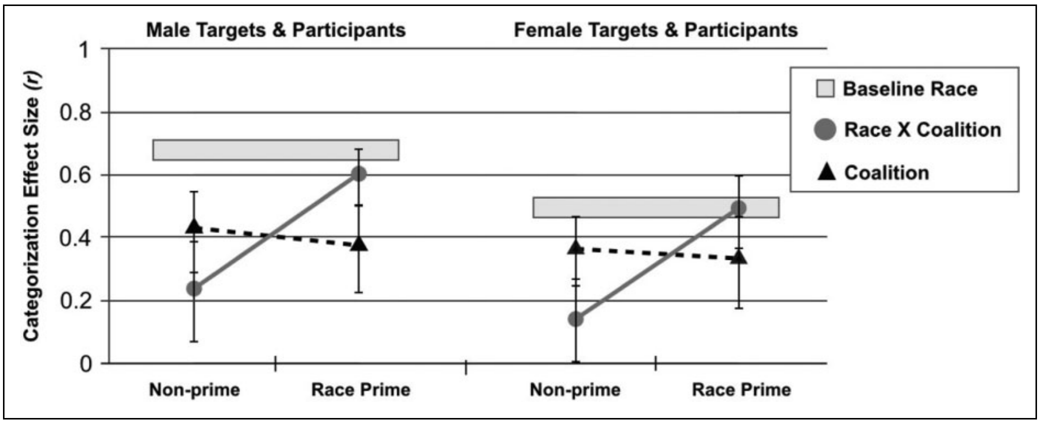

Figure 2. Categorization by race and coalition in the nonprime and race prime conditions. Baseline levels of categorization by race (in which race is presented in a neutral, noncoalitional context) is depicted in the gray box. When race was primed after the encoding phase, but before the recall phase (race prime), levels of categorization by race increased back up to the levels found in the noncoalitional baseline (and were not significantly different from those baseline levels). This means racial categorization is encoded but inhibited when crossed with coalition. Categorization by coalition was not affected by the race prime manipulation (no significant difference was found between the nonprime and race prime conditions). Error bars: $\pm$ 1 *SE*

Finally, categorization by coalition, rather than race, can also be compared across the *race prime* and the *nonprime* coalition conditions. If the race prime manipulation is only affecting race, and not the orthogonal coalition dimension, then categorization by coalition will not differ across these two conditions.

What is the level of categorization by coalition in the race prime conditions? Male participants viewing male targets made more within-coalition errors ($M = 6.15$, $SD = 1.75$) than between-coalition errors, $M = 5.00$, $SD = 1.60$, $t(32) = 2.27$, $p = .030$, $r = .37$. Female participants viewing female targets also made more within-coalition errors ($M = 6.52$, $SD = 2.28$) than between-coalition errors, $M = 5.22$, $SD = 1.66$, $t(31) = 1.96$, $p = .059$, $r = .33$.

What is the level of categorization by coalition in the nonprime coalition conditions? Male participants viewing male targets made more within-coalition errors ($M = 6.14$, $SD = 2.13$) than between-coalition errors, $M = 4.49$, $SD = 1.65$, $t(32) = 2.68$, $p = .011$, $r = .43$. Female participants viewing female targets also made more within-coalition errors ($M = 5.97$, $SD = 1.99$) than between-coalition errors, $M = 4.64$, $SD = 1.80$, $t(51) = 2.78$, $p = .008$, $r = .36$.

Does categorization by coalition differ between the race prime and the nonprime coalition conditions? No. A linear regression revealed that categorization by coalition did not differ between the *race prime* and *nonprime* conditions for either male or female participants (males: *race prime* $M = 1.15$, $SD = 2.91$; *nonprime* $M = 1.65$, $SD = 3.54$, $t(64) = .627$, $p = .533$, $r = .08$; females: *race prime* $M = 1.30$, $SD = 3.74$; *nonprime* $M = 1.34$, $SD = 3.46$, $t(82) = .050$, $p = .961$, $r = .01$; see Figure 2).

Discussion

Categorization by race increased dramatically when the race prime was introduced after the initial presentation phase. In fact, categorization by race in the *race prime* conditions was nearly identical to that found in the *noncoalitional baseline* conditions (see Figure 2). Re-cuing that race is predictive of coalitional alliance after the initial presentation phase dramatically increases the degree to which participants categorize targets by race.

This suggests that coalitional manipulations decrease race by inhibiting or locking away its representation from the rest of the cognitive architecture (or minimally that part of the architecture underwriting statement attribution). In other words, the manipulation is affecting recall, not encoding. This suggests that the mind may simultaneously still encode a previously diagnostic coalitional cue while at the same time inhibiting it.[8]

This makes good design sense for a psychology that faces the task of tracking multiple, changing cues in the world of multiple coalitions: It should be somewhat incredulous that a chronically diagnostic cue will never be diagnostic again when presented with a particular case in which it is not and thus should store but inhibit its use (i.e., promiscuously encode but selectively retrieve). In the current studies, race is not predictive among these particular targets within this particular coalitional context—but it may be for other targets or even among these targets in other contexts.

Therefore, an important direction of future research will be to determine the scope of coalitional manipulations on race. Is race inhibited only for the targets seen in a study or would it also be inhibited for novel individuals? How long does race inhibition last, does it extend to novel situations and contexts? Aside from informing the scope of experimental (and or real-world) reductions, these follow-up studies will also inform how the mind dynamically tracks coalitional cues and how information applied to one person extends to others.

If the mind does not immediately abandon previously diagnostic cues, but inhibits their use, then there also needs to be something like a coalitional cue storage buffer in the mind, in which previously diagnostic cues are encoded and stored. The decay function of such a buffer, and what affects the decay function, will also be fruitful avenues of future research.

In terms of social relevance, these results suggest that in a society in which a particular set of features are perceived as race, a lack of correlation between those features and social interaction patterns will reduce racial categorization, but in a context-specific way—not immediately and absolutely. This need not be a pessimistic finding: This is additional evidence that racial categorization is fundamentally malleable and about social expectations and changes quickly in response to social interaction patterns.

However, a single cross-race cooperation event will not inexorably erase race once and for all. Nor should it: If race is implicitly understood as a social construct, then the averaged sum of experienced social dynamics will determine the strength and perniciousness of racial perception and categorization in each individual mind. Observing cross-race cooperation can powerfully impact and reduce race. Observing cross-race antagonism will reverse this effect and reinforce and strengthen racial representations (as these results show). Racial representations can be changed and doing so will be no harder and no easier than changing patterns of experienced and observed social interaction.

Finally, categorization by the novel (charity) group membership was not significantly reduced by the prime, suggesting that the mind has no trouble tracking two simultaneously predictive and yet orthogonal coalitional cues (computationally, this would mean the systems for tracking coalitional cues are *noncompensatory*). Although more work is needed to more firmly establish this noncompensatory effect, this is what we would expect to see from cognitive adaptations well designed for tracking multiple, nested coalitional relationships.

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Notes

1. Klauer, Hölzenbein, Calanchini, and Sherman (2014) suggest that the early Kurzban, Tooby, and Cosmides (2001) article may have a methodological confound and that the effect reported in that article can be better explained by a general principle of *competitive category use*, in which any strong category (such as age, sex, or race) will be reduced when crossed with any weak category (p. 21). While there are limitations of the early Kurzban et al. article, including some which Klauer and colleagues do not identify (see Pietraszewski et al., 2015), these have been addressed in subsequent work, and even clearer evidence in support of the race as coalitional by-product hypothesis has been found, with many between-subject replications (Pietraszewski et al., 2014, 2015; Pietraszewski & Schwartz, 2014b). These more recent results also falsify competitive category use as a counterhypothesis and avoid the methodological issues introduced by the Klauer et al. method, in which an additional old/new discrimination task is placed in front of (and thus can interfere with) the categorization memory task and in which there are asymmetries between the "weak" and "strong" categories with respect to this task across conditions (creating task, priming, and memory confounds between conditions). Studies are currently underway to examine whether the competitive category use effect found by Klauer et al. is a real effect that occurs under limited circumstances or if it is an experimental artifact of this asymmetry.
2. People's explicit beliefs about race often involve naive realism (race is an objective feature of the world) and biological essentialism (Graves, 2001; Hirschfeld, 1996). However, even these may serve social ends, as evidence suggests that explicit biological beliefs perpetuate social dynamics at both individual and sociological scales (e.g., Evans, 2004; Williams & Eberhardt, 2008). Biological beliefs may be social instruments.
3. All three were run within the same study set using the same subject population (i.e., are within-study comparisons). The results of two of the conditions, the *noncoalitional baseline* and *nonprime* conditions, are also reported in Pietraszewski et al. (2014, studies 1 and 5). Here they are reported as comparisons to the *race prime* results.
4. After the study participants were given extensive debriefing to reverse this prime.
5. See study 5, *coalitions-irrelevant* conditions of Pietraszewski et al. (2014, S1, pp. 5–6).
6. *Coalitions-irrelevant* refers to whether the statements presented during the recall phase contained coalition diagnostic information (coalitions-relevant) or not (coalitions-irrelevant). In both cases, coalitions were relevant based on contextual and visual cues at encoding.
7. Because the race prime conditions featured male participants viewing male targets and female participants viewing female targets, only the male target/male participant and female target/female participant data from Pietraszewski et al. (2014) are included in the comparisons. For all analyses, p values are two tailed, and because all comparisons were preplanned and had directional predictions, are not Bonferroni adjusted. The Pearson correlation coefficient r is used to report effect size (Rosenthal, Rosnow, & Rubin, 2000).
8. This explains a recent brain imaging study which found that skin color (or race, depending on the interpretation) was still represented when participants were exposed to a team membership coalitional manipulation (Ratner, Kaul, & Van Bavel, 2013).

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