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Arguing that Black is White: Racial Categorization of Mixed-Race Faces

Michael B. Lewis

School of Psychology, Cardiff University, Park Place, Cardiff, CF10 3AT, UK

lewismb@cf.ac.uk

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1 Table

1 Figure

1 Footnote

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Abstract

Previous research has demonstrated that racially ambiguous faces (blended from Black and White parent faces) are categorized as being Black more often than White. This has been taken as support for social concept of hypodescent: mixed race people are categorised with the same race as the socially subordinate parent. The current research explores racial categorization further by using two sets of participants: those with greater experience of White faces and those with greater experience of Black faces. It was found that mixed-race faces were categorized as being Black more often than White by the former but White more often than Black by the latter group. Racial categorization of a mixed-race face, therefore, depends upon who is doing the categorising. A face that may be argued as appearing racially Black to one person would be argued as appearing racially White to another depending on their experience.

Arguing that Black is White: Racial Categorization of Mixed-Race Faces

There is a received wisdom that people who are Black/White mixed-race are seen as being Black. This appears within the popular media with headlines such as ‘Barack Obama to be America’s first Black president’ (*The Guardian*, 2008) or ‘Black actors hail Oscar success’ (BBC News, 2002) when Halle Berry won the film industry award. In each of these cases, the person was of a mixed racial background but was reported as being Black. Previous research has suggested that this is because Black people are socially subordinate. Research presented here challenges this interpretation and in doing so questions the concept of hypodescent.

What is hypodescent?

The observation that people with a mixed Black/White racial background are referred to as Black is explained (in the United States at least) in terms of a social concept known as hypodescent. The term has been around since 1915 but became more popular since the 1990’s (as observed in the word counts in Google books). Harris (1964, p108) defines hypodescent as when ‘an individual who has a lineal ancestor, maternal or paternal, who is or was a member of a subordinate group, is likewise a member of the subordinate group.’ This definition of hypodescent is continued by Kottak’s (2010) more recent description.

What is important for the current discussion is that the concept of hypodescent has within it the assumption that Black people are subordinate to White people and it is this subordinate role that determines the race of any mixed off-spring. The observed phenomenon of mixed Black/White people being perceived as Black (even by Black people) has been used to implicitly demonstrate the reality of hypodescent and, by extension, the subordinate nature of Black people. This is apparent in the media examples presented above but it has also been argued that it is supported by research such as the studies described below.

Psychological research has been used to support hypodescent: Peery and Bodenhausen (2008), for example, demonstrated that racially ambiguous people were more likely to be classified as Black than White – at least in Illinois. In their experiment, faces of Black people, faces of White people and 50% morph faces (each blended from Black and White parent faces) were presented for racial categorisation. Their experiment employed a two-step racial categorization design: Each face was rated as both either being White or not-White and either being Black or not-Black. These responses lead to four categories for each face: Black, White, both and neither. When categorization was rapid, mixed-race faces were judged to be White 41.5% of the time and Black 57.5% of the time. When biological and

cultural information had been learnt, these proportions changed to 24.7% and 67.0% respectively. The conclusion drawn was that people rapidly categorize a mixed-race person as Black more often than White and this difference increases with more information a person has about their mixed background.

Peery and Bodenhausen (2008) take their finding to be evidence in favour of hypodescent. The conclusion drawn was that it is the “socially subordinate” (*p* 977) part of any race information is more salient. They assume that the participants in their study viewed Black people to be “socially subordinate” to White people. The socially subordinate category is the one that dominates the categorisation task thereby offering a clear demonstration of the reality of hypodescent.

Ho, Sidanius, Levin and Banaji (2011) also demonstrated what they called hypodescent in participants recruited in New England. They asked people to rate the race of hypothetical individuals with one parent who was from a non-White minority group. Their participants, on average, rated the person to be less White than the minority race. The minority-group bias effect was larger for Black minorities than for Asian minorities. It was argued that this was consistent with hypodescent as it reflected the prevailing racial hierarchy. The argument is that hypodescent can be demonstrated for Black/White people therefore Black people must have a lower status.

The logic of Peery and Bodenhausen (2008) and Ho and colleagues (2011) can be challenged by looking at the limited populations used within their experiments. The problem arises from the fact that hypodescent is being concluded based upon the lower status of Black people and also being used to conclude that Black people have a lower status. It is not that hypodescent has been demonstrated empirically but rather it has been shown how mixed-race individuals are categorised and not the reason behind these categorisations. Observing that Black plus White equals Black in a particular population group does not mean that hypodescent is true.

Historical and scientific context

Hypodescent is in effect the *one-drop rule*. This rule is that a single Black ancestor confers a Black status upon an individual. It is suggestive that being White is a pure status that could not withstand contamination. The application of ideas about genetic dominance has been offered to support this rule. Spencer (2004) provides a review of this concept. He describes how it originally provided a social utility for supporters of American slavery in that it allowed for the classification of mixed-race offspring as the slave category. The one-drop rule continued to be important during the racial segregation of the United States. People of

mixed race needed to be classified for legal purposes and hypodescent provided this classification. Recent research shows that less than 1% of African Americans have no European or Native American genetic ancestry and over 10% have less than 50% of their genetic ancestry from Black Africans (Bryc, Durand, Macpherson, Reich & Mountain, 2015). This means that the majority of Black Americans could be described as mixed race.

Dawkins and Wong (2005) go further and state that the desire to use simple discontinuous labels rather than complex continuous descriptions is cross-cultural and has a biological basis. A person who has both Black and White parents would be given the simpler category of Black rather than the more complex mixed race category. The fact that the simple category picked is typically Black owes something to the cultural equivalent of genetic dominance. Dawkins and Wong suppose that there will be cross-cultural agreement over the category boundaries of races just like, as they state, there is cross cultural agreement over the category boundaries in a rainbow (although see Roberson, 2005, on the cross-cultural differences in colour perception).

This hypodescent pattern of race classification also occurs within scientific research publications. Face databases such as Minear and Park's (2004) that are used in face-recognition research (e.g., Hills & Lewis, 2006) use a Black category to describe faces that are most probably mixed race. What we know about recognition of different races confounds mixed-race faces with Black faces. Similarly, when medical studies analyse drug outcomes, the tendency is to categorize patients into simple racial groups without consideration of mixed ancestry (see Lynch & Dubriwny, 2006, or Schwartz, 2001).

Hypodescent or Minodescent

There is an alternative explanation for Peery and Bodenhausen's (2008) and Ho and colleague's (2011) findings: an alternative that does not conclude that there is a racial hierarchy. Both of these previous studies employed almost entirely non-Black participants and were conducted in locations that were predominantly White (University campuses in Illinois or New England). Hence, the decision being made by their participants was, more often than not, one of 'same race' versus 'other race' or at least 'typical race' versus 'unusual race'. An alternative to their hypodescent account, therefore, is that information that is different or unusual is more dominant. This hypothesis is that it is the distinctive piece of race information that is more salient rather than that which is more socially subordinate. The Black-part of the blended face's race information in those studies is more salient because it is different from the participant's race (or at least their common experience). It is not so much that the socially subordinate race dominates but an unusual race dominates the racial

categorisation decision. I describe this kind of attribution of race as *minodescent*¹ as it is the race of the parent who is outside of the observer's group or outside his or her usual experience that is used to attribute racial categorisation of the off-spring.

Theoretical support for this minodescent account of racial categorisation can be found in an observation in face-recognition tasks. Tanaka, Giles, Kremen and Simon (1998) demonstrated that a 50% morph (or blend) between any two 'parent' faces was more likely to be categorized as the distinctive parent face than the typical parent face. That is, the more distinctive, or unusual, face was the one that was seen as being more salient in the blended image. General models of face learning such as those by Valentine (1991) or Lewis (2004) explain why the distinctive parent face dominates in the perception of the morph face. For the typical face, there are many similar looking faces and so a distortion away from that face will be detrimental to recognition of that exemplar. Alternatively, the distinctive face will have fewer similar faces that are competing for recognition which would mean that the distortion of the morphing process is less detrimental to recognition. Relating this research to the race-categorization tasks suggests a face that is equally similar to two categories (Black and White) would be more likely to be categorised as the distinctive category. That is, it is the unusualness or distinctiveness of the race that determines which is more salient in a mixed-race face.

This distinctiveness account is also consistent with Levin's (2000) race-as-feature account for the own-race bias. Levin suggested that when looking at an other-race face, its race is salient as a positive trait because it is unusual or unexpected. An own-race face would not have these traits and this explains why it is faster to find an other-race face among a set of own race faces than the other way around (Levin, 2000). A mixed-race face would still have some of these positive race traits (albeit less than an other-race face) and these would be sufficient to activate a racial identity.

This kind of cognitive interpretation of the categorisation of mixed race people has been suggested before. Halberstadt, Sherman & Sherman (2011) conducted an experiment where blends between Chinese and European faces were racially categorised by New Zealanders of either European or Chinese heritage. They showed that the people with a Chinese heritage were more likely to classify the ambiguous faces as European than the people with a European heritage. Further, a similar experiment had been conducted earlier by

¹ The word 'hypodescent' takes the Greek prefix of 'hypo' meaning 'under' suggesting that the descent of race follows the under race or the socially subordinate race. The term 'minodescent' replaces the Greek prefix with 'mino' meaning 'smaller or fewer' suggesting that descent of the race is based on the number of people of that group such that the race of the off-spring will be that of the parent with the less common racial categorisation.

Webster, Kaping, Mizokami and Duhamel (2004) although they looked at blends between White and Japanese faces but obtained similar results. Benton and Skinner (2015) also have similar findings using a diffusion model to analyse the categorisation of faces morphed between Asian and White categories.

From Halberstadt and colleagues' (2011) results, it was suggested that the observed categorisation patterns are related to the minority status of the socially subordinate group. They continue to use the term hypodescent for this categorisation although they chose to widen its definition. Instead of the established definition relating to social status, they redefine hypodescent to mean race is determined by either 'the minority or socially subordinate group' (p29). The 'minority' element of this would be more indicative of minodescent rather than hypodescent. Based on ideas about attention theory (see Sherman, Kruschke, Sherman, Percy, Petrocelli & Conrey, 2009), it was suggested that a person learns the majority group first and then identifies how any minority group differs to the majority. A racially ambiguous face will have sufficient minority indicators for him or her to be classified as belonging to the minority group. Halberstadt and colleagues argue that what is observed as hypodescent is selective attention to features that identify minor group status. Here it is argued that this is more akin to minodescent than hypodescent.

Halberstadt, and colleague's (2011) study is useful in that it demonstrates an insight into racial categoriation by different groups. There are, however, a number of limitations in terms of relating this to the possibility of the phenomenon of hypodescent. First, hypodescent is rarely considered to apply between Asian and White populations. Where it is considered (e.g., Ho, Sidanius, Levin & Banaji, 2011) it is smaller than hypodescent between Black and White populations. This could be because the social status of Asians may be argued to be similar to the social status of Whites. As such the study does not operate in a situation where one might argue that hypodescent would apply. Second, the ambiguous faces were morphed blends of the two races. A proponent of hypodescent could suggest that the mechanism for dominance by the social subordinate race is one of genetic dominance. In this way, a morphed blend of two racial distinct faces does not accurately represent a mixed-race person. Finally, the study only employed four pairs of faces. This means any findings may be idiosyncratic to the images picked and may not generalise to other faces. Such idiosyncrasies are alluded to by the authors in order to explain why there is a bias towards rating blended faces as Chinese more often.

Experiment

Distinguishing between the hypodescent account and the minodescent account of the racial categorization of mixed-race faces requires a simple experiment. Such an experiment would need to test the categorization of mixed-race faces by people who are White (and interact with mostly White people) and by people who are Black (and interact mostly with Black people). If Peery and Bodenhausen's (2008) results are a consequence of hypodescent then mixed-race people will be categorized mostly as Black even by Black Africans. If, however, it is the case that distinctive information is more salient than we would expect that Black people would categorize mixed-race faces as being White more often than being Black because the White aspect of the face is more distinctive and hence salient for them. These two contrasting accounts were tested in the current experiment.

The current experiment explored the racial categorisation of Black, White and mixed-race faces by Black and White participants. The design was based upon that conducted by Peery and Bodenhausen (2008) but using non-American participants. There are, however, two further differences between the current experiment the original. First, Black faces were taken from social media groups making reference to the person being in Africa. These faces, therefore, are less likely to already be mixed race than the Black-American faces used in the previous experiment. Second, the mixed-race faces were real people rather than a digital blend. This allows for any biological effects of mixing of two races to be apparent in the stimuli. For example, the biological mixing of a parent with black hair with one with blond hair is not always going to produce offspring with mid-toned hair as would happen in the digital morphing procedure. Rhodes et al. (2005, see also Lewis, 2010), for example, has demonstrated that the biological effect of mixing races is greater than just regression to the average of the parents' appearance.

Method

Participants

Thirty-seven students at a UK University took part in the experiment. Nineteen described themselves as White British and had little contact with Black people (i.e. fewer than 10% of the people they knew were Black). The remaining 18 participants were overseas students who had arrived in the UK within 6 months of taking part. All these participants were from African countries and described themselves as Black. They also reported that fewer than 10% of the people they knew were White.

Stimuli

A set of 300 faces was collected from the *Facebook* website using the publically available profile images. The fact that people tend publically to affiliate themselves to groups

was used to help the selection of particular racial faces. The profile images, which are typically faces, were taken from members of *Facebook* groups for which their race would be known. These groups, when set as ‘public’ allow the profile images of all the members to be seen. One hundred of the faces were White (taken from groups associated with regions in the UK with a predominantly White population such as “North Wales Network”), 100 were Black (taken from groups associated with regions in Africa such as “Nigerian Medical Professionals”) and 100 were mixed race (taken from groups associated with being mixed race such as “Mixed race London” and as far as possible these were selected from Black/White mixed race people). The images were scaled up to a width of 400 pixels and the height varied between 400 and 800 pixels. The images were displayed with a width of 180mm on a monitor position approximately 500mm from the participant.

The images were collected by a research assistant naïve to purposes of the research. The criteria provided for collection of the images were as follows. The images must contain only one face of a quality such that the person could be recognized by a friend (full body images, images where the face was occluded or masked, or images that were of such poor quality that the person would not be recognised would be rejected). The face in the image should show a typical facial expression for a facebook image (smiles or a neutral expressions were acceptable whereas grimaces or tongue protrusions were not). The perceived race of the person should be, as far as possible, consistent with the group that they were collected from. The image should not contain any extra-facial information that might suggest a particular origin (one image was rejected because the person was wearing a top with ‘Africa’ written on it). If any image did not fit all of the criteria as judged by the naïve research assistant then they were rejected and a new image was selected from a similar group. The collection of stimuli in this way meant that there was little control over the physical properties of the faces used but, as the main research question concerned differences between participants, any inconsistencies in the stimuli would affect both groups of participants equally.

Procedure

Participants viewed all 300 images twice to provide two different categorization judgments. Each image was presented on the monitor until a response was made via labelled keys on a keyboard. The judgments were whether they thought the person shown would describe themselves as ‘White or not White’ or ‘Black or not Black.’ The two judgment types were blocked and the order of the blocks was counterbalanced across participants. Participants were aware that they would be categorizing the same faces twice and what the two categorization conditions would be prior to the first task. Following the face-

categorization tasks, participants completed a short questionnaire on their own racial background and their contact with people of different races.

Results

Following a method similar to that used by Peery and Bodenhausen (2008), each of the 300 faces was classified as being either Black, White, both Black and White or neither Black nor White by each participant based on the two responses (Black or not Black and White or not White). There was general agreement of the races of the Black and White faces between the Black and White raters. The categorization patterns are shown in Table 1.

The classifications of the mixed-race faces are also shown in Table 1 by participant and in Figure 1 by face. For these faces, 81% of the classifications were as either Black or White. However, whether the more common classification was Black or White was affected by the race of the rater. White raters tended to rate these mixed race faces as being Black more often than White whereas Black raters rated the same faces as being White more often than Black.

An ANOVA was conducted to test the interaction between race of rater and the classification of mixed-race faces. The dependent measure was the number of mixed race faces being rated as Black (rather than not Black) or being rated as White (rather than not White). A two (race of rater: White British vs Black African) by two (rating type: White/not White vs Black/not Black) analysis revealed a significant interaction ($F(1,35) = 173.716$; $p < 0.001$; $\eta^2 = .832$). Simple main effects analyses showed significant effects of raters' race on ratings of someone as being Black ($F(1,35) = 102.637$; $p < 0.001$; $\eta^2 = .746$) and also on someone being White ($F(1,35) = 78.766$; $p < 0.001$; $\eta^2 = .692$).

Discussion

The findings demonstrate that people with limited exposure to Black people and those with limited exposure to White people generally agree on classifications of Black and White faces. Another similarity between the performances of the two groups of participants comes in the proportions that attribute faces to being both Black and White. This categorization was used only 8% of the time for mixed-race faces with very little difference between two sets of raters. Dual racial membership, therefore, does not seem to be something that is employed during automatic racial categorization.

Important findings are revealed in the racial judgments made by the different participants for the mixed-race faces. For White participants, 67% of mixed-race faces were rated as being Black compared with 21% rated as White. This result is similar to that observed by Peery and Bodenhausen (2008) who found that mixed-race faces were classified

more often as being Black than White. In fact, the size of the bias is larger in the current study. This difference could be explained by the fact that the current study used real mixed-race faces rather than morphs. The morphs generated by Peery and Bodenhausen were blended from Black and White Americans. The Black faces used to generate the morph may have already been mixed race (see Davis, 1991) and so the Black racial component to the morphs would have been less than 50%.

In the current experiment, unlike previous research, Black participants also categorized the mixed-race faces. It was found that for Black participants, 59% of mixed-race faces were classified as White compared with just 25% classified as Black. Contrary to the categorization of the White participants, the Black participants saw the mixed-race faces as being White more often than Black. Taking the results from both the Black and the White participants together, they demonstrate that there is a bias to see mixed-race people as belonging to the different race than one's own or one's typical experience. This finding is consistent with the idea of minodescent with regard to the categorisation of mixed-race people.

Above, it was suggested that the finding of minodescent would be consistent with models of face processing such as facespace (Valentine, 1991) and mean that familiarity with different groups is the driving factor in categorisation. However, a limitation of the current research is that it is not able to distinguish between the familiarity of racial groups and other potential factors such as the salience of the groups or empowerment of them. What the findings do allow for is a rejection of the idea that is universal agreement on the racial categoriation of people with a mixed race background.

It might be argued that the mixed-race faces taken from the public websites might not be representative of true F1 Black/White offspring: maybe, for example, the faces were more White than Black. While it is accepted this is possible, it does not affect the conclusions being drawn here for two reasons. First, the faces used were a random selection of people who identify as being mixed race. In this way, it is a representative group that people are likely to come across and hence ensures ecological validity. Second, the main effect reported here is the difference in categorisations of the two participant groups. As Figure 1 shows, there were some faces that were more White than Black but the difference in the categorisation between the two groups of participants was consistent across the range of faces.

Conclusion

The current experiment demonstrates that one's perception of the race of mixed-race faces is affected by one's own experience. It appears that it is the race of the racially distinctive parent that determines how a mixed-race face will be categorized. If the distinctive parent is Black, because the categoriser has less experience with Black faces, then this race will be more salient. However, if the categoriser has more experience with Black faces then the White parent's race will be more salient and the mixed-race person will be categorized as White. The results support the account that it is the parent's whose race is least familiar or most unusual to the categoriser that determines the racial categorization given.

If the findings of Peery and Bodenhausen (2008) were to be taken as support of hypodescent and the racial hierarchy that this suggests then the current findings present a challenge to it. The argument that the progeny of a mixed-race couple have the properties of the subordinate parent does not follow from the current perceptual analysis. The perception of the race of a mixed-race person appears to be dependent on the background of the person doing the categorisation. This is important for anyone doing research into face-related race effects because the perceived race of a mixed-race face (as many Black Americans are) is affected by one's background. The Illinois-based participants in Peery and Bodenhausen's study would argue on average that a mixed race person looks Black to them. Here, it is shown that a Black person brought up around mostly Black people would be more likely to argue that the same person looks White to them.

References

- Benton, C. P., & Skinner, A. L. (2015). Deciding on race: A diffusion model analysis of race-categorisation. *Cognition*, 139, 18-27.
- Bryc, K., Durand, E. Y., Macpherson, J. M., Reich, D., & Mountain, J. L. (2015). The Genetic Ancestry of African Americans, Latinos, and European Americans across the United States. *The American Journal of Human Genetics*, 96(1), 37-53.
- Davis, F.J. (1991). *Who is Black? One Nation's Definition*. University Park, PA: Pennsylvania State University Press.
- Dawkins, R., & Wong, Y. (2005). *The ancestor's tale: a pilgrimage to the dawn of life*. London: Phoenix.
- Halberstadt, J., Sherman, S.J. & Sherman, J.W. (2011). Why Barack Obama is Black: A cognitive account of hypodescent. *Psychological Science*, 22, 29-33.
- Harris, M. (1964). *Patterns of Race in the Americans*. New York: Doubleday.

- Hills, P.J. & Lewis, M.B. (2006). Reducing the Own-Race Bias in face recognition by shifting attention. *Quarterly Journal of Experiment Psychology*, 59, 996-1002.
- Ho, A.K., Sidanius, J., Levin, D.T. & Banaji, M.R. (2011). Evidence for hypodescent and racial hierarchy in the categorization and perception of biracial individuals. *Journal of Personality and Social Psychology*, 100, 492-506.
- Kottak, C.P. (2010). *Cultural Anthropology*. New York: McGraw-Hill.
- Levin, D.T. (2000). Race as a visual feature: Using visual search and perceptual discrimination tasks to understand face categories and the cross-race recognition deficit. *Journal of Experimental Psychology: General*, 129, 559- 574.
- Lewis, M.B. (2004). Face-Space-R: Towards a unified account of face recognition. *Visual Cognition*, 11, 29-69.
- Lewis, M.B. (2010). Why are mixed-race people perceived as more attractive? *Perception*, 39, 136-138,
- Lynch, J. & Dubriwny (2006). Drugs and double binds: Racial identification and pharmacogenomics in a system of binary race logic. *Health Communication*, 19, 61-73.
- Minear, M. E. and Park, D. C. (2004). A lifespan database of adult facial stimuli. *Behavior Research Methods: Instruments and Computers*, 36, 630-633.
- Peery, D. & Bodenhausen, G.V. (2008). Black + White = Black : Hypodescent in reflexive categorization of racially ambiguous faces. *Psychological Science*, 19, 973-977.
- Rhodes, G., Lee, K., Palermo, R., Weiss, M., Yoshikawa, S., Clissa, P., Williams, T. and Peters, M. (2005). Attractiveness of own-race, other-race and mixed-race faces. *Perception*, 34, 319-340.
- Roberson, D. (2005). Color categories are culturally diverse in cognition as well as in language. *Cross-Cultural Research*, 39, 56-71.
- Schwartz, R.S. (2001). Racial profiling in medical research. *The New England Journal of Medicine*, 344, 1392-1393.
- Sherman, J.W., Kruschke, J.K., Sherman, S.J., Percy, E.J., Petrocelli, J.V. & Conrey, F.R. (2009). Attentional processes in stereotype formation: A common model for category accentuation and illusory correlation. *Journal of Personality and Social Psychology*, 96, 305-323.
- Spencer, R. (2004). Assessing multiracial identity theory and politics: The challenge of hypodescent. *Ethnicities*, 4, 357-379.

- Tanaka, J., Giles, M., Kremen, S. & Simon, V. (1998). Mapping attractor fields in face space. The atypicality bias in face recognition. *Cognition*, 68, 199-219.
- Valentine, T. (1991). A unified account of the effects of distinctiveness, inversion and race in face recognition. *Quarterly Journal of Experimental Psychology*, 43A, 161-204.
- Webster, M.A., Kaping, D., Mizokami, Y. & Duhamel, P. (2004). Adaptation to natural facial categories. *Nature*, 428, 557-561.

Table 1. Pattern of categorization of each set of 100 faces split according to the two participant groups. Standard errors by participants are in parentheses.

| | White participants | Black participants |
|----------------------------------|--------------------|--------------------|
| White faces categorized as: | | |
| Both Black and White | 3.0 (.7) | 1.9(.7) |
| Black but not White | .3 (.2) | .4 (.2) |
| White but not Black | 93.9 (1.2) | 92.4 (1.7) |
| Neither Black nor White | 2.7 (.6) | 5.3 (1.5) |
| Mixed-race faces categorized as: | | |
| Both Black and White | 7.0 (1.3) | 9.2 (2.3) |
| Black but not White* | 60.3 (3.3) | 13.6 (1.5) |
| White but not Black* | 14.1 (1.7) | 50.3 (2.8) |
| Neither Black nor White | 13.7 (2.4) | 23.7 (3.1) |
| Black faces categorized as: | | |
| Both Black and White | 1.3 (.3) | 1.9 (.7) |
| Black but not White | 96.1 (1.6) | 93.4 (.9) |
| White but not Black | .2 (.1) | .8 (.3) |
| Neither Black nor White | 2.4 (.5) | 3.8 (1.0) |

*difference between participants is significant $p < 0.001$.

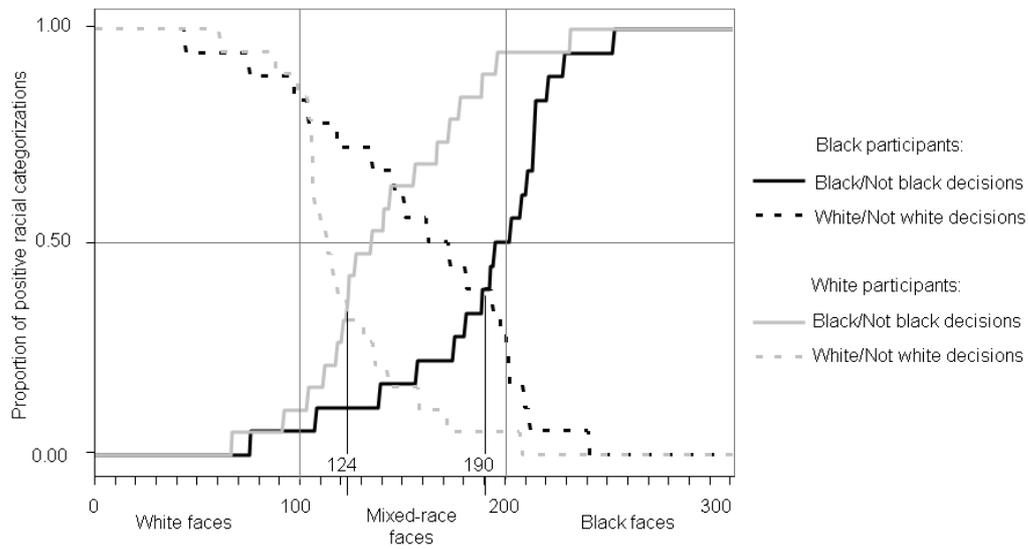


Figure 1. The pattern of racial categorisation for all 300 faces in cumulative frequency form. The points of cross over between the same toned lines show the number of faces that are more likely to be categorised as White than Black. For White participants this occurs for 124 faces (100 of which are White faces). For Black participants this occurs for 190 faces. So 76% of the mixed race faces are more likely to be categorised as Black than White by White participants but only 10% are more likely to be categorised as Black than White by Black participants.