Skin colour: Does it matter in New Zealand?

December 2007 Working paper, Updated March 2008

Paul Callister
Senior Research Fellow, Institute of Policy Studies, Victoria University, Wellington

e-mail: paul.Callister@vuw.ac.nz

Skin colour: Does it matter in New Zealand?

Introduction

Pick up any official New Zealand publication which includes photographs representing the population and it is highly likely that the people featured will have visible characteristics, including skin colour, that are stereotypically associated with the main ethnic groups living in this country. Equally, examine official reports that consider differences in outcomes between groups of people, such as in health and education, and it is very likely that ethnicity will be a key variable in the analysis. But it is extremely unlikely that skin colour will be explicitly mentioned in either type of report.

The paper explores three areas in society where skin colour might matter. First, based primarily on US literature, the question of the role of skin colour in discrimination and, ultimately, economic and health outcomes, is examined. Then, returning to New Zealand, there is a discussion of whether skin colour is a factor in why those responding to official surveys with a 'Māori only' ethnic response have, on average, worse outcomes than those reporting Māori plus other ethnicities. Finally, two connected health issues are looked at. One is skin colour and the risk of skin cancer and the second is the hypothesised, but still controversial, links between skin colour, sun exposure, vitamin D production and an inverse risk for developing colorectal cancer. Two main questions are asked in this paper. First, when compared with many other countries, why in recent years have New Zealand researchers and policy makers been averse to discussing and researching skin colour? Second, is there a case to be made for measures other than self-identified ethnicity, such as skin colour, in official statistics and other large surveys, including health-related surveys?

Background

Most governments collect some information on ethnicity or race. In a global comparison of census questionnaires, Morning (2008) shows that over half (56%) asked about ethnicity, 15% asked about race, 7% were based around ancestry, while only 2% asked directly about skin colour. However, Morning notes while ethnicity may be used in the wording of many questions, often the possible responses include colour-related categories. Examples include 'black' and 'white', often alongside responses that could be seen as 'race' or 'nationality' groupings, such as Indian or Chinese. For instance, the British census has categories such as "White British" and 'White Irish' as well as "Black British", while the Canadian census has 'black' and 'white' in its list of tickboxes.[1] Equally, race-based collections, such as in the US, include 'black' and 'white' response options. In all these countries, as in New Zealand, there is also an increasing awareness of ethnic or racial intermarriage and, how over time, this can lead to people not only wanting to record multiple ethnic or racial responses, but how the process can result in many 'hues' of skin colour (Callister, Didham and Potter, 2005).

[1] While terms such as black and white are used in the UK, some commentators suggest skin colour is actually a taboo subject in that country (Lane and Lawrence, 2007).

Before New Zealand shifted to culturally defined ethnicity, in common with other countries, race, based primarily on ancestry, was the foundation of New Zealand statistical collections (Statistics New Zealand 2004). Mixing between races was recognised early on with nineteenth century census data identifying and separating out "half-castes" (Brown 1984). According to Kukutai and Didham (2007), although information on birthplace was routinely collected, national origin differences were minimised in racial determinations – at least for people considered white. They note that guidelines for the race question in the 1936 census advised that: "All persons of "white" race should enter "European", irrespective of whether they are of New Zealand, English, Scottish, Irish, Frenchman, United States, or other stock". The "coloured" races, which included, among others, Māori, Chinese, and "Negros", were separately identified. Yet, skin colour related terms such as black and white never explicitly became part of official language when discussing the composition of the New Zealand population. This was despite that fact that from early days of colonisation 'the colour line was hardly invisible on the ground' (Kukutai, 2005: 27).[2] Also, unlike countries such as Canada, the expression "visible minority', a term referring to non-white groups, has not been used in New Zealand (Potvin, 2005).

Despite skin colour not being an explicit part of New Zealand's historical official statistical output, unofficially, and sometimes officially, skin colour is often talked about. In recent years, primarily in relation to the growth of Māori and Pacific groups, there has much discussion of the 'browning of New Zealand' (e.g. Kiro 2002). In the sporting arena, there is sometimes mention of the 'browning' of teams such as the All Blacks and the Silver Ferns, but also at times questions have raised about players in the Māori All Blacks based on the 'whitening' of some team members. In a paper on the transmission of ethnicity in New Zealand, which was presented at a US forum, Kukutai (2005, 2007) uses the expression "white mothers, brown children". While not providing information on skin colour, one in five Māori children in single-parent households have a residential parent who is not Māori (Statistics New Zealand 2001).

In relation to New Zealand's historic migration policy, Te Ara, the official electronic encyclopaedia of New Zealand, notes that "much as New Zealand tried to keep its immigrants *white* through assisted migration schemes and entry permits, such a policy was hard to enforce and even harder to defend" (emphasis added).[3] When considering the dominance, both in terms of size of the group and its historic power, of the European ethnic group, the expression 'white privilege' is also sometimes used in New Zealand.[4] For instance, in a 2007 conference about ethnicity, Ho (2007) notes "[w]hen I call white people white people, I reference systems of white privilege and white dominance." Gagnon (2007) suggests that in the major developed countries, Australia Canada, US , and west European countries, 'whiteness' is a core part of official national identity. This is the viewpoint put forward by Hage (1998) in

[2] http://unipr.waikato.ac.nz/publicat/WaikatoMagazineSummer04.pdf
[3] http://www.teara.govt.nz/NewZealanders/NewZealandPeoples/HistoryOfImmigration/15/en
[4] This is a concept developed in the United States, but sometimes used in New Zealand. 'White privilege' is seen to be a set of advantages and/or immunities that 'white people' benefit from on a daily basis beyond those common to all other groups.

Australia. He talks about the concerns 'white Australians' feel in the face of declining power in a multicultural nation.[5]

But 'whiteness' is not only a concern in former European colonies. In many parts of Asia some groups try to develop or maintain light coloured skin.[6] It is believed that a lighter complexion is associated with wealth and higher education levels, whereas darker skin suggests being a low-income outdoor worker. In contrast, in countries such as New Zealand and Australia, the use of solaria and fake tans suggests that there are people who value some aspects of darker skin and wish to change their natural skin colour.[7] In these higher income countries such tans may be associated with leisure rather than with manual outdoor work.

The term white can be symbolic rather than strictly representative of skin colour. When asking in a New Zealand context "[w]hy do some white people get grumpy when they get called white people", Ho (2007) notes "it's not because those people reckon they are actually beige, peach, off-white, cream or pink, rather than literally white." Similarly, in a study of Samoan intermarriage in New Zealand, Keddell (2006) comments that New Zealand-born Samoans whose parents are both Samoan are often excluded and marginalised by older, Island-born Samoans. She suggests these children are perceived as being "fia palagi", that is, wanting to be Palagi or, as Keddell notes, 'white'.

The idea of whiteness also affects thinking about the growth of New Zealander type responses in the New Zealand census. Part of the objection to the 'New Zealander' response being accepted as a valid ethnic category seems to be based on the belief that people should be able to be placed in distinct 'racial' groups. For example, in a paper discussing this response, Dupuis *et al* (1999) describe 'Kiwi' and 'New Zealanders' as being mostly from the "Pakeha" group, but later in the paper they go further and label this group as "white" (p. 47). In addition, many people think country or region of birth is indicative of skin colour. For example, it is commonly assumed that all migrants from Europe will be 'white'. Yet, most European countries have an increasingly multi-ethnic population and migrants to New Zealand, selected primarily on skill levels, increasingly reflect that diversity.

While skin colour has not been part of official statistics collections, there are some examples of the use of skin colour by specific agencies in New Zealand. For example, skin colour is included in New Zealand's human rights laws. There are 13 prohibited grounds of discrimination that are set out in section 21 of the *New Zealand Human Rights Act* 1993. These include sex or disability, but also ethnic or national origins, race and colour. However, the most common example of use of skin colour is likely to be the Police. When the Police are endeavouring to track down a suspect they will often resort to physical based descriptions. For instance, it is not uncommon to hear the police describe a suspect as 'Caucasian', meaning a white-skinned person.[8] [9] As

[5] Hage (1998) defines white people as those of European origin. The rest of the population are 'Third world-looking people'.
[6] http://uniorb.com/ATREND/asianwhite.html
[7] http://www.cancernz.org.nz/Uploads/CSNZ_PS_Solaria07.pdf
[8] Pool (2007) argues the term 'Caucasian' is inappropriate for most people of European descent. Caucasian is a term that has continued to be used but other terms to describe 'races' such as Negroid, Mongaloid are no longer used.
[9] These are clearly not self determined descriptions.

noted in the following quote, throughout the criminal justice system there is the potential for skin colour to matter.

> In the criminal justice system another approach to definition is sometimes adopted - ethnicity as judged by the observer/recorder, based on the physical appearance of the subject. This approach occurs when information is recorded from victims or witnesses to crimes, and occasionally by police officers on patrol or making arrests. In practice, many situations arise where it is impossible, or impractical, to assess ethnicity according to statistically standard processes, and the field on the form is left blank, or filled in by a "best guess" (Department of Corrections, 2007).

The police are not the only ones constructing an individual's ethnicity. Various 'others', such as employers, landlords, teachers, doctors, and even funeral directors are important gatekeepers in society. For instance, Xie and Goyette (1997: 549-550) note that, for members of minority groups in the US, 'choice' about ethnicity is limited by "labels imposed by other members of society or by custom." Waters (1990, 1996) also puts forward the view that minority groups have less flexibility in determining their ethnicity. Often this construction of ethnicity by others will be based on visible, or recognisable, characteristics, including skin colour.[10] Simon (2005) also discusses "observation-based identification" in a US context. He suggests that this method is often used by firms for the purposes of equal opportunity programmes, as well as by schools and by the police. He notes that even if third party classification does not match an individual's concept of their identity, it is more likely to match the perceptions of others and thus be "more salient in explaining possible unfavourable treatment" (p 21).

Young people are also engaged in constructing the ethnicity of others. A survey carried out by Thomas and Nikora (1991, 1996) investigated the characteristics associated with the terms 'Māori' and 'Pakeha' among New Zealand high school students. The data showed that skin colour was one of the methods of determining who belonged to a particular ethnic group. Among both Pakeha and Māori students the main characteristics associated with being Pakeha were: skin colour (Pakeha 57%, Māori 51%), and culture, customs and lifestyle (33% and 15%). Among Māori respondents, the most common attributes associated with being Māori were: culture, customs, lifestyle (71%), and Māori language (61%). However, other attributes included skin colour and appearance (48%), accent (29%), descent (25%), and tribal and kin affiliations (20%). Among Pakeha respondents colour and appearance (49%) was most frequently used to describe Māori people, followed by culture, customs and lifestyle (35%), accent (28%), and language (17%).

Yet, there are many examples suggesting physical characteristics may not be a good predictor of ethnicity in New Zealand. For instance, in 2002, Jackson commented that there was much surprise, particularly amongst Māori, that Keith Abbott the policeman who shot Steven Wallace in Waitara was Māori (with descent from Ngati Kahungunu). This was presumably based on physical characteristics. This realisation complicated discussions about possible racism as a factor in the shooting. When

[10] I would like to thank David Bromell for suggesting the term 'recognisable'. Many characteristics, generally based on stereotypes, may be subject to assessment when people are classifying others. These may be accent or facial features, including nose and hair (Holmes *et al*, 2001). However, types of clothes and hair styles, food or music preferences, jewellery, or even make of car can be important. Central to this is always the issue of who is doing the recognising.

announcing a top female Māori scholar, *Mana* magazine (Mana, 2002: 22) focused initially on physical characteristics but then notes "[d]on't be fooled by the blond hair and the green eyes. She's Maori, really, and is our top scholar for the year." In New Zealand it has long been known that mortality data (at least during the 1980s and early 1990s) undercounted Māori and Pacific deaths partly due to funeral directors sometimes guessing ethnicity (Pomare *et al*. 1995, Te Ropu Rangahau Hauora a Eru Pomare 2000). Kukutai (2003: 22), drawing on a number of other New Zealand studies, including Matahaere (1995), also notes that in relation to 'others' determining who is Māori, traits such as "skin colour continues to be used as ethnic cues".

Skin colour – Discrimination and outcomes

As already noted, employers, teachers, the police, landlords, and health care providers are important societal gatekeepers. These people can be discriminatory in their behaviour. Such discrimination can occur on the basis of a wide range of characteristics including age, sex, religious belief, surname, style of clothing and skin colour. Some of these can be seen as 'visible' characteristics, but are probably more realistically called 'recognisable' characteristics. However, questions are then raised as to why some characteristics are recognised; who is doing the recognising; and why some people might exhibit discriminatory behaviour. It tends to be assumed that people from the dominant culture will be doing the recognising; that they will be basing this recognition on stereotypes; and that some will be then exhibiting discriminatory behaviour based on these stereotypes. But everyone in society, including those who are part of ethnic minorities, will be doing some form of recognising and possibly forming discriminatory views or undertaking discriminatory actions based on such recognition.

In New Zealand, as noted, colour is one of the prohibited grounds of discrimination. The Human Rights Commission (HRC) notes that usually a complaint relating to *colour* will also relate to the ground of *race*. A search of the database undertaken by the HRC showed few complaints have been made on the basis of skin colour alone and that *colour* is one of the grounds on which they receive the least number of complaints. In the reporting year ending 30 June 2003, colour was the grounds in 2% of unlawful discrimination matters; in 2004, 1%; and in both 2005 and 2006 it was 0.8%. During the year 1 July 2006 to 30 June 2007, the Commission received 14 complaints related to *colour*. But while some complaints are based around dark skin, some specific cases suggest that colour issues are complex. For example in the 2007 year, there was a complaint about an advertisement with a woman saying to a 'freckled red hair' man 'get your dirty freckled hands off me'. Another example was harassment in a text message referring to a person's 'yellow skin'.[11]

It is easier to find literature from the US that considers skin colour as an important variable when examining economic and social outcomes, including how discrimination may influence these outcomes. In a review article covering employment discrimination, segregation, and health, Darity (2003) points to a number of mainly cross-sectional studies that showed Blacks with dark skin, as well as (in some situations) darker skinned Hispanics, fare worse on a number of social and economic outcomes than their lighter skinned counterparts (Darity *et al* 2002; Keith

[11] Personal communication with Emma Bassett, Human Rights Commission, 1 October 2007.

and Herring 1991; Seltzer and Smith 1991; Telles and Murguia 1990). These findings regarding worse outcomes for Blacks are supported by longitudinal data (Hill, 2000). In terms of being subject to discrimination, Klonoff and Landrine (2000) found that dark-skinned Blacks were considerably more likely to experience frequent racial discrimination than those with lighter skins. When reviewing US literature on skin colour and health, Borrell *et al* (2006) note many studies point to discrimination that is based on race. The review also points to research that shows skin tone can have an effect on discrimination. As well, the review cites studies pointing to negative health outcomes for those facing discrimination. However, they suggest there is little research linking skin tone directly with health outcomes. Some studies have indicated that the influence of skin colour in outcomes can be different for women and men (e.g. GóMez 2000; Hunter 2002). In the US, skin colour has also been shown to be important in relation to rates of racial intermarriage (Rockquemore, 2002. But adding complexity to all these relationships, Borrell *et al* (2006) have noted that in the US women, on average, have lighter skins than men.

There are also US studies that do not find strong effects of skin colour in relation to discrimination. For example Krieger *et al* (1998), in a health-related longitudinal study of African Americans, found no association between skin colour and discrimination in relation to employment, housing or medical care. Using the same dataset, Borrell *et al* (2006) also found that while racial discrimination is associated with worse self-reported physical and mental health in African Americans, skin colour was not important. They suggest that this may indicate a declining importance of skin tone in the US. Gullickson (2005) has also suggested that within African-Americans lighter skinned individuals may no longer be having better outcomes than those with darker skins. However, Borrell *et al* (2006) go on to propose that this is due to African Americans being seen and treated as black regardless of their tone or shade. This potentially relates back to the 'one drop' thinking in the US, where one 'drop' of 'black blood' made a person black (Graves 2001). Yet, when discussing affirmative action polices in the U.S., Korgen (1998: 104) suggests that the 'one drop' rule may be bypassed and actual colour might matter.

> Under affirmative action, both corporations and certain individuals benefit from ambiguous racial designations. Companies meet their quotas more easily when persons with mixed race backgrounds qualify for affirmative action. There is a danger, however, that mixed racial Americans may be the first to fill positions set aside for monoracial minorities. Because they may appear "whiter", biracial employees may be more palatable for an employer under pressure to hire racial minorities.

In all the US studies that include skin colour there are measurement issues which are important. For example, in relation to self-assessed skin colour, Hill (2000) notes theories that perceptions may depend on social class, with the idea that 'lightening' will occur amongst higher socio-economic groups. In his review article, Darity (2003) notes that many Mexicans, Puerto Ricans, and Cubans do not want to self-identify as Black and that members of each group with 'dark complexions' frequently report their race as White. This finding that Hispanics with higher socio-economic status were more likely to report as White is supported by research by Herman (2004). This prompted Herman to question whether for potentially biracial Americans it is socio-economic status that leads to self-identification as white, or the reverse? Herman also makes the point that many forces are at work with, for example, some darker skinned

Hispanics considering themselves White if they were married to "Caucasians' or lived in White communities where they were treated as White.

As discussed, external observers will be visually assessing skin colour and it is possible for researchers to do this. But as Simon (2007) notes, in a US context, differences between observer assessments of race or ethnicity and official collections have not been studied.

Some researchers have attempted to find more objective measures of skin colour. For example, Hunter (2002) measured skin colour in five categories for each data set: very dark, dark, medium, light, and very light. Respondents' complexions were rated by trained interviewers who used colour palettes to identify respondents' skin colour as best fitting into one of the categories. Borrell et al. (2006) also note that time of year is important as skin colour changes with sun exposure. This is one reason why objective skin colour tests often have two measures. One is a place that is generally out of the direct sunlight, such as an inner upper arm to give a measure of natural skin colour, and the other can be a site such as the forearm to give a measure of tanning and is the skin colour that most people will see. This measurement issue is one that will be revisited in the section on sun exposure, skin cancer, vitamin D and skin colour.

Writing in a New Zealand journal, Fernando (2006) argues that racism involves discrimination and this racism is often based on skin colour. However, New Zealand research on racism has not directly considered skin colour. As an example, a study of self perceived racial discrimination on self determined health outcomes used data from the 2002/2003 New Zealand Health Survey and was based around ethnicity (Harris *et a*l, 2006).[12] In this study Māori reported the highest prevalence of 'ever' experiencing any forms of racial discrimination (34%), followed by Asians (28%) and then Pacific people (25%) and finally Europeans/Others (15%).[13] However, perhaps hinting that some physical characteristics might matter, the authors note that the European/Other category contained a number of non-Europeans. [14] Yet, this study also gives some indication that skin colour may not be the critical variable. If skin colour was, then potentially the 'brown' Pacific and Māori populations might be subject to similar levels of discrimination. It seems a wider range of characteristics are influencing discriminatory behaviour or perceptions of discrimination.

Single and multiple ethnicity and outcomes

Moving back to the US context, two hypotheses have been put forward as to the effect of mixed-race on a variety of outcomes, including health status. One is that mixed-race individuals will be at greater risk of poor outcomes than those who affiliate with

[12] This study used the 2001 census question on ethnicity then prioritised the responses.

[13] While a third of Maori reported having ever faced discrimination, it is worth noting that two thirds indicated they had never faced such discrimination. It is highly likely that at least some of these two thirds would have had characteristics that placed them in a category of being 'recognisably' different from the dominant group in society.

[14] While clients of the health system may be facing discrimination so might also some of the providers of health services. When considering the experience of rural doctors in Australia, many of whom are overseas born and part of Asian or Middle-East ethnic groups, research indicated that some feel discriminated against, often citing visible differences such as skin colour (Hawthorne, Birrell and Young, 2003).

a single race due to stresses associated with a mixed identity. The other theory is that outcomes will lie between those of the two single groups (Udry *et al.* 2003). Many factors are likely to be influencing these outcomes, but variations in skin colour could be important, either directly or indirectly.[15]

In a New Zealand context, to date there has been relatively limited use made of single versus dual and multi-ethnic responses when analysing advantage and disadvantage. When used, it has tended to focus on differences within the broad Māori ethnic group. For example, in a 2000 paper, Gould reports on work he carried out using 1981 census data on average per capita incomes for three groups. They were: Māori (then defined as half or more Māori blood); those with some, but less than half Māori blood; and non-Māori. Gould found that the income of Māori was just under 74% of that of non-Māori, but for those defined as having less than half blood it was over 92%. Using 1986 census data, he found that the proportions of the population in the 20-24 age group who lacked any school qualifications were 64% for sole Māori, 26% for sole European and near the middle, 41%, for those recording Māori and European responses. Using 1991 data, he then went on to look at some basic ancestry/ethnicity interactions. Again he found a gradient of disadvantage in relation to degree of 'Māori-ness'. In an earlier paper, Gould (1996) associated Ngai Tahu's integration into European society with their relative success when compared with other iwi. However, while other people have talked about Ngai Tahu as being the 'white tribe', skin colour was not discussed by Gould in any of these papers.

In a number of papers, Chapple (1999, 2000) and Chapple and Rea (1998) divided the wider Māori ethnic group into two groups, 'sole Māori' and 'mixed Māori' and found better outcomes for 'mixed Māori'. In his 2000 paper, Chapple raised the idea that the disadvantage amongst Māori is concentrated in a particular subset, that is those who identify only as Māori; who have no educational qualifications; and who live outside of major urban centres. Again, skin colour was not a feature of these studies.

While most studies of mortality have used single ethnic groups, an exploratory study showed that when considering age-standardised mortality rates for Māori, there was a gradient of highest mortality rate amongst those recording Māori only (but similar rates for Māori /Pacific), lower for the Māori/non- Māori, non Pacific group, lower again when Māori ancestry but not ethnicity was reported, and the lowest rates for non- Māori /non-Pacific (Callister and Blakely, 2004).

Although also providing no information on physical characteristics, a study of New Zealand adolescents found those recording 'Māori only' did report more discrimination than those recording both Māori and Pakeha (Ward 2006).

However, Kukutai (2003) suggests social policy makers should not put much weight on the categories such as 'Māori only' and 'Māori plus other ethnic group(s)'. Using survey data and a system of self-prioritisation, Kukutai showed those individuals who identified as both Māori and non-Māori, but more strongly with the latter, tended to be socially and economically much better off than all other Māori. In contrast, those

[15] An example of an indirect path is that Herman (2004) suggests when outsiders place people in ethnic groups then they may reinforce this perception in terms of visible characteristics such as hairstyles and dress.

who identified more strongly as Māori, had socio-economic and demographic attributes that were similar to those who only record Māori as their ethnic group.

Kukutai's work shows that some people recording multiple ethnic responses feel strong belonging in more than one ethnic group. For others, however, a stronger affiliation is felt with one particular ethnic group. While not discussed directly in the study, factors such as visible difference, including skin colour, may influence such decisions.

What is causing different outcomes between those recording only Māori ethnicity and those recording Māori and European responses? We do not know. No one single factor is likely to be a driver, but skin colour, in a variety of ways, may exert some influence. For example, it may be that those who 'look more Māori' (or look more 'Pacific') are more likely to record only Māori (or a Pacific) ethnicity in official surveys. If this is correct, and if discrimination is common in New Zealand, the Māori only (or Pacific peoples) group would be more likely to suffer discrimination from police, landlords and healthcare providers.

Skin colour, skin cancer, vitamin D and colorectal cancer

> To what extent are health disparities the result of unequal distribution of resources, and thus a consequence of varied socio-economic status (or blatant racism), and to what extent are inequalities in health status the result of inherent characteristics or individuals defined as ethnically or racially different? (Lee *et al* 2001: 33-34).

The relationship between race or ethnicity and health outcomes has always been contentious. Since the Human Genome project began the debates have become more complex. There are now articles in a wide range of journals presenting research and opinions on topics such as whether 'races exist'; whether 'race (or ethnicity) based' medicine is useful or problematic; and how genes and the environment interact (for example, Brown, 2007; Graves, 2001; Kaufman and Cooper, 2002; 2000; Schwartz, 2001; Wade, 2003). Such discussion include ideas that race or ethnicity might need to be thought about on at least four levels: societal, individual, cellular and subcellular (Braun et al 2007: 1425). Questions of nature versus nurture (or nature and nurture) show up in discussions of early Māori health with an examination of the role of genetic mixing as opposed to the social, economic and cultural changes that accompany intermarriage and social mixing. For example, O'Regan (2001: 135) notes that early in the colonisation of New Zealand "[k]āi Tahu leaders were quick to recognise the increased resistance to European illnesses in those of mixed descent." Medical research suggests there are few diseases that have a simple genetic determination, one example being that of Huntingtons, a rare inherited neurological disorder. Whilst simple genetic mutations may be found to vary between ethnic/racial groups, most genetic factors show greater variation within than between ethnic groups (Pearce et al. 2004, Cooper, 2003). However, one area in which genetics has a clear impact is skin colour.

Skin colour has been associated with the risk of developing skin cancer, including melanoma. In both New Zealand and Australia there has been debate about whether there is a strong causal, but inverse, relationship between sun exposure, vitamin D production and cancer. The theory is that sun exposure may protect against some

forms of cancer, in particular colorectal cancer. In a report commissioned by the Cancer Society, Scragg (2007: 21) suggests:

> The strong evidence from studies showing an inverse association between vitamin D and colorectal cancer, when combined with similar (albeit limited) findings from studies of total cancer incidence and mortality, suggest that cancer incidence and mortality in New Zealand can be expected to decline if levels of vitamin D in the population are increased.

In terms of why skin colour may be lighter amongst some groups, there is some scientific evidence to suggest that humans emerged from Africa to colonise other areas some 70,000 years ago. Scientists suggest the migrating Africans were likely to have had dark, highly reflective skin and black hair. It is hypothesised that as this group moved from equatorial regions northwards into central Asian, then into Europe, eastern Asia and the polar north, dark skin became a liability. At higher latitudes, the lower angle of the sun, the longer and darker winters and the need to wear warm clothing, may have made those who had darker skin deficient in vitamin D, which is mainly produced by the action of ultraviolet radiation (UV) on cholesterol in the skin.[16] Vitamin D is essential for normal calcium metabolism and chronic deficiency causes rickets in children.

But light coloured skin raises the risk of skin cancer, including melanoma, especially when light skinned people then migrate to areas with strong UV radiation (Boyle *et al*, 2004).[17] While skin cancer is a risk in Europe, people from Europe have migrated to countries such as Australia and New Zealand where UVR levels are much higher in the summer than at comparable latitudes in the northern hemisphere (McKenzie et al, 1996). In New Zealand, the descendents of these migrants include New Zealand Europeans but, through intermarriage, they also include Māori, Pacific people and Asians. Particularly high rates of historic intermarriage have led to the perception of Ngai Tahu as the 'white tribe' (Wanhalla, 2007). In terms of skin cancer it is noted:

> The highest incidence rates of melanoma are reported from (essentially European migrant populations in) Australia and New Zealand (non-Maori population) where the annual incidence is more than double the highest rates recorded in Europe. Incidence rates have been increasing rapidly for several decades in all Caucasian populations although there is now an indication that in those areas where the incidence is highest, the mortality rate is beginning to stabilise or fall (Boyle *et al*, 2004).

In this context, the term Caucasian means white skinned. In this situation it is not an ethnic group. Again, this term is used in a New Zealand study of skin cancer:

> The main aetiological factor for melanoma is exposure of Caucasian skin to ultra-violet (UV) light, particularly intermittent exposure and particularly during childhood. The best avenue currently for melanoma prevention is believed to be by encouraging protection against sunburn, particularly in children, and in fair-haired and fair-skinned people' (Sneyd and Cox 2006: 8).

[16] Vitamin D is also obtainable from some food sources.

[17] Carcinogenic UV radiation in New Zealand can be more than 50% greater than at some industrialised northern hemisphere locations at the equivalent latitudes during summer because of New Zealand's clear, unpolluted atmosphere (Smith, 1998).

In a 1988 study, Shaw noted that malignant melanoma was rare amongst Māori. However, while numbers are still small cancer registration data suggest that Melanoma may be increasing for Māori. In 1998 data there were three registrations for Māori men and the same number for Māori women (New Zealand Health Information Service, 2002). The 2004 cancer registration data show 5 malignant melanoma registrations and 4 deaths for Māori men and 12 registrations and 2 deaths for Māori women. In comparison, there were 944 registrations and 148 deaths for non-Māori men and 935 registrations and 95 deaths for non-Māori women (New Zealand Health Information Service, 2007). Given the small numbers, age standardised rates per 100,000 population could only be calculated in relation to incidence for Māori women, with a rate of 5 compared with 35.6 for non-Māori women. If skin colour is a factor behind the rise, from a low base, in Māori melanoma rates, there are two possible explanations. First is that through historic and ongoing intermarriage there is a growing group of Māori with light coloured skins who are at risk of developing melanoma. It is also possible that there is now a group of light skinned people who had Māori ancestry, but in the past did not claim Māori ethnicity.

But exposure of the skin to the sun is important for producing Vitamin D, with sunlight being the main source of vitamin D. Based on the analysis of blood samples collected as part of the 2002 National Children's Nutrition Survey, Rockell *et al* (2005) found that Māori and Pacific children have, on average, lower vitamin D levels than European children. Based on their measure of insufficiency of Vitamin D (<37.5 nmol/L), the researchers found 41% (range 30% to 54%) of Māori, 60% (43%,74%) of Pacific and 26% (16%, 37%) of European children fell below this level.[18] This lower level of Vitamin D for Māori and Pacific children was assumed to be the result of the amount of melanin, or skin darkness and lack of exposure to the sun.[19] [20] However, a range of other factors may be influencing levels, including prevalence of obesity, type of diet or level of exercise. The relationship of sun exposure and skin type in New Zealand to these lower levels of Vitamin D has not yet been validated against an objective measure of skin colour. In relation to risk from skin cancer, there is an objective scale that can be used to classify skin. This is the Fitzpatrick skin type that has six categories[21]

- Skin type I: Always burns, never tans; sensitive to sun exposure; redheaded, freckles

[18] In schools three distinct groups of children were selected, Maori, Pacific and European/Other. However, it is not clear from the published methodology how children who may have wanted to affiliate with more than one ethnic group were allocated to just one ethnic group. Note also that while the averages are different, the ranges overlap for Europeans/Others and Maori and for Maori and Pacific children.

[19] A study of Vitamin D levels in South Asian women in New Zealand suggests that avoiding sun exposure may be health risk for some groups of Asians, http://masseynews.massey.ac.nz/2007/Massey_News/issue-19/stories/01-19-07.html

[20] A British study of Vitamin D adequacy cites a number of research papers that identify skin pigmentation rather than ethnicity per se as important is the production of adequate levels of Vitamin D (Scientific Advisory Committee on Nutrition, 2007).

[21] Another option is the direct measurement of melanin and blood concentration in human skin because human skin colour is mainly determined by the colours of melanin and blood. However, it is difficult to measure these concentrations in human skin because skin has a multi-layered structure and scatters light strongly (Shimada *et al*, 2001).

- Skin type II**:** Burns easily, tans minimally; fair-skinned, blue, green or gray eyes
- Skin type III**:** Burns moderately, tans gradually to light brown
- Skin type IV: Burns minimally, always tans well to moderately brown; olive skin
- Skin type V: Rarely burns, tans profusely to dark; brown skin
- Skin type VI: Rarely burns, least sensitive; deeply pigmented skin

Colorectal cancer is a major cancer type and the leading cause of non-tobacco-attributable cancer mortality for both men and women (Blakely *et al*, 2007). Just as there are differences in melanoma rates for Māori and non-Māori, there are also differences in the rates, and in trends, of colorectal cancer. Blakely *et al* show that when considering age standardised mortality rates (within the 1-74 age group), Māori men had a lower rate than European men for the 1981-84 cohort. However, mortality rates have been increasing for Māori men and decreasing for European/Other men, so that for the 2001-04 cohort colorectal cancer mortality rates were higher for Māori men. For Māori women, the estimates move around more, but for the 2001-04 cohort Māori rates were still marginally below that of European/Other women. The increasing rates for Māori undermine the Vitamin D hypothesis, unless sun exposure has changed over time through, perhaps, rural urban migration and/or fewer Māori working in outdoor occupations, or because Māori with dark skin have inappropriately been affected by 'sunsmart' promotions which suggest limiting sun exposure at peak UV intensity. However there are also likely to be many confounders, including change of diet, physical activity and obesity. Nevertheless, Vitamin D produced by sun exposure may still be of some importance in relation to colorectal cancer rates, and skin colour may be a factor in obtaining adequate levels of vitamin D from the sun.

One possible outcome of the debate about Vitamin D and its potential protective effect is that sun exposure, including sun protection, messages should differ according to ethnic group. One suggestion might be that Māori and Pacific people are not at risk, or at lesser risk, from melanoma so do not need to 'cover up' in the summer in the same way as 'Europeans'. In fact, the argument could be that Māori and Pacific people should actively seek out sun exposure to protect themselves again colorectal cancer. But how good a predictor is ethnicity of particular skin types? In much of the New Zealand health discussions there seems to be an assumption that ethnicity is an excellent predictor of skin type.[22] In the long term, if skin colour was collected on the official cancer registry, then relationships in relation to cancer incidence and mortality could be assessed. But even if it turns out that there is a reasonable relationship at a group level, such data tell one little about risk factors for individuals within the group. It would be irresponsible, for example, to say that, given historic data showing Māori have a low (but growing) risk of melanoma, Māori (or Pacific people) as a group therefore do not need to cover up at peak UVR times in summer. That decision needs to be made in relation to individual characteristics, particularly skin colour. That is, there may be some Māori and Pacific people who should spend more time in the sun than they currently do to protect against some forms of cancer, but there will be other

[22] In 2007 the Health Research Council funded a project *Quantifying the association between sun exposure and vitamin D status in New Zealanders*. This project will consider skin type.

Māori and Pacific people who should carefully heed the summer sunsmart messages in order to protect against developing skin cancer.

Conclusion

Does skin colour matter? Ideally, in most, but not all, situations society should be colour blind. Yet, despite skin colour not being part of any official measure of ethnicity in New Zealand, it seems likely that many people are using skin colour, along with other recognisable characteristics, on a day-to-day basis either in relation to defining their own ethnic identity or other people's identity. Expressions such as the 'browning' of New Zealand also suggest that skin colour is an important concept in some contexts. In New Zealand, there seems to be a common assumption that Māori and Pacific people are brown and that, equally, Europeans are white. It is also assumed by some that those who record 'New Zealander' ethnic responses in surveys are white and that migrants from Europe are also white. Yet, the small amount of available evidence suggests there may be much variation in skin colour within broad ethnic groups.

Based on mainly US research, it is likely that skin colour, along with other recognisable characteristics, is a factor in discriminatory behaviour. However, research would be needed to test whether this is important in New Zealand. If skin colour is important, then it is likely, as an example, that not all Māori would face the same degree of discrimination. It is possible that those who fit a particular visual stereotype would face the greatest difficulties. This may be one factor in why those recording Māori and European ethnicities have, on average, better outcomes than those who record 'Māori only'. To help reduce ethnic inequalities it is important that we understand all the contributing factors to the disadvantages faced by particular groups.

This paper raises some questions as to why skin colour is thought about in some contexts, but appears unable to be discussed in others. The main area where it seems that this is not able to be discussed is in the research and policy community. To some degree, this seems due to New Zealand moving from thinking about race in official contexts and switching to a discourse focusing on culturally-constructed ethnicity. Skin colour has become a hidden variable when considering differing outcomes for groups within New Zealand. But if we did talk more openly about skin colour, should we go one step further and start collecting such information in official surveys, especially in health datasets such as the Cancer Registry? Skin colour is likely to be useful for some medical research, such as the possible links between vitamin D levels and cancer. It is also likely to very useful when considering discrimination. But there would be problems in collecting such data. One is simply technical, how would we get objective data? But there may be other reasons for not collecting such information. It may be that focusing more on skin colour would reinforce differences between people rather than help break them down. Just as collections of ethnic data may not only reflect ethnic groups but also create them through developing stereotypes based on behaviour, so too might collections that contain skin colour.

As a first step, it would be worth carrying out some qualitative work as to how individuals, especially young people, conceptualize ethnicity, including how they

bring in considerations of skin colour alongside other influences. This would help us start to answer the question of whether skin colour matters in New Zealand.

Acknowledgements

I would like to thank David Bromell, Tony Blakely, Robert Didham, Gary Hawke, Judith Galtry and Tahu Kukutai for their insightful comments. However, all opinions expressed in this paper are my own.

References

Blakely, T., Tobias, M., Atkinson, J., Yeh, L-C. and Huang, K. (2007) *Tracking Disparity: Trends in ethnic and socioeconomic inequalities in mortality, 1981–2004*. Wellington: Ministry of Health.

Borrell, L. N., Kiefe, C. I., Williams, D. R., Diez-Roux, A. V. and Gordon-Larsen, P. (2006) Self-reported health, perceived racial discrimination, and skin color in African Americans in the CARDIA study, *Social Science & Medicine*, 63:1415-1427.

Boyle, P., Doré, J. F., Autier, P. and Ringborg, U. (2004) Cancer of the skin: a forgotten problem in Europe, *Annals of Oncology*, 15: 5–6.

Braun, L., Fausto-Sterling, A., Fullwiley, D., Hammonds, E. M. H., Nelson, A., Quivers, W., Reverby, Susan M. and Shields, A. E. (2007) Racial categories in medical practice: How useful are they?, PloS Medicine online, www.plosmedicine.org

Brown, P. (1984) Official ethnic statistics in New Zealand, in P. Spoonley, C. Macpherson, D. Pearson and C. Sedgwick (eds.) *Tauiwi: Racism and Ethnicity in New Zealand*, Dunmore, Palmerston North.

Brown, M. (2007) Defining human differences in biomedicine, Editorial, PloS Medicine online, www.plosmedicine.org

Callister. P. and Blakely, T. (2004) Ethnic classification, intermarriage, and mortality: Some methodological issues in relation to ethnic comparisons in Aotearoa/New Zealand, Working Paper, Wellington School of Medicine.

Callister, P., Didham, R. and Potter, D. (2005) Ethnic Intermarriage in New Zealand, Working paper, September, Wellington: Statistics New Zealand.

Chapple, S. (1999) Explaining patterns of disparity between Māori and non- Māori employment chances, *Labour Market Bulletin*, 70-100.

Chapple, S. (2000) Māori socio-economic disparity, *Political Science*, 52(2):101-115.

Chapple, S. and Rea, D. (1998) Time series analysis of disparity between Māori and non- Māori labour market outcomes, *Labour Market Bulletin* 1&2: 27-144.

Cooper, R. S. (2003) Race, genes, and health-new wine in old bottles? *International Journal of Epidemiology*, 32(1), 23-25.

Darity, W.A. (2003) Employment discrimination, segregation, and health, *American Journal of Public Health*, 93 (2): 226-231.

Darity, W.A., Hamilton, D. and Dietrich J. (2002) Passing on blackness?: Latinos, race, and earnings in the USA, *Applied Economics Letters*, 9: 847-853.

Department of Corrections (2007) Over-representation of Māori in the criminal justice system: An exploratory report, Policy, Strategy and Research Group, Department of Corrections, Wellington, September.

Dupuis, A., Hughes, D., Lauder, H. and Strathdee, R. (1999) What it means to be a 'New Zealander': Issues arising from a question on ethnicity, *New Zealand Sociology*, 14(1): 27-60.

Fernando, S. (2006) Stigma, racism and power, *AEN Journal*, 1(1) http://www.aen.org.nz/journal/1/1/fernando.html

Gagnon, C. (2007) Whiteness and Multiculturalism, http://www.ithaca.edu/gagnon/whiteness/

GóMez, C. (2000) The continual significance of skin color: An exploratory study of Latinos in the Northeast, *Hispanic Journal of Behavioral Sciences*, 22(1): 94-103.

Gould, J. D. (1996) Socio-economic differences between Māori Iwi, *The Journal of the Polynesian Society,* 105(2): 165-183.

Gould, J. D. (2000) Counting Māori, *New Zealand Population Review*, 26(2):1-19.

Graves, J. L (2001) *The emperor's new clothes: Biological theories of race at the millennium*, New Brunswick, New Jersey and London: Rutgers University Press.

Gullickson, A. (2005) The significance of color declines: A re-analysis of skin tone differentials in post-civil rights America, *Social Forces*, 84(1): 157-180.

Hage, G. (1998) *White Nation - Fantasies of White supremacy in a multicultural society*, Australia: Pluto.

Harris, R., Tobias, M, Jeffreys, M. Waldegrave, K., Karlsen, S., and Nazroo, J. (2006) Racism and health: The relationship between experience of racial discrimination and health in New Zealand, *Social Science and Medicine*, 63(6): 1428-41.

Hawthorne, L., Birrell, B. and Young, D. (2003) The retention of overseas doctors in general practice in regional Victoria, Faculty of Medicine, Dentistry and Health Science, University of Melbourne.

Herman, M. (2004) Forced to choose: Some determinants of racial identification in multiracial adolescents, *Child Development*, 75(3): 730-748.

Hill, M. E. (2000) Color differences in the socioeconomic status of African American men: Results of a longitudinal study**,** *Social Forces*, 78(4): 1437-1460.

Ho, H. (2007) What's the problem with white? Paper posted on the website of the conference 'Sweet As?': Ethnic and Pākehā NZers talk identity and dominance in a colonised land, http://sweetasconference.blogspot.com/2007/06/whats-problem-with-white.html

Holmes, K., Murachver, T. and Bayard, D. (2001) Accent, appearances and ethnic stereotypes in New Zealand, *New Zealand Journal of Psychology,* 30: 79-86.

Hunter, M. L. (2002) If you're light you're alright: Light skin color as social capital for women of color, *Gender & Society*, 16(2):175-193.

Jackson, M. (2003) The part-Maori syndrome, *Mana*, 52(June-July):62.

Kaufman, J. S. and Cooper, R. S. (2002) Commentary: Considerations for use of racial/ethnic classification in etiologic research, *American Journal of Epidemiology,* 154(4): 291- 298.

Keddell, E. (2006) Pavlova and pineapple pie: Selected identity influences on Samoan-Pakeha people in Aotearoa/New Zealand', *Kōtuitui: New Zealand Journal of Social Sciences Online*, 1: 45–63

Keith, V. and Herring, K. (1991) Skin tone and stratification in the black community, *American Journal of Sociology*, 27:760–778.

Kiro, C. (2002) When the invisible hand rocks the cradle: Implications of the UNICEF report for public health in New Zealand, *PHA News,* 5(6):1-3.

Klonoff, E. A. and Landrine, H. (2000) Is skin color a marker for racial discrimination? Explaining the skin color–hypertension relationship, *Journal of Behavioral Medicine*, 23(4): 1573-3521.

Korgen, K. O. (1998) *From black to biracial: Transforming racial identity among Americans*, Westport, Conn: Praeger.

Kukutai, T. (2003) *The Dynamics of Ethnicity Reporting: Māori in New Zealand*. Wellington: Te Puni Kōkiri.

Kukutai, T. (2005) White mothers, brown children: Understanding the intergenerational transmission of minority ethnic identity. Paper presented at the Annual American Population Association Meeting, Philadelphia.

Kukutai, T. (2007) White mothers, brown children: Understanding the intergenerational transmission of minority ethnic identity, *Journal of Marriage and Family*, 69(5): 1150-1161.

Kukutai, T. and Didham, R. (2007) Can national identity become ethnic identity? The case of the emerging New Zealander ethnic group, paper presented at the International

conference on *Social Statistics and Ethnic Diversity: Should we count, how should we count and why?* Montréal, 6-8 December 2007.

Lane, J. and Lawrence, P. (2007) Children need to know that skin colour is not a taboo subject, Guardian Unlimited, December 4.

Lee, S. S., Mountain, J. and Koenig, B. (2001) The meanings of race in the new genomics: Implications for health disparities research, *Yale Journal of Health Policy, Law and Ethics*,1: 33-75.

Mana (2002) Top Scholar, *Mana Magazine*, 45(April- May): 22.

Matahaere, D. (1995) Maori, the 'externally comprised noun": Complicity, contradictions, and postcolonial identities in the age of biculturalism, *Women's Studies Journal*, 11(1-2): 15-24.

McKenzie, R. L., Bodeker, G. E., Keep, D. J., Kotkamp, M. and Evans, J. H. (1996) UV radiation in New Zealand: Measured North to South differences, and relationship to other latitudes, *Weather and Climate*, 16 (1): 17-26.

Morning, A. (2008) Ethnic classification in global perspective: a cross-national survey of the 2000 census round, *Population Research and Policy Review* online, http://www.springer.com/social+sciences/demography/journal/11113

New Zealand Health Information Service (2002) Cancer: New Registrations and Deaths 1998, Wellington: Ministry of Health.

New Zealand Health Information Service (2007) Cancer: New Registrations and Deaths 2004, Wellington: Ministry of Health.

O'Regan, H.M. (2001) *Ko Tahu, Ko Au: Kāi Tahu Tribal Identity*, Horomaka, Christchurch.

Pearce, N., Foliaki, S., Sporle, A. and Cunningham, C. (2004) Genetics, race, ethnicity, and health. *British Medical Journal*, 328:1070-1072.

Pomare, E., Keefe-Ormsby, V., Ormsby, C., Pearce, N., Reid, P., Robson, B., and Watene-Haydon, N. (1995) Hauora: Māori Standards of Health III, Eru Pomare Māori Health Research Centre, Wellington.

Pool, I., Dharmalingam, A. and Sceats, J. (2007) *The New Zealand family from 1840: A demographic history*, Auckland: Auckland University.

Potvin, M. (2005) The role of statistics on ethnic origin and 'race' in Canadian anti-discrimination policy, *International Social Science Journal*, 57(183): 1–4.

Rockell, J. E., Green, T. J., Skeaff, C. M., Whiting, S. J., Taylor, R. W., Williams, S. M., Parnell, W. R., Scragg, R., Wilson, N., Schaaf, D., Fitzgerald, E. D., & Wohlers, M. W. (2005) Season and ethnicity are determinants of serum 25-hydroxyvitamin D

concentrations in New Zealand children aged 5-14 y, *The Journal of Nutrition*, *135*, 2602-2608.

Rockquemore, K. A. (2002) Negotiating the color line: The gendered process of racial identity construction among Black/White biracial women, *Gender and Society*, 16 (4): 485-503.

Schwartz, R. S. (2001) Racial profiling in medical research, *New England Journal of Medicine,* 344 (18): 1392-1393.

Scientific Advisory Committee on Nutrition (2007) Update on Vitamin D: Position statement by the Scientific Advisory Committee on Nutrition, http://www.sacn.gov.uk/pdfs/sacn_position_vitamin_d_2007_05_07.pdf

Scragg, R. (2007) Vitamin D, sun exposure and cancer: A review prepared for the Cancer Society of New Zealand, Wellington: Cancer Society, http://www.cancernz.org.nz/Uploads/VitaminD_UV_CancerReview_24Sept07.pdf

Seltzer, R. and Smith, R. C. (1991) Color differences in the Afro-American community and the differences they make, *Journal of Black Studies*, 21:279–286.

Shaw, J. H. (1988) Malignant melanoma in Auckland, New Zealand, *Journal of Surgery, Gynecology and Obstetrics*, 166 (5): 425-30.

Shimada, M., Yamada, Y., Itoh, M. and Yatagai, T. (2001) Melanin and blood concentration in a human skin model studied by multiple regression analysis: assessment by Monte Carlo simulation, *Physics in Medicine and Biology*, 46 (9): 2397-2406.

Simon, P. (2007) The measurement of racial discrimination: The policy use of statistics, *International Social Science Journal*, 57 (183): 1–4.

Smith, G. (1998) Why is New Zealand's melanoma problem so bad?, Wellington: Ministry of Health, http://www.moh.govt.nz/moh.nsf/pagesmh/164?Open

Sneyd, M. J. and Cox, B. (2006) The control of melanoma in New Zealand, *The New Zealand Medical Journal*, 119 (1242): 1-11.

Statistics New Zealand (2001) Tamariki and Rangatahi Māori Regional Reports, http://www.stats.govt.nz/analytical-reports/maori-regional-reports.htm

Statistics New Zealand (2004) *Report of the Review of the Measurement of Ethnicity*, Wellington: Statistics New Zealand.

Te Ropu Rangahau Hauora a Eru Pomare (2000) Counting for nothing: Understanding the issues in monitoring disparities in health, *Social Policy Journal of New Zealand*, 14: 1-16.

Telles, E. and Murguia, E. (1990) Phenotypic discrimination and income differences among Mexican Americans. *Social Science Quarterly*, 71:682–694.

Thomas D. R. and Nikora, L. W. (1991) Maori, Pakeha and New Zealander: Conceptions of ethnic and national identity among New Zealand students. Hamilton: University of Waikato, Department of Psychology, unpublished manuscript.

Thomas, D. R. and Nikora, L. W. (1996) Maori, Pakeha and New Zealander: Ethnic and national identity amongst New Zealand students. *Journal of Intercultural Studies*, 17(1&2): 29–40.

Udry, J. R. Li, R. M. and Hendrickson-Smith, J. (2003) Health and behavior risks of adolescents with mixed-race identity**,** *American Journal of Public Health*, 93(11): 1865-1870.

Wade, N. (2003) 2 scholarly articles diverge on role of race in medicine, New York Times, March 20, Accessed 24 March 2003, http://www.nytimes.com/2003/03/20/health/20RACE.html?ex=1049241160&ei=1&en=e6075cc8c73d9854

Wanhalla, A. (2007) Ngai Tahu Historiography, *History Compass*, 5(3): 802–817.
Ward, C. (2006) Acculturation, identity and adaptation in dual heritage adolescents, *International Journal of Intercultural Relations*, 30: 243-259.

Waters, M. C. (1990) *Ethnic Options: Choosing Identities in America*, University of California, Berkeley.

Waters, M. C. (1996) Optional ethnicities: For whites only?, in S. Pedraza and R. G. Rumbaut (eds.) *Origins and Destinies: Immigration, Race, and Ethnicity in America*, Wadsworth, Belmont, California.

Xie, Y. and Goyette, K. (1997) The racial identification of biracial children with one Asian parent: Evidence from the 1990 Census" *Social Forces,* 76(2):547-570.