

THE RELATIONSHIP OF SKIN TONE TO PHYSICAL AND MENTAL HEALTH
OUTCOMES IN SOUTH ASIAN AMERICANS

by

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ABSTRACT OF THE DISSERTATION

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Americans

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Since 1990, the South Asian population in America has exhibited massive growth, as large numbers of immigrants from India, Pakistan, and other South Asian countries have arrived in the United States. Yet limited empirical psychological research has been conducted assessing race-related stressors in this population. Skin tone (skin color) has been linked frequently with physical and mental health outcomes in other American ethnic minority populations, such that dark skin tone typically correlates with poor outcomes. The present study demonstrated, in a relatively large sample of South Asian Americans, that darkness of skin tone negatively predicted self-esteem and self-rated physical health. Contrary to expectations, dark skin tone positively predicted general mental health. The study also investigates the mediation role of perceived discrimination and body image disturbance in these relationships, as well as the moderating roles of gender, socioeconomic status, and ethnic identification. The relationship of dark skin tone

to low self-esteem, but not low self-rated physical health or high general mental health, was mediated via increased body image disturbance. Ethnic identification moderated the positive association between dark skin tone and general mental health, such that this association was strong at low levels of ethnic identification and *reversed* for individuals of high ethnic identification. Neither gender nor ethnic identification moderated the negative associations between dark skin tone and low self-rated physical health or low self-esteem. Implications and recommendations are discussed.

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Following the expansion of United States immigration quotas in 1965, Asian immigration has increased tremendously (Bijlani, 2005). Among Asian immigrants, Indians, Pakistanis, and others from the South Asian region have exhibited some of the largest growth rates in the United States, with estimated increases as high as 106% between 1990 and 2000 (South Asian Leaders of Tomorrow, 2007). However, a search of journal article abstracts in PsycInfo using the terms “South Asian American,” “Indian American,” and “Pakistani American” collectively produces only 32 psychological studies published since 2000, of which only 15 directly address issues of mental health for South Asians. This lack of research attention coincides with documented underutilization of mental health care resources by South Asian Americans (Conrad & Pacquiao, 2005; Dasgupta & Warriar, 1996; Karasz, 2005), suggesting the importance of examination of factors affecting the mental health of this group. Furthermore, high rates of stress-influenced illnesses among South Asian Americans, such as coronary heart disease, hypertension, and stroke, indicate the need for research into predictors of stress and distress in this population (e.g., Ferdinand, 2006; Mathews & Zachariah, 2008; Mohanty, Woodhandler, Himmelstein, & Bor, 2005).

Among the few studies that do explore predictors of psychological distress for South Asian Americans, many focus upon experiences related to immigration and cultural adjustment rather than racism or race-related stress (e.g., Frey & Roysircar, 2006; Kandula, Tirodkar, Lauderdale, Khurana, Makoul, & Baker, 2010; Loya, Reddy, & Hinshaw, 2010), despite the established role of race-related factors in predicting distress and poor physical health for other ethnic minority groups (e.g., Pascoe & Smart Richman, 2009). The current study presents a conceptual framework of skin tone-related distress,

elaborated upon below. The study then considers the relationship of skin tone to adverse psychological and physical health outcomes in a South Asian American sample, as well as the possible moderating roles of socioeconomic status (SES) and gender in these associations. Finally, this study conducts an exploratory analysis of the moderating role of ethnic identification in the relationships between skin tone and mental/physical health outcomes.

A Conceptual Framework of Skin Tone-Related Distress

For the current study, I derive my hypotheses from a multivariate model of the development and maintenance of skin tone-related distress in South Asian Americans. This theoretical model draws upon theories of body image disturbance, racial identity, and minority status stress. Accordingly, I conceptualize skin tone-related distress as a race-related component of body image, first learned during childhood by a process of social learning and conditioning per Neziroglu, Khemlani-Patel, and Veale's (2009) etiological theory of body image disturbance. Dominant, historically-rooted cultural values equating "White" or light skin tone with beauty or goodness and devaluing dark skin tones as ugly or undesirable are absorbed through explicit parental and peer endorsements as well as socially learned behaviors such as witnessing key ingroup members avoid the sun or use lightening creams. Individuals internalize this system of skin tone-related beliefs, schema, and behaviors, and this then contributes to cognitive and attentional biases that distort or selectively attend to environmental and social cues reinforcing negative beliefs about dark skin tone. This theoretical model is consistent with models of racial or ethnic identity, which all similarly conceptualize the internalization of negative beliefs about one's own racial group as a measurable state in

identity development among ethnic minority individuals (e.g., Cross, 1971; Baldwin, 1981; Parham & Helms, 1985). Racial or ethnic identity may play a protective or detrimental role in the process of skin-tone related distress, depending on which values and concepts of group identity are internalized (e.g., negative versus positive stereotypes) and how they are reinforced (e.g., affirmation of ethnic pride versus alienation from the majority culture).

The present model then theorizes dark skin tone to be predictive of poor mental and physical health outcomes. Consistent with previous theories of minority status stress (e.g., Smedley, Myers, & Harrell, 1993), I posit a cyclical relationship between aversive experiences such as discrimination, attribution of these experiences to the darkness of one's skin tone, subjective experience of body image disturbance, and subsequent interactions that serve to maintain attribution of distress and negative social experiences to dark skin tone. In this study, I explore the outcome-related component of this model, testing the theorized links between skin tone and mental/physical health outcomes in South Asian Americans. Furthermore, I assess whether a psychological health factor, body image disturbance, and a social factor, perceived discrimination, mediate the associations of skin tone with psychological and physical health. Finally, I consider the role of three contextual factors – socioeconomic status, ethnic identification, and gender – as moderators of these processes. Substantial evidence from previous research, along with cultural and historical factors unique to South Asia, has established context and an empirical basis for this model of skin tone-related distress. This evidence is presented next.

The Salience of Skin Tone in South Asian Cultures

Media images, consumer behavior, and historical evidence suggest that skin tone may play a particularly important role in South Asian communities. The link of dark skin color with ugliness, evil, and other negative traits has consistently appeared in South Asian film and other cultural products (Gosai, 2010). Narrative accounts suggest that dark-skinned South Asian men and women have been stigmatized both within and outside of their communities as undesirable, unattractive, unhealthy, and of lower social class (Prashad, 2000). Furthermore, research has drawn attention to the rapidly growing market for “skin bleaching” creams in South Asian communities in Asia, North America, and Europe (e.g., Glenn, 2008; Goon & Craven, 2003; Li, Min, Belk, Kimura, & Bahl, 2008). This controversy has also been visible in the Indian popular media, where Indian film celebrities have made public statements suggesting that the popular use and advertisement of skin bleaching creams has had a detrimental effect on the self-worth of the generally dark-skinned South Asian population (e.g., Baker, 2010; Black, 2009). In immigrant South Asian communities, this link is most visible in advertisements for arranged marriages, wherein eligible brides and grooms note that their skin is of “fair complexion” (Jha & Adelman, 2009). Broadly, trends in contemporary culture suggest that deviance from a light-skinned standard of beauty may represent a significant stressor and predictor of mental and physical well-being for South Asians.

The importance of skin tone in South Asian cultures has often been tied to the region’s history of caste and colonialism. The term caste refers to inherited social class, and has been established as a persistent form of socioeconomic division in South Asian cultures (Sen, Iyer, & George, 2002). With the advent of European colonialism in the region beginning in the 16th century, European racial discrimination and domination of

South Asians rapidly became the *sine qua non* of colonial rule (Bose & Jalal, 2004). British colonialism in particular linked caste to skin tone, and the colonial administration categorized, ranked, and preferentially treated South Asian subjects on the basis of both skin tone and caste (Prashad, 2001). As a result, color and caste began to overlap substantially, and darker skin tone became unambiguously stigmatized as an emblem of lower social and economic status (Deshpande, 2002). The subsequent benefits associated with light skin tone came at the obvious price of discrimination against darker skinned South Asians, by both European colonials and native South Asians themselves (Deshpande, 2002; Reddy, 2005). Thus, historical evidence also suggests that skin tone may be particularly salient and impactful to the health of South Asians.

Despite its cultural and historical importance, no quantitative studies explicitly address the links between skin tone and psychological or physical health among South Asian Americans. The single existing study of skin tone among South Asians found that a sample of 100 South Asian Canadian women preferred skin tones lighter than their actual skin tones, supporting the idea that light skin tones may function as an ideal in this population (Sahay & Piran, 1997). However, this study did not examine the mental or physical health correlates of these preferences. Conversely, a substantial amount of literature explores the relationship of skin tone to mental and physical health in other racial communities, including African Americans (e.g., Sweet, McDade, Kiefe, & Liu, 2007), Latino/Hispanic Americans (e.g., Telzer & Vazquez Garcia, 2009), and other Asian Americans as well (e.g., Kiang & Takeuchi, 2008). These studies of other racial and ethnic minority groups may provide direction for the study of skin tone-related mental and physical health outcomes for South Asian Americans. Existing evidence on

skin tone and its psychological and physical health correlates in other ethnic groups is reviewed forthwith.

Physical and Mental Health Correlates of Skin Tone

Previous research has linked dark skin tone to poor physical health. For example, dark skin color is associated with greater prevalence of hypertension among African Americans (e.g., Brondolo, Rieppi, Kelly, & Gerin, 2003; Klonoff & Landrine, 2000; Krieger & Sidney, 1996). A recent analysis of a sample of 1893 African Americans in the Coronary Artery Risk Development in Young Adults (*CARDIA*) study found that dark skin tone was associated with higher blood pressure (Sweet, McDade, Kiefe, & Liu, 2007). Similarly, in another study of 457 African Americans, dark skin tone predicted greater rates of hypertension (Klag, Whelton, Coresh, Grim, & Kuller, 1991). Data on non-African American groups in this vein is limited, but in one study that assessed a large community sample of 2,092 Filipino American adults in San Francisco and Honolulu, dark skin tone was associated with poorer self-rated physical health (Kiang & Takeuchi, 2008), the latter being a strong predictor of mortality (cf. Idler & Benyamini, 1997).

The majority of studies suggest that skin tone is associated with self-esteem for women, while this association is not necessarily evident for men. In three studies, dark skin tone was associated with diminished self-esteem in African American and Hispanic/Latina women (Lopez, 2008; Telzer & Vazquez Garcia, 2009; Thompson & Keith, 2001). Yet, another study found *no* associations between skin tone and self-esteem for African American women (Coard, Breland, & Raskin, 2001). Thompson and Keith (2001) and Coard et al. (2001) were the only two studies to examine the relationship of skin tone to self-esteem in African American men, and they found no association.

Previous research on gender, body image, and attractiveness suggests that gender differences in this relationship may be driven by a greater social emphasis on physical appearance for women, and subsequent differential reinforcement of these values for women as compared to men (e.g., Keith, Lincoln, Taylor, & Jackson, 2010; Thompson & Keith, 2001). Thus, evidence suggests that the relationship between skin tone and self-esteem may be moderated by gender, such that it exists more strongly for women than for men.

With respect to other aspects of mental health, research on the relationship between skin tone and psychological distress has been limited to two studies. One study of African American women showed no association between skin tone and depression (Keith, Lincoln, Taylor, & Jackson, 2010). An additional study found differing associations between “dark phenotype” and depression for male and female Mexican Americans, such that depression was higher in men with a “dark phenotype” but lower in women with a dark phenotype (Codina & Montalvo, 1994). However, this study operationalized the term “dark phenotype” as a composite of skin tone and facial features, thereby conflating two potentially separate constructs (e.g., Livingston & Brewer, 2002). The current study extends past research by assessing the relationship of skin tone to both self-esteem and a broader range of mental health indicators (i.e., anxiety, depression, and overall distress) for South Asian Americans of both genders. Furthermore, this study will assess whether gender moderates the relationship between skin tone and self-esteem.

Skin Tone and Body Image Disturbance

While skin tone has been shown to have important physical and mental health correlates, it is improbable that the actual color of skin itself is biologically responsible

for these outcomes. Rather, this link is likely explained by multiple mediating factors. The conceptual framework supporting the current study derives in large part from integrative theories of body image disturbance (BID; Neziroglu, Khemlani-Patel, & Veale, 2008). BID, broadly defined, refers to any psychological distress or dysphoria stemming from dissatisfaction with perceived flaws in one's body or physical appearance (Hrabosky et al., 2009). The skin, among a variety of body parts and areas, is recognized as a significant appearance-related element of body image and body image disturbance (e.g., Cafri, Thompson, Jacobsen, & Hillhouse, 2009; Kent, 2000; Rosen, Reiter, & Orosan, 1995). Thus, skin tone, like other body components, may be a significant predictor of general body image disturbance, which is in turn a well-established predictor of mental health outcomes. Previous research validates the link between BID and a number of psychological problems including depression (e.g., Davison & McCabe, 2005), anxiety (e.g., Cash, Phillips, Santos, & Hrabosky, 2004), eating disorders (e.g., Probst, Pieters, & Vanderlinden, 2008), and, most prominently, body dysmorphic disorder (Hrabosky et al., 2009).

Despite the fact that skin tone is self-evidently a component of the body and physical appearance, only two studies have explored the link between actual skin tone and BID (Bond & Cash, 1992; Buchanan, Fischer, Tokar, & Yoder, 2008). The first study found a negative correlation between skin tone satisfaction and body image disturbance in a sample of 66 African-American women (Bond & Cash, 1992). The second study used path analysis to establish a positive association between habitual monitoring of skin tone and general body image disturbance in a sample of 117 African American women (Buchanan et al., 2008). These studies established a link between perceptions and

monitoring of skin tone with body image disturbance. The current study extends previous research by assessing the role of body image disturbance as a mediator of hypothesized links between *actual* skin tone and health outcomes in a large sample of South Asian American men and women.

Skin Tone and Perceived Discrimination

Evidence suggests that perceived discrimination may be another key mediating mechanism by which darker skin tone predicts adverse physiological and psychological effects. Much of the existing work on skin tone-based discrimination and stereotyping focuses on African Americans (Maddox, 2004). Consistent with the developmental model of skin tone-related distress presented in this study, negative stereotypes and derogatory attitudes about dark skin color have been demonstrated in American samples. For example, both African Americans and Whites hold negative implicit stereotypes about dark-skinned African Americans relative to those with lighter skin. In particular, both White and African American participants are faster to associate the faces of dark-skinned African-Americans with words reflecting negative stereotypes about African Americans (including criminality, ugliness, laziness, and poverty) and light-skinned faces with positive traits (such as intelligence, kindness, attractiveness, and wealth) than they are to associate dark faces with positive traits and light faces with negative traits (Hill, 2002; Maddox & Gray, 2002).

Klonoff and Landrine (2000) theorize that, due to the devaluation of dark skin tone salient in American culture and society, African Americans with dark skin tones experience greater discrimination than their light-skinned counterparts, resulting in stress-related detriments to cardiovascular health. Previous research supports this theory;

African Americans with dark skin tone report experiencing more frequent discrimination than individuals with light skin tone (e.g., Dixon & Maddox, 2005; Hersch, 2008; Maddox & Gray, 2002). Specifically, bias against dark-skinned African Americans has been linked with hiring discrimination (Harrison & Thomas, 2009), as well as judgments about guilt of an accused African American criminal (Dixon & Maddox, 2005). In the single study of skin tone-based discrimination against Latinos, darker skinned Latinos report greater discrimination in the workplace than do those with lighter skin (Morales, 2009). The present evaluation of a South Asian American sample serves to determine the cross-cultural applicability of previous findings suggesting that dark-skinned individuals report greater levels of perceived discrimination than those with lighter skin.

Increased perceptions of discrimination may predict detriments to mental and physical health (e.g., Pascoe & Smart Richman, 2009; Williams & Mohammed, 2009). A recent meta-analysis of 134 articles published from 1986 to 2007 found perceived racial or ethnic discrimination to be robustly associated with negative mental and physical health outcomes (Pascoe & Smart Richman, 2009) These included increased rates of psychological disorders, greater psychological distress, greater risk for cardiovascular and other diseases, increased somatic symptoms such as nausea or pain, and reduced general well-being. Recent research has supported the association between perceived racial or ethnic discrimination and poorer mental or physical health for Arab Americans (Padela & Heisler, 2010), Latino/Hispanic Americans (Moradi & Risco, 2006), Chinese Americans (Grossman & Liang, 2007), other Asian Americans (Gee, Ro, Shariff-Marco, & Chae, 2009; Yip, Gee, & Takeuchi, 2008), African Americans (Borrell, Kiefe, Williams, Diez-Roux, & Gordon-Larsen, 2006; Williams & Mohammed, 2009), and

Whites (Smart Richman, Pek, Pascoe, & Bauer, 2010). Yet no studies exist assessing this link for South Asian Americans, despite growing concern about cardiovascular health and other stress-influenced disorders in South Asian immigrant communities. Thus, the current research extends the solid foundation of evidence on the negative effects of perceived discrimination among other racial and ethnic minority groups to the study of South Asian Americans. Specifically, the present study hypothesizes that perceived discrimination mediates the relationship between skin tone and mental and physical health outcomes for this population.

The Moderating Role of Socioeconomic Status

Previous evidence also indicates that socioeconomic status (SES) may moderate the relationship between skin tone and mental or physical health outcomes, such that lower SES individuals are at greater risk. Social causation theories of SES and its role as a risk factor for psychopathology and mortality suggest that low SES increases stresses experienced by families and individuals while also limiting financial and social resources that could alleviate this distress (Conger & Donnellan, 2007). Furthermore, SES has been shown to interact with race such that low SES individuals and families from ethnic minority groups are often at greater risk for negative outcomes than low SES Whites (e.g., Hardaway & McLoyd, 2009). Thus, skin tone, a race-related stressor, may be a significant component of this interaction. Klag et al. (1991) found that dark skin tone positively predicted hypertension rates for African Americans of low SES only. Similarly, Sweet et al.'s (2007) analysis of the CARDIA data found that higher SES was associated with reduced blood pressure for African Americans with lighter skin, but not for those with darker skin. While another analysis of the CARDIA data did not find any

association between skin tone and hypertension, this study failed to take into account the interaction of skin tone and SES (Borrell et al., 2006). The robust association between dark skin tone and low SES across multiple studies indicates that analysis of skin tone-related outcomes among African Americans should always account for this interaction (e.g., Allen, Telles, & Hunter, 2000; Hochschild & Weaver, 2007; Hunter, 2002).

Dark skin tone also has been associated with lower income for other racial groups. This association has been found with Mexican Americans in a number of studies (e.g., Allen, Telles, & Hunter, 2000; Espino & Franz, 2002; Morales, 2009). Only one study examines this association for Americans of Asian descent; Kiang and Takeuchi's (2008) study of Filipino Americans found that dark skin tone was associated with both low income as well as poor self-rated physical health. There are no published data on South Asian Americans in this regard. However, historical parallels between South Asians and African Americans suggest that due to shared histories of colonialism and skin tone-based discrimination, skin tone and socioeconomic status may be linked similarly in both communities (e.g., Prashad, 2000), particularly given the multiple stressors introduced by low SES that may combine in effect with race-related distress (e.g., Brondolo, Rieppi, Kelly, & Gerin, 2003; Klag et al., 2010). Thus, the present study tests the hypothesized protective, moderating role of SES on the relationship between skin tone and health outcomes for South Asians.

Exploring the Moderating Role of Ethnic Identity

Previous models of group belonging in ethnic or racial minority groups suggest that ethnic/racial identification may operate as both a protective and a risk factor vis-à-vis individual health and well-being. Theories of ethnic and racial identity typically share

the assumption that strong and positive ethnic identity is a protective factor for ethnic minority group members (e.g., Cross & Cross, 2008; Phinney & Ong, 2007; Smith & Silva, 2011). Consistent with theory, a recent meta-analysis of 184 studies indicated a moderately positive relationship between ethnic identification and personal well-being (Smith & Silva, 2011). Yet, other data suggest that ethnic or racial identification plays a complex role for ethnic minorities; while it may lead to increased well-being, it also may increase risks of negative stereotyping and aversive race-related experiences (e.g., Kaiser & Pratt-Hyatt, 2009; Sellers & Shelton, 2003; Wilkins, Kaiser, & Rieck, 2010). The few studies directly exploring the links between ethnic identity, physical markers of race, and well-being have produced results suggesting ethnic identification may function simultaneously as a risk and a protective factor. Ethnic identity moderated the relationship between dark skin tone and low self-esteem in a sample of Puerto Rican women such that dark skin tone predicted low self-esteem more significantly for highly ethnically identified women than for less ethnically identified women (Lopez, 2008). Ethnic identity also moderated the relationship between self-perceived racial prototypicality and psychological distress in a sample of Filipina American women such that racial prototypicality predicted distress more significantly for highly ethnically identified women (Kiang & Takeuchi, 2008). Thus, these two studies suggest that ethnic identification may behave as a *risk* factor between skin tone and self esteem and a *protective* factor between skin tone and distress. Because there are very few previous studies of this phenomenon, the current study tests the moderation effects of ethnic identification on skin tone - outcome relationships as exploratory hypotheses. Furthermore, as physical health is often highly associated with mental health variables

(e.g., Shaffer-Hudkins, Suldo, Loker, & March, 2010), this study also investigates the significance and directionality of the moderating effect of ethnic identification on the relationship between skin tone and self-rated physical health.

Overview of the Present Study

In sum, the conceptual framework of skin tone-related distress elaborated in the current study is congruent with empirical support for associations between dark skin tone and poor mental/physical health outcomes. Evidence also suggests that body image disturbance and perceived discrimination may mediate these relationships. Furthermore, previous research suggests that socioeconomic status moderates the relationship between skin tone and mental/physical health outcomes, such that dark skin tone is particularly likely to be associated with poor mental and physical health for individuals of low socioeconomic status. Moreover, the relationship of skin tone to self-esteem may be moderated by gender, such that this relationship should exist more strongly for women than for men. Finally, ethnic identification may also moderate the skin tone - outcome relationships. None of these questions have been explored with South Asians, despite compelling indications that skin tone may play an especially salient role in South Asian American communities. Due to the dearth of research on skin tone as a psychologically relevant variable among South Asians in the United States, this study first presents the bivariate correlations between darkness of skin tone and four other exploratory skin tone-related questionnaire items in a South Asian American sample. These correlations serve as a preliminary assessment of skin tone-related attitudes and their relationship to actual skin tone. Also presented are bivariate correlations of skin tone and the four exploratory

skin tone-related items with the outcome, mediator, and moderator variables described above.

Next, the focal hypotheses for the current study explore the outcome-related components of the proposed conceptual model of skin tone-related distress. Expanding upon existing research on skin tone in other American ethnic minority communities, I hypothesized the following for South Asian Americans:

Hypothesis 1. Darkness of skin tone will predict decreased general mental health, self-esteem, and self-rated physical health.

Hypothesis 2. The relationships of skin tone with general mental health, self-esteem, and self-rated physical health will be simultaneously mediated by body image disturbance and perceived discrimination such that dark skin will predict detriments to mental/physical health via increased body image disturbance and increased perceived discrimination.

Hypothesis 3. The relationships of skin tone with general mental health, self-esteem, and self-rated physical health will be moderated by socioeconomic status, such that higher socioeconomic status will serve as a protective factor and weaken these relationships.

Hypothesis 4. The hypothesized relationship between skin tone and self-esteem will be moderated by gender, such that the relationship will be more strongly significant for women than for men.

Exploratory moderation analyses. The exploratory hypotheses are a) ethnic identification will function as a risk factor for self-esteem, such that the skin tone - self-esteem relationship will be *more* strongly significant for highly ethnically identified

individuals; and b) ethnic identification will function as a protective factor for general mental health, such that the skin tone -mental health relationship will be *less* strongly significant for highly ethnically identified individuals. Additionally, the significance and directionality of moderation by ethnic identification on the relationship between skin tone and self-rated physical health will be investigated.

Methods

Participants

Participants ($N = 187$, 62% female) were recruited through introductory psychology courses and campus organizations representing South Asian American students on the New Brunswick, NJ, campus of Rutgers University, and nationally from student and professional organizations via the Internet. Participant demographics are listed in Table 1. The mean age of the sample was 26.2 ($SD = 8.5$), and participants ranged in age from 18 to 61 years. The median and modal individual income reported was “under \$18,000”, likely reflecting the student nature of the sample. The median parental income reported was “\$75,000 - \$99,999,” while the modal parental income was “\$100,000 or more.” The majority of participants (70.6%) reported two languages spoken in their homes. Most participants reported that their country of birth was either the U.S.A. (50.2%) or India (25.6%), and the majority of the sample self-identified as Indian (46.1%) or South Asian (23.0%).

Procedures

Internet sampling was selected because it has been shown to produce diverse samples that are similar in age, gender, and socioeconomic status to those obtained by traditional methods such as paper-and-pencil measures, particularly with respect to

college student populations (David & Okazaki, 2006; Gosling, Vazire, Srivastava, & John, 2004; Kraut et al., 2004; Meyerson & Tryon, 2003). For the current study, internet-based sampling targeted South Asian Americans who were members of student organizations at universities with large South Asian American student populations in states with large South Asian populations such as California, New York, New Jersey, Illinois, and Texas (South Asian Leaders of Tomorrow, 2007). Of the current participants, 12.3% of the total ($n = 23$) were recruited from the student subject pool at Rutgers University, and the remaining 87.7% ($n = 164$) were recruited via the Internet. Power analysis per Soper (2011) suggested that the current sample exceeded *a priori* power requirements of 165 participants to detect a medium-sized effect ($\beta \geq .80$, $\alpha \leq .01$, $ES = .15$) using multiple regression with eleven independent variables (one predictor, two mediators, three moderators, three interaction terms, and two of three outcomes as covariates at any given time).

The recruitment advertisements for the proposed study are displayed in Appendix A. Internet recruitment was conducted by the principal investigator, a South Asian American doctoral student with a master's degree in clinical psychology. A total of 280 South Asian student and community organizations across the United States were contacted for recruitment purposes. The principal investigator described the study as seeking participants of South Asian descent for a study on how individuals view and cope with everyday experiences and life stressors, and requested the permission of organization leaders to forward the recruitment advertisement to their constituencies via email. Once permission was obtained, the principal investigator or organization leaders would send the email forward to their lists. The survey had a 50% response rate,

measured by the proportion of times the survey was accessed online versus the number of surveys actually completed. All participants were screened to ensure that they were at least 18 years of age. Potential participants were informed that, upon completing the study, they could participate in a lottery for \$25 for which the chances of winning would be one in 75 or better. Internet-recruited and Rutgers student pool participants were then administered questionnaires via SurveyGizmo.

Measures

Demographic information. A demographic questionnaire was used to collect information on gender, age, race, ethnicity, country of birth, and number of languages spoken at home. Only participants who listed “South Asian” as at least one of their races were included in the current sample.

Socioeconomic status. Multiple indicators were used to compute socioeconomic status (SES). These included a total of fifteen items assessing objective and subjective socioeconomic status, which were then standardized and combined into a composite mean score representing overall SES. The Cronbach’s alpha for this composite scale was .84.

Objective socioeconomic status. Objective socioeconomic status (OSS) ratings were assessed using nine items. The first four items prompted participants to state their individual income, parental income, individual education, and parental education. Income and education items were anchored on seven-point scales, with 1 = “under \$18,000,” 2 = “\$18,000 - \$24,999,” 3 = “\$25,000 - \$29,999,” 4 = “\$30,000 - \$49,999,” 5 = “\$50,000 - \$74,999,” 6 = “\$75,000 - \$99,999,” and 7 = “\$100,000 or more” for income and 1 = “did not complete high school,” 2 = “high school diploma,” 3 = “some college,” 4 =

“bachelor’s degree,” 5 = “some graduate school,” 6 = “master’s degree,” and 7 = “doctoral/advanced degree (Ph.D., M.D., J.D., etc)” for education. Median individual education was “some graduate school,” while the mode was “bachelor’s degree.” Median and modal parental education was “master’s degree.” The largest proportion of individuals reported individual income of under \$18,000 (58.3%), parental income of \$100,00 or more (44.4%), individual education of some college (27.8%) or a Master’s degree (25.1%), and parental education of a Master’s degree (30.5%) or doctoral/advanced degree (28.3%).

Two additional prompts were used to extrapolate five additional OSS items: high school attended and childhood ZIP code. Federal education databases were then consulted to generate an item representing the percentage of students on free or assisted lunches in participants’ high schools (National Center for Education Statistics, 2011). The same databases were used to generate four items representing the median family incomes, median household incomes, per capita incomes, and percentages of families and individuals below the poverty line in participants’ childhood ZIP codes. Percentages of students on free or assisted lunches and of families and individuals below the poverty line were then subtracted from 100% to ensure that higher scores would reflect higher OSS. These five OSS items suggested a sample of above average socioeconomic status. Average childhood ZIP code median household income was \$63,410 ($SD = \$22,546$), family income was \$74,720 ($SD = \$25,450$), and individual income was \$30,317 ($SD = \$11,553$). Similarly, mean percentage of families under the poverty line was 5.15% ($SD = 5.46\%$), while mean percentage of individuals under the poverty line was 7.50% ($SD =$

7.17%). After standardization, the internal consistency estimate for the nine OSS items was .84.

Subjective socioeconomic status. Subjective SES (SSS) was assessed using six items. The first two items were from the MacArthur Scale of Subjective Social Status (MSSS; Adler, 2000). These items presented participants with a drawing of a ten-rung ladder, each rung labeled with a number from 1 to 10, with instructions: “Think of this ladder as representing where people stand in society. At the top of the ladder are the people who are best off - those who have the most money, most education and the best jobs. At the bottom are the people who are worst off – who have the least money, least education and the worst jobs or no job. The higher up on this ladder, the closer you are to people at the very top and the lower you are, the closer you are to the bottom.” The first item asks, “Where would you put yourself on this ladder compared to others in the United States?” The second asks, “Where would you put yourself on this ladder compared to others in your community?” The maximum possible combined score on the MSSS is 20, indicating very high subjective socioeconomic status compared to others in the United States and/or the participant’s community. The MSSS has been shown to be reliable and valid in racially diverse samples in the United States and the United Kingdom (e.g., Goodman et al., 2001; Singh-Manoux, Marmot, & Adler, 2005). For the current sample, the mean score for the first item was 6.60 ($SD = 1.66$), while the median and mode were 7. The mean score for the second item was 6.61 ($SD = 1.86$), the median was 7, and the mode was 8.

The final four items comprised another measure of subjective socioeconomic status (SSS-4; Wolff, Subramanian, Acevedo-Garcia, Weber, & Kawachi, 2010), and

asked participants to indicate where they stood in comparison to the following groups: “Others in American society,” “Others of your same race or ethnicity,” “Your neighbors,” and “Your parents when they were your age.” These items were rated on a four-point Likert-type scale, with 1 = “a lot worse off” and 4 = “a lot better off.” The maximum possible combined score of these four items is 16, indicating high subjective socioeconomic status. The SSS-4 has previously been used with diverse racial groups in the United States (Wolff et al. 2010). The mean scores for the four items were, respectively, 3.97 ($SD = .96$), 3.42 ($SD = .92$), 3.40 ($SD = .84$), and 4.09 ($SD = 1.08$). The median scores were 4, 3, 3, and 4, while the modes were 4, 4, 3, and 5. These scale scores suggested that participants generally regarded themselves as subjectively somewhat better off than other comparison groups. After standardization, the Cronbach’s alpha internal consistency estimate for the six SSS items (MSSS and SSS-4) was .73.

Skin tone. Skin tone was assessed using the following item from Bond and Cash (1992): “How dark or light is your skin color?” Previous studies have indicated that participants tend to accurately rate their skin tone when compared to external observers’ ratings (e.g., Bond & Cash, 1992; Coard, Breland, & Raskin, 2001; Kiang & Takeuchi, 2008). This high reliability suggests that observer ratings of participant skin tones are not required for studies in which participants are asked to self-rate skin tone. With respect to construct validity, this item also has been shown to correspond well with observers’ and participants’ own ratings of their skin tone using a color palette (Bond and Cash, 1992; Coard, Breland, & Raskin, 2001). The Internet-based format of the survey precluded the use of a color palette, as individual variations in the colors displayed on each participant’s computer monitors may unpredictably affect color perception and damage

the reliability of the color palette measure (e.g., Stepanova & Strube, 2009). The mean rating of skin tone was 5.34 ($SD = 1.26$), with most participants rating themselves as “medium” (32.6%) or “somewhat dark” (28.9%).

Four exploratory skin tone-related items were also presented. Three items asked about participants’ skin color ideals and perceptions of others’ skin color ideals: “How satisfied are you with your skin color?”; “What is your family’s ideal skin color?”; “What is your peers’ ideal skin color?” Answers were rated on a scale of 1 to 9, with 1 = “very light” and 9 = “very dark”. A final item asked, “If you could change your skin color, how much darker or lighter would you make it?” Answers were rated on a scale 1 to 9, with 1 = “much, much lighter, 9 = “much, much darker,” and 5 = “no change.” For the skin tone change item, 71 participants endorsed answers ranging from “slightly lighter” (4) to “much, much lighter” (1), 103 endorsed “no change” (5), and only 10 participants endorsed “slightly darker” (6). No participants endorsed answers from “darker” (7) to “much, much darker” (9), and three participants entered no response. Scores on this item were recalculated to reflect magnitude of desired change, with 4 indicating the greatest degree of change and 0 indicating no change. Due to the small number of participants endorsing a desire for darker skin, the 81 non-zero scores on the recalculated skin change item mostly reflect endorsements of the desire to lighten skin. As the four exploratory items did not represent a unified scale, no Cronbach’s alpha was computed.

Self-esteem. Global self-esteem was assessed using the ten-item Rosenberg Self-Esteem Scale (RSES; Rosenberg, 1965). The RSES items assess participants’ feelings about themselves. Items are rated on a four-point Likert-type scale, with 1 = “strongly agree” and 4 = “strongly disagree.” Sample items include “I am able to do things as well

as most other people,” “On the whole, I am satisfied with myself,” and “I feel I do not have much to be proud of” (reverse-coded). Higher scores indicate higher self-esteem, and the highest possible score on the scale is 40. The RSES has generally exhibited construct validity and reliability in past research across ethnic and cultural groups (e.g., Blascovich & Tomaka, 1993; Robins, Hendin, & Trzesniewski, 2001; Schmitt & Allik, 2005). Recently published internal consistency estimates have ranged from .89 to .93 (Auerbach, Abela, Ho, McWhinnie, & Czajkowska, 2010; Zeigler-Hill, Myers, & Clark, 2010). Mean self-esteem in the current sample was relatively high at 30.80 ($SD = 5.53$). The Cronbach’s alpha in the current study was .90.

Mental health. General mental health was assessed using the ten-item K10 (Kessler et al., 2002). K10 items list symptoms and are rated on a five-point Likert-type scale, with 1 = “none of the time” and 5 = “all of the time.” Sample items include “In the past four weeks, about how often did you feel worn out for no good reason?” and “How often did you feel so nervous that nothing could calm you down?” Items are reverse-coded such that high total scores reflect low psychological distress, and the highest possible score is 50. The validity and reliability of the K10 has been demonstrated with a diversity of ethnolinguistic and national groups (e.g., Arnaud et al., 2010; Donker et al., 2010; Fassaert et al., 2009). Internal consistency estimates for the K10 have been high in previous studies, ranging in recent publications from .84 to .94 (Arnaud et al., 2010; Donker et al., 2010; Kessler et al., 2002). The mean score in the current study was 39.77 ($SD = 6.98$), indicating relatively low psychological distress. In the current study, Cronbach’s alpha for the scale was .91.

Self-rated physical health. Self-rated physical health was assessed using two questions used in previous research (Erosheva, Walton, & Takeuchi, 2007; Ferraro & Yu, 1995; Idler & Benyamini, 1997; Kiang & Takeuchi, 2008). The first item, rated on a five-point scale, with 5 = “excellent” and 1 = “poor”, is “How would you rate your overall physical health?” The second item, rated on a three-point scale, is “Would you say your overall health is better, about the same, or worse than other people your age?” Item scores were standardized, and then averaged to yield a composite score of self-rated physical health as per Kiang and Takeuchi (2008). Higher scores reflect greater self-rated physical health. Self-rated health is a robust predictor of mortality (Jylha, 2009), and has been shown to be valid and reliable across age groups and cultural contexts (e.g., Ishikazi, Kai, & Imanaka, 2006; Larsson, Hemmingsson, Allebeck, & Lundberg, 2002; McGee, Liao, Cao, & Cooper, 1999), including an Asian American population (Kiang & Takeuchi, 2008). The mean scores were 3.40 ($SD = .91$) for the first item, and 2.16 ($SD = .69$) for the second, both suggesting relatively high self-rated health. The Cronbach’s alpha was .81 for the two standardized items.

Body image disturbance. General body image disturbance was measured using a seven-item version of the Body Dysmorphic Disorder Questionnaire (Phillips, 1996). BDDQ items are anchored on a six-point scale, with 1 = “never” and 6 = “always.” Sample questions include “I think a lot about my appearance problems” and “My preoccupation with my appearance has gotten in the way of doing things with friends or dating.” No items mentioned specific body parts or areas (including skin or skin tone); thus, BDDQ items only assess generalized body image disturbance. Higher scores on the BDDQ indicate higher levels of body image disturbance, and the highest possible score is

42. Support for the construct validity of the BDDQ has been indicated in Chinese (Liao et al., 2010), Australian (Mancuso, Knoesen, & Castle, 2010), and American samples (Park, Calogero, Young, & Diraddo, 2010). The mean score in the current study was 16.25 ($SD = 7.59$), indicating a sample with relatively low self-rated body image disturbance. The Cronbach's alpha internal consistency coefficient for the scale has ranged from .80 to .89 in recent studies, and was .94 in the current study.

Perceived discrimination. Perceived discrimination was measured using an eleven-item measure assessing reports of everyday discrimination, adapted from the Detroit Area Study (Williams, Yu, Jackson, & Anderson, 1997). Nine of the items measure frequency of discrimination across various circumstances. Items are rated on a six point scale, with 0 = "never" and 6 = "almost every day." Scores are coded such that higher scores indicate more frequent discrimination, and the highest total scale score possible is 66. Sample items include "You are treated with less courtesy than other people" and "You receive poorer service than other people at restaurants or stores." The final two items, using the same six-point scale, are "How often do you get discriminated against based on your race, ethnicity, or skin color by members of your own racial or ethnic group?" and "How often do you get discriminated against based on your race, ethnicity, or skin color by members of other racial or ethnic groups?" This discrimination measure has previously been validated with a large, diverse sample of 2,095 Asian Americans from the National Latino and Asian American Study, and has previously produced a Cronbach's alpha of .91 (Cheng et al., 2010). The mean score in the current study was 11.05 ($SD = 8.44$), indicating low rates of perceived discrimination in the sample. The Cronbach's alpha in the present study was .93.

Ethnic identification. Ethnic identification was measured using the six-item Multigroup Ethnic Identity Measure - Revised (MEIM-R; Phinney & Ong, 2007). Items on the MEIM-R are anchored on a four-point scale, with 1 = “strongly disagree” and 4 = “strongly agree.” High scores indicate high levels of ethnic identification, and the highest possible score is a 24. Sample items include “I have spent time trying to find out more about my ethnic group(s), such as its (their) history, traditions, and customs” and “I feel a strong attachment towards my own ethnic group(s).” The MEIM-R has evinced construct validity in previous studies in a variety of American ethnic minority and White populations (e.g., Friedlander et al., 2010; Glass & Owen, 2010; Phinney & Ong, 2007). Previous studies using the MEIM-R have produced Cronbach’s alphas ranging from .81 to .90. The mean score in the current study was 18.19 ($SD = 3.60$), suggesting relatively high ethnic identification overall with a relatively low variance. The alpha for the MEIM-R in the current study was .88.

Results

Descriptive statistics and preliminary analyses

Descriptive statistics for study variables are presented in Table 2. T-tests were conducted to determine if there were significant differences between the student subject pool population ($n = 23$) and the internet recruitment sample ($n = 164$). The student subject pool population was found to be significantly lower in age than the internet sample, with respective mean ages of 18.65 ($SD = .65$) and 27.22 ($SD = 8.55$) years ($t[184] = 4.79, p < .001$). The student subject pool sample was also significantly lower in socioeconomic status ($t[185] = 4.20, p < .001$) and general mental health ($t[166] = 3.58, p < .001$) than the internet recruitment sample. The samples were nonetheless combined, as

there was no evidence that group differences in socioeconomic status and general mental health reflected anything other than the regional characteristics and site-to-site diversity that the nationally-based Internet survey sought to capture. All score distributions were assessed for excessive skew and violations of normality assumptions.

Bivariate interrelationships between skin tone (darkness) and the four exploratory skin tone-related variables were evaluated first. Table 3 includes bivariate correlations between these five skin tone-related items: skin tone, skin tone satisfaction, family ideal skin tone, peer ideal skin tone, and the magnitude of desired skin tone change. Magnitude of desired skin tone change was positively associated with darkness of skin tone and negatively associated with skin tone satisfaction. Participants' perceived family ideal skin tone ratings were strongly and positively associated with perceived peer ideal skin tone ratings. There was no other significant association between the five skin tone items.

Table 3 also displays bivariate correlations between skin tone, the four exploratory skin tone-related items, and hypothesized mediator, moderator, and outcome variables. Consistent with Hypotheses 1 and 2, skin tone (darkness) correlated negatively with self-esteem and self-rated physical health, and positively with perceived discrimination and body image disturbance. Skin tone did not correlate significantly with general mental health, ethnic identification, or socioeconomic status. Of the four exploratory items, skin tone satisfaction correlated positively with general mental health, self-esteem, and socioeconomic status, and negatively with body image disturbance, but non-significantly with self-rated physical health, perceived discrimination, and ethnic identification. Magnitude of desired skin tone change correlated negatively with self-esteem and general mental health, positively with body image disturbance, and non-

significantly with self-rated physical health, perceived discrimination, socioeconomic status, and ethnic identification. Family ideal skin tone and peer ideal skin tone were not significantly correlated with the outcome, mediator, and moderator variables, with the exception of a negative correlation between peer ideal skin tone and ethnic identification.

Generally, these patterns of association suggested that skin tone, skin tone satisfaction, and the amount of desired skin tone change were each associated with at least two of the three hypothesized outcomes in the current study, as well as with a hypothesized mediator, body image disturbance. Skin tone was also associated with the second hypothesized mediator, perceived discrimination. Aside from the solitary peer ideal skin tone - ethnic identification association, family and peer ideal skin tones were not strongly associated with any of the other variables besides each other. The two moderators, socioeconomic status and ethnic identification, were correlated with only one skin tone-related item each.

To maintain focus on the central research hypotheses of this study, and avoid inflation of Type I error by quintupling the number of predictors, only the primary skin tone item - darkness of skin tone – was used as a predictor in the main data analyses below. Furthermore, while bivariate correlation patterns are suggestive, they do not control for covariation, nor do they account for interactions or simultaneous mediation. Multiple regression analysis was determined to be the appropriate strategy for testing the central research hypotheses, as it allows for a clearer understanding of the numerous statistical relationships between the current study variables¹. Prior to moderation analyses, all independent variable, moderator, and covariate scores were standardized as per Frazier, Tix, & Barron (2004).

Hypothesis 1

To measure the bivariate relationship between skin tone and general mental health, general mental health scores were regressed upon skin tone. Following this analysis, the same procedures were utilized to measure the bivariate relationship between skin tone and self-esteem and between skin tone and self-rated physical health. Unstandardized and standardized regression coefficients for predictors and covariates and variance accounted for by models in Hypothesis 1 are displayed in Table 4. Due to high intercorrelations between the hypothesized outcomes and moderators, the remaining two outcome variables as well as socioeconomic status and ethnic identification were entered as covariates in each regression equation. Thus, for instance, in the regression of general mental health scores upon skin tone, self-esteem, self-rated physical health, socioeconomic status, and ethnic identification were controlled. Consistent with Hypothesis 1, darkness of skin tone negatively predicted self-esteem and self-rated physical health. However, contrary to expectations, darkness of skin tone *positively* predicted general mental health.

Hypothesis 2

To assess whether perceived discrimination and body image disturbance mediated the relationships of skin tone with general mental health, self-esteem, or self-rated physical health, simultaneous mediation analyses were conducted using the bootstrapping approach per Preacher and Hayes (2008). Confidence intervals for Hypothesis 2 are displayed in Table 5. Confidence intervals that do not include zero indicate that the indirect effect of a mediator is significantly different from zero (null). The number of

bootstrap resamples was set to 20,000. For each test of mediation, ethnic identification and the remaining two outcome variables were entered as covariates.

Hypothesis 2 was partially supported. Body image disturbance partially mediated the relationship between skin tone and self-esteem. Mediation analyses indicated that darkness of skin tone was positively associated with body image disturbance, which, as predicted, was then negatively associated with self-esteem. The 95% confidence interval for the indirect effect did not encompass zero, indicating that the null hypothesis could be rejected. Contrary to the hypotheses, body image disturbance did not mediate the relationships between skin tone and mental health or skin tone and self-rated physical health. Moreover, no significant mediation effects by perceived discrimination were found.

Hypothesis 3

The moderating effects of socioeconomic status on the relationships of skin tone to general mental health, self-esteem, and self-rated physical health were tested with hierarchical multiple regression analysis. Results for Hypothesis 3 are displayed in Tables 6, 7, and 8. A separate test of moderation was conducted to account for the effects of socioeconomic status on each skin tone - outcome relationship, resulting in three discrete hierarchical multiple regressions. As per Cohen, Cohen, West, & Aiken (2003), after accounting for the main effects of skin tone and composite socioeconomic status scores on the outcome variable in the first block of the equation, their cross-product was tested for significance in the second block. An alpha level of .01 was used to balance power requirements with the risk of familywise error in detecting significant effects (e.g., Cohen,

1992). Testing for slope differences, when necessary, was conducted as per Aiken and West (1991).

Composite socioeconomic status scores did not significantly moderate the negative associations between skin tone and self-esteem or skin tone and self-rated physical health. Composite socioeconomic status scores also did not significantly moderate the positive association between general mental health and darkness of skin tone at the conservative alpha level of .01. However, as the significance of the interaction still was below .05 at $p = .04$, this relationship is displayed in Figure 1. As shown in Figure 1, for participants of low SES levels, dark skin tones are positively associated with mental health, while the mental health of those of higher SES levels do not covary with their skin tones.

Hypothesis 4

The moderating effect of gender on the relationship between skin tone and self-esteem was tested with hierarchical multiple regression analysis. Results for Hypothesis 5 are displayed in Table 9. After accounting for the main effects of skin tone and gender on self-esteem in the first block of the equation, their cross-product was tested for significance in the second block. A conservative alpha level of .01 was used to reduce the risk of experiment-wise Type I error in detecting significant effects (e.g., Cohen, 1992). The test of moderation indicated no significant interaction between gender and skin color in predicting self-esteem.

Exploratory moderation analyses

The moderating effects of ethnic identification on the relationships of skin tone to general mental health, self-esteem, and self-rated physical health were tested with

hierarchical multiple regression analysis. Results for these exploratory analyses are displayed in Tables 10, 11, and 12. The same testing procedures used for Hypotheses 3-4 were used for these analyses. Ethnic identification scores significantly ($p = .004$) moderated the positive association between general mental health and darkness of skin tone such that the apparently protective effect of skin tone darkness on general mental health relationship was more strongly significant at low levels of ethnic identification (Figure 2). Simple slopes analysis suggested that participants with high ethnic identification appeared to *all* have high general mental health scores irrespective of skin tone. Ethnic identification scores did not significantly moderate the negative associations between skin tone and self-esteem or skin tone and self-rated physical health. As both ethnic identification and socioeconomic status were found to interact with skin color in predicting general mental health, the three-way interaction was also tested. No significant three-way interaction was found.

Discussion

Current findings: Does skin tone predict health outcomes?

The results of this research suggest that skin tone may have important implications for health and well-being in South Asian Americans. Using a relatively large, nationally-recruited South Asian American sample, the current study provided evidence for the association of skin tone with health outcomes. As predicted, South Asian Americans with dark skin tones had lower self-esteem and poorer self-rated physical health than their peers with lighter skin tones. Moreover, the study introduced a potential explanatory factor for the association between dark skin tone and low self-esteem: body image disturbance. The current study also produced an unexpected positive association

between darkness of skin tone and general mental health. This association was moderated by both SES and ethnic identification such that the positive association was robust at low levels of SES and at low levels of ethnic identification.

Consistent with previous literature identifying attitudes about skin as components of body image (e.g., Cafri, Thompson, Jacobsen, & Hillhouse, 2009), the results of this study suggest that, for South Asian Americans, dark skin tone is associated with low self-esteem via body image disturbance. These results are also the first to demonstrate a link between dark skin tone and body image disturbance in any population. The data are consistent with this study's conceptual framework of skin tone-related distress as well as existing etiological theory on body image (e.g., Neziroglu, Khemlani-Patel, and Veale), and the current paucity of previously established empirical links between skin tone and body image disturbance leaves a number of possible, if speculative, answers regarding the nature of this association. For instance, Neziroglu, Khemlani-Patel, and Veale's (2008) integrative theory of body dysmorphic disorder suggests that body image disturbance stems from a combination of childhood operant conditioning, social learning, and information processing changes related to the valuing and salience of body image throughout the life course. It is likely that attitudes about skin tone are similarly learned through various conditioning, learning, and maintenance processes. The link in the current study between body image disturbance and skin tone suggests that racial phenotype dovetails with other components of body image, potentially generating a cumulative detrimental effect on self-esteem.

This study did not provide explicit evidence of mediation mechanisms for the low self-rated physical health of dark-skinned South Asian subjects relative to light-skinned

South Asians. However, the most consistent findings in previous literature on the subject have connected dark skin tone to poor health (e.g. Sweet, McDade, Kiefe, & Liu, 2007), and the current study replicates this with a measure of self-rated physical health. Furthermore, previous research suggests that South Asians and other American ethnic minority populations are likely to report somatic symptoms more readily and frequently than affective or cognitive disturbances (e.g., Karasz, Dempsey, & Fallek, 2007). Thus, measuring self-rated physical health in South Asians may assess a somatic dimension of psychological health that explicit measures of psychological distress or self-esteem do not. Regardless, low self-rated physical health among dark-skinned South Asians is consistent with theories of minority status stress (e.g., Smedley, Myers, & Harrell, 1993) as well as with the theoretical model of skin tone-related distress underpinning the current study. If perceived discrimination or body image disturbance do not explain this relationship, other significant stressors not assessed in this study may mediate the skin tone - self-rated physical health link demonstrated here.

Surprisingly, perceived discrimination failed to mediate any of the relationships between skin tone and psychological or physical well-being. Although perceived discrimination was positively associated with darkness of skin tone, this relationship did not predict outcomes. In contrast, body image disturbance did mediate one of the predictor-outcome relationships. This may be consistent with previous research that suggests that appearance-related discrimination is a salient predictor of physiological stress responses more than race- or ethnicity-related discrimination (Matthews, Salomon, Kenyon, & Zhou, 2005). While perceived racial discrimination is a robust predictor of a variety of psychological and physiological outcomes (e.g., e.g., Pascoe &

Smart Richman, 2009; Williams & Mohammed, 2009), racial phenotypes may be associated with distress via a different, body image- or appearance-related pathway.

A second unexpected finding was that dark-skinned South Asians were found to have higher levels of general mental health than those with light skin, when self-rated health, self-esteem, socioeconomic status, and ethnic identification were controlled. This relationship was moderated significantly by ethnic identification. The bivariate association between dark skin tone and high general mental health may be reflective of the fact that mental health was assessed using the K10, a reverse-scored measure of psychological distress. Psychological distress is likely to be a different kind of construct than self-esteem or self-rated physical health, and the association indicated may be more properly understood as one between dark skin tone and the absence of psychological distress symptoms. or between light skin tone and the presence of psychological distress symptoms, rather than between dark skin and optimal psychological health. Indeed, previous literature suggests that distress and optimal functioning may be fundamentally different constructs, not simply numerical opposites (e.g., Ryff et al., 2006). In light of these distinctions, the ethnic identification moderation results do suggest that dark skin is a protective mental health factor for individuals with low ethnic identification. Participants with high ethnic identification appeared to have high general mental health scores irrespective of skin tone, consistent with previous research suggesting that high levels of ethnic identification are associated with improved mental health outcomes and behaviors (e.g., Smith & Silva, 2011). It is possible that high ethnic identification is associated with low psychological distress irrespective of skin tone, such that the

protective effects of dark skin tone on mental health are only visible in the *absence* of strong ethnic identification.

Ethnic identification did not moderate relationships of skin tone with self-rated physical health or self-esteem, although socioeconomic status marginally moderated the association between skin tone and general mental health. Perhaps, socioeconomic status, while likely as broadband a risk factor for South Asian Americans as for any ethnic group, may not interact with skin tone as strongly as it might with ethnic groups such as African Americans or Latinas/os whose communities have been in the United States through multiple generations. In other words, South Asian Americans may be too “new” an ethnic community to have experienced serious detriments to socioeconomic success due solely to skin tone. Indeed, one recent study of skin tone across generations asserted that skin tone differentials among African Americans in socioeconomic status and upward mobility have declined significantly in the post-Civil Rights era (Gullickson, 2006). Thus, South Asian Americans, a community whose numbers have become substantial only after immigration law changes in 1965 (Masood, Okazaki, & Takeuchi, 2009), may not be as socioeconomically influenced by skin tone as other, older American ethnic minority groups.

No evidence was found for moderation by gender of the relationship between skin tone and self-esteem. While women may generally experience more body image disturbance and body image-related distress than men (e.g., Boroughs, Krawczyk, & Thompson, 2010), skin tone *per se* may not be a uniquely significant predictor of outcomes for women. Previous research has not consistently produced this link for African American and Latina women (e.g., Coard, Breland, & Raskin, 2001; Keith et al.,

2010). It is also possible that the outcomes measured in the current study did not capture the full range of psychological or behavioral consequences to skin tone-related distress. For instance, darkness of skin tone may not interact with gender in predicting self-esteem, general mental health, or self-rated physical health, but this interaction may be evident in predictions of somatic symptoms, habitual body monitoring, use of harmful skin lightening products, or other outcomes not measured in the current study.

A final, exploratory set of bivariate correlations assessing the relationship of skin tone to skin tone satisfaction, desire to change skin tone, perceived peer ideal skin tone, and perceived family ideal skin tone provided initial evidence that attitudes about skin tone may predict outcomes as well. In particular, skin tone satisfaction and the desire to change skin tone both correlated with each other as well as with a number of the hypothesized mediators and outcomes. It is likely that skin tone and ethnic identification are only two of a number of race-related psychological constructs associated with mental and physical health outcomes. These race-related constructs may include racial (as opposed to ethnic) identification (e.g., Pieterse & Carter, 2010), and prototypicality of facial features (e.g., Oyserman, Brickman, Bybee, & Celious, 2006), as well as the skin tone-related attitudes measured in the current study. Thus, in assessing the relationships of group identification, racial phenotype, and health outcomes, other race- and skin tone-related predictors may capture data that the central predictor in the current study did not.

Limitations, implications, and future directions

The current study had a number of limitations, some of which can be addressed in future studies. First, the internet-based administration of the measure prevented control of environmental and contextual variables that a similar cross-sectional study in a lab

setting would have been able to control. Survey results may have been further biased by the fact that participants were largely contacted through South Asian organizations whose membership may not necessarily encompass a fully representative sample. For instance, undocumented South Asian Americans may not be an easily accessible population, despite the rapid growth of the undocumented South Asian population in the United States since 2000 (Hofer, Rytina, & Campbell, 2007). Second, concerns regarding the probability of Type I error given multiple comparisons remain. While numerous corrections for Type I error exist, there is no clear consensus on which correction best balances control over the false positive rate with sample size and power required to detect an effect (e.g., Lix & Sajobi, 2010). Thus, the current study provides all relevant information required to re-interpret the results should stronger consensus on Type I error emerge in the future.

Moreover, while the present study tested a number of theoretically plausible explanatory mediators and important moderators of the relationship of skin tone to health outcomes, the results suggest that other important variables such as somatization, facial feature prototypicality, and skin tone-related behaviors such as body checking or use of skin lighteners may need to be measured to clarify the mechanisms behind this relationship. The correlations of other skin tone items with the hypothesized moderator and outcomes also suggest that skin tone satisfaction, magnitude of desired change in skin tone, and other self-perceptions of skin tone may be informative, and may explain some of the associations between skin tone and outcomes. The cross-sectional design of this study also does not allow for causal inferences, and future experimental or longitudinal studies of skin tone and its relationship to status, ethnic identification, and

health outcomes should be conducted to determine causal linkages between racial phenotype and individual well-being. Finally, it is likely that the multiple regression analyses utilized in this study did not fully capture the relationships between the variables tested in the current study. Multicollinearity is a concern, given intercorrelations between the hypothesized outcomes. Additionally, it is likely that other previously explored skin tone-related health outcome measures, such as depressive symptoms (Keith, Lincoln, Taylor, & Jackson, 2010) or physiological factors (Klag, Whelton, Coresh, Grim, & Kuller, 1991), may be more appropriate for the theorized model. More significantly, the sample size of 187 individuals suggests that, while a full structural equation modeling approach may not be possible, path analyses may be a valuable method of testing simultaneous, multiply mediated and moderated models of skin tone and its related psychological and physical health outcomes (MacCallum & Austin, 2000).

Limitations notwithstanding, the results of this study on skin tone and health outcomes suggests a number of broader implications for research and practice in clinical-community psychology. First, the study joins a larger body of work in social and health psychology that connects phenotypic traits such as skin tone and facial features to social and health outcomes (e.g., Lopez, 2008; Maddox, 2004; Oyserman, Brickman, Bybee, & Celious, 2006). Thus, ongoing research on racial and ethnic health disparities should account for the role of racial phenotype as a relevant factor, and theories of disparity should account for any impact of racial phenotype in predicting outcome. Second, the study suggests that the growing body of literature on cultural competence in clinical psychological practice (e.g., Imel et al., 2011; O'Donnell & Tharp, 2012), which

frequently focuses on cultural differences, should also address the role racial phenotypic factors may play in direct clinical intervention above and beyond the impact of cultural difference. Finally, intervention research that seeks to understand racial and ethnic factors should explore the extent to which clinical interventions need to directly address the role of racial phenotype, and if so, whether empirically supported treatments can be adapted as such.

In sum, the present study establishes, for the first time, links between skin tone and individual self-esteem, general mental health, and self-rated physical health in a relatively large sample of South Asian Americans. Furthermore, the study provides evidence for the moderating role of ethnic identification and the mediating role of body image disturbance on two of the outcome variables of interest, mental health and self-esteem. Future studies should conduct more powerful analyses that can simultaneously analyze the multivariate relationships between skin tone, perceived discrimination, body image disturbance, ethnic identification and mental/physical health outcomes. This study also provides a framework for experimental or longitudinal work with South Asians and other American ethnic minority groups, and highlights the importance of exploring the role of racial phenotype as a critical predictor of race-related stress.

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Footnotes

¹ The issue of multiple comparisons remains relevant here, as the number of hypotheses tested in the current study may increase the probability of a Type I error (false positive). However, a multitude of solutions exist, none of which are clearly agreed upon as “gold standard” strategies in psychological research. The traditional Bonferroni correction tends to substantially lower power and inflate familywise error rates (Abdi, 2007; Lix & Sajobi, 2010), and a number of alternatives have been proposed (e.g., Benjamini & Yekutieli, 2001; Lix & Sajobi, 2010). P-values for the current hypotheses are presented in Appendix B. Given the thirteen null hypotheses encompassed by Hypotheses 1-4, the Bonferroni correction would require $\alpha = .05/13 = .004$. Notably, the three mediation tests of Hypothesis 2 in the current study use bootstrapping methods, and thus do not produce the correct p-values required for these familywise error rate corrections. Omitting those hypothesis tests, one updated Type I error correction, the Benjamini-Hochberg procedure (Benjamini & Hochberg, 1995; Benjamini & Yekutieli, 2001) also produces an α cutoff of .004. Still another recommended procedure designed by Hochberg (1988) and recommended by Lix and Sajobi (2010) produces an α of approximately .006. Due to this lack of consensus, significance is reported in the current study by traditional standards with $\alpha \leq .05$, .01, and .001. However, as a measure of caution, $\alpha > .01$ results in the current study should be regarded as potentially non-significant. The issue of multiple comparisons is noted in the Discussion section of the current study as a limitation to the present results, and alternative strategies are proposed.

² See Footnote 1 for commentary on the challenges presented in controlling for familywise error in the current study.

Table 1

Sample Demographic Statistics (N = 187)

Variable / Item	%	<i>M</i>	<i>SD</i>	Median	Min - Max
Age		26.16	8.49	24.00	18 – 61
Individual income ^a		2.73	2.36	1	1 – 7
Parental income ^a		5.37	2.01	6	1 – 7
Individual education ^b		4.52	1.62	4	2 – 7
Parental education ^b		5.22	1.69	6	1 – 7
High school data					
FRL (%)		15.39	17.74	8.79	0.00 – 79.00
Childhood ZIP data					
MHI (\$)		63,410	22,546	63,750	22,072 – 129,375
MFI (\$)		74,721	25,460	74,060	23,683 – 160,075
PCI (\$)		30,317	11,553	29,418	10,415 – 78,598
FBPL (%)		5.15	5.46	3.10	0.00 – 37.10
IBPL(%)		7.50	7.17	4.70	.80 – 39.40
MSSS		13.20	2.95	13.50	3.00 – 20.00
SSS-2		14.88	2.62	15.00	6.00 – 20.00
Country of Birth					
U.S.A.	50.2				
India	25.6				
Pakistan	7.5				
Other S. Asian	5.9				
Non-S. Asian	10.8				

Self-Described Ethnicity

Indian	48.7
S. Asian	20.3
Pakistani	10.2
Other S. Asian	6.4
Non-S. Asian	11.2

Languages

1	10.7
2	70.6
3	16.0
4+	2.7

^a 1 = “under \$18,000,” 2 = “\$18,000 - \$24,999,” 3 = “\$25,000 - \$29,999,” 4 = “\$30,000 - \$49,999,” 5 = “\$50,000 - \$74,999,” 6 = “\$75,000 - \$99,999,” and 7 = “over \$100,000.”

^b 1 = “did not complete high school,” 2 = “high school diploma,” 3 = “some college,” 4 = “bachelor’s degree,” 5 = “some graduate school,” 6 = “master’s degree,” and 7 = “doctoral/advanced degree (Ph.D., M.D., J.D., etc).”

Notes. FRL = Eligibility for free or reduced lunch, MHI = Median household income, MFI = Median family income, PCI = Per capita income, FBPL = Families below poverty line, IBPL = Individuals below poverty line, MSSS = MacArthur Scale of Subjective Socioeconomic Status, SSS-4 = Four-item subjective socioeconomic status scale, Languages = number of languages spoken at home.

Table 2

Means and Standard Deviations for Study Variables (N = 187)

Variable / Item	<i>M</i>	<i>SD</i>	Median	Min - Max
Actual skin color ^a	5.34	1.26	5	1 – 8
Family ideal skin color ^a	3.78	1.23	4	1 – 7
Peer ideal skin color ^a	3.74	1.33	4	1 – 8
Skin color satisfaction ^b	6.79	2.05	7	1 – 9
Skin color change magnitude ^c	.64	.84	.00	.00 – 4.00
Self-esteem	30.80	5.53	31	14 – 40
Mental health	39.77	6.98	41	17 – 50
Overall health rating	3.40	.91	3	1 – 5
Health compared to others ^d	2.16	.69	2	1 – 3
Composite health score	.00	.92	-.34	-2.16 – 1.49
Perceived discrimination	11.05	8.44	9	0 – 55
Body image disturbance	16.25	7.59	15	7 - 40
Ethnic identification	18.19	3.60	18	6 – 24
Composite socioeconomic status	-.00	1.03	.19	-3.63 – 1.83

^a 1 = “extremely light,” 5 = “medium,” 9 = “extremely dark.”

^b 1 = “extremely dissatisfied,” 5 = “neither satisfied nor dissatisfied,” 9 = “extremely satisfied.”

^c Scale scores ranged from “much, much lighter” to “slightly darker.” Thus, scores higher than 1 on the skin change magnitude item indicate that preference for lighter skin tone.

^d 1 = “worse,” 2 = “about the same,” 3 = “better.”

Table 3

Study Variable Intercorrelations

	1	2	3	4	5	6	7	8	9	10	11	12
1. Skin Tone	1	-.14	.03	.15	.18*	-.27***	-.08	-.27***	.22**	.28**	-.03	-.10
2. Skin Tone Satisfaction		1	-.01	-.05	-.51***	.40***	.30***	.13	-.04	-.30***	.18*	.07
3. Family Ideal Skin Tone			1	.52***	-.13	.03	.08	-.03	-.12	-.03	.00	-.07
4. Peer Ideal Skin Tone				1	.02	-.06	-.09	.00	.06	.11	-.10	-.16*
5. Magnitude of Skin Tone					1	-.31***	-.35***	-.05	.06	.40***	-.11	-.09
6. Self-Esteem						1	.64***	.36***	-.16	-.63***	.23**	.32***
7. Mental Health							1	.36***	-.24**	-.62***	.33***	.32***
8. Self-Rated Health								1	-.10	-.38***	.16*	.16*
9. Perceived Discrimination									1	.33***	-.30***	-.05

10. Body Image Disturbance	1	-.21**	-.22**
11. Socioeconomic		1	.17*
12. Ethnic Identification			1

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Table 4

Multiple Regression Analyses of Skin Tone and Covariates as Predictors of Mental Health, Self-Esteem, and Self-Rated Health

Predictor Variables	1. Outcome: Mental Health			2. Outcome: Self-Esteem			3. Outcome: Self-Rated		
	B	S.E.	β	B	S.E.	β	B	S.E.	β
Covariates									
Socioeconomic Status	.69	.44	.10	.30	.37	.05	.07	.08	.08
Ethnic Identification	.16	.13	.08	.22	.10	.14*	-.00	.02	-.00
Mental Health	-	-	-	.46	.06	.54***	.03	.02	.22*
Self-Esteem	.66	.09	.57***	-	-	-	.03	.02	.16
Self-Rated Health	1.00	.48	.14*	.59	.40	.10	-	-	-
Independent Variable									
Skin tone	.74	.37	.13*	-.92.	.30	-.19**	-.15	.07	-.19*
R^2	.46			.48			.19		

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Table 5

Multiple Regression Analyses of Perceived Discrimination and Body Image Disturbance as Mediators Between Skin Tone and Outcomes

<i>A. Predictor (skin tone) to mediators^a</i>						
	<u>Model 1 (SelfEst)</u>		<u>Model 2 (MH)</u>		<u>Model 3 (SRH)</u>	
	B ^b	S.E.	B ^b	S.E.	B ^b	S.E.
Discrim	1.78**	.62	1.71**	.63	1.92**	.63
BID	1.13**	.44	.32	.45	.76	.43
<i>B. Direct effects of mediators to outcomes</i>						
Discrim	.07	.04	-.03	.05	.00	.01
BID	-.26***	.06	-.27***	.08	-.02	.02
<i>C. Total effects of predictor on outcomes</i>						
Skin Tone	-1.01***	.31	.82*	.38	-.14*	.07
<i>D. Direct effect of predictor on outcomes</i>						
Skin Tone	-.84**	.30	.95**	.37	-.13	.07
<i>E. Partial effect of control variables on outcomes</i>						
SES	.29	.37	.22	.45	.09	.08
Ethnic	.18	.10	.11	.12	.01	.02
SelfEst	-	-	.49***	.10	.01	.02
MH	.33***	.07	-	-	.02	.02
SRH	.29	.40	.65	.49	-	-
<i>F. R² for Outcome Models</i>						

R^2	.58***		.50***		.22***	
<i>G. Bootstrap Results for Indirect Effects: Bias-Corrected and Accelerated</i>						
	Lower	Upper	Lower	Upper	Lower	Upper
Discrim	.00	.39	-.30	.16	-.03	.05
BID	-.62	-.05	-.32	.18	-.07	.00
Contrast	.12	.83	-.24	.34	-.02	.09
Total	-.50	.15	-.49	.26	-.07	.03

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

^a For “predictor to mediators” section (A), mediators are listed vertically in the leftmost column. As each outcome model utilized a different set of covariates, three different pairs of predictor-to-mediators regression coefficients were produced.

^b Simultaneous mediation analysis as per Preacher and Hayes (2008) includes unstandardized B as output, not β .

Notes. Discrim = Perceived Discrimination, BID = Body Image Disturbance, SelfEst = Self-Esteem, MH = Mental Health, SRH = Self-Rated Health, SES = Socioeconomic Status, Ethnic = Ethnic Identification. Bootstrap results significant when confidence intervals do not encompass zero. Number of bootstrap resamples: 20,000.

Table 6

Hierarchical Regressions of Skin Tone, Socioeconomic Status, Covariates, and Interaction Predicting Self-Esteem

Predictor Variables	Model 1			Model 2		
	B	S.E.	β	B	S.E.	β
Covariates						
Ethnic Identification	.77	.37	.14*	.78	.37	.14*
Mental Health	3.21	.42	.54***	3.29	.42	.55***
Self-Rated Health	.59	.40	.10	.65	.40	.11
IV						
Skin Tone	-1.16	.38	-.19**	-1.06	.39	-.18**
Socioeconomic Status (SES)	.30	.37	.05	.21	.37	.04
Skin Tone X SES				.51	.33	.10
R ²		.48			.49	
F for ΔR^2		25.45***			2.40	

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Table 7

Hierarchical Regressions of Skin Tone, Socioeconomic Status, Covariates, and Interaction Predicting Mental Health

Predictor Variables	Model 1			Model 2		
	B	S.E.	β	B	S.E.	β
Covariates						
Ethnic Identification	.57	.45	.08	.52	.45	.08
Self-Esteem	3.65	.47	.57***	3.69	.47	.57***
Self-Rated Health	1.00	.48	.14*	.85	.48	.12
IV						
Skin Tone	.93	.47	.13*	.77	.47	.11
Socioeconomic Status (SES)	.69	.45	.10	.79	.44	.12
Skin Tone X SES				-.80	.39	-.13*
R ²		.46			.47	
F for ΔR^2		22.92***			4.28*	

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Table 8

Hierarchical Regressions of Skin Tone, Socioeconomic Status, Interaction, and Covariates Predicting Self-Rated Health

Predictor Variables	Model 1			Model 2		
	B	S.E.	β	B	S.E.	β
Covariates						
Ethnic Identification	-.00	.08	-.00	-.01	.08	-.01
Mental Health	.22	.10	.22*	.19	.11	.19
Self-Esteem	.14	.10	.16	.16	.10	.17
IV						
Skin Tone	-.19	.08	-.19*	-.20	.08	-.20*
Socioeconomic Status (SES)	.07	.08	.08	.09	.08	.09
Skin Tone X SES				-.10	.07	-.11
R ²		.19			.20	
F for ΔR^2		6.19***			1.90	

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Table 9

Hierarchical Regressions of Skin Tone, Gender, Interaction, and Covariates Predicting Self-Esteem

Predictor Variables	Model 1			Model 2		
	B	S.E.	β	B	S.E.	β
Covariates						
Ethnic Identification	.90	.38	.16*	.90	.38	.16*
Mental Health	3.18	.41	.53***	3.18	.41	.53***
Self-Rated Health	.56	.40	.10	.557	.40	.09
IV						
Skin Tone	-1.16	.38	-.19**	-1.15	.56	-.19*
Gender	-1.00	.74	-.09	-1.00	.74	-.09
Skin Tone X Gender				-.02	.74	-.00
R ²		.49			.49	
F for ΔR^2		25.90***			.00	

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Note. Gender is coded such that “Male” = 0 and “Female” = 1.

Table 10

Hierarchical Regressions of Skin Tone, Ethnic Identification, Covariates, and Interaction Predicting Self-Esteem

Predictor Variables	Model 1			Model 2		
	B	S.E.	β	B	S.E.	β
Covariates						
Socioeconomic Status	.30	.37	.05	.28	.36	.05
Mental Health	3.21	.42	.54***	3.36	.42	.56***
Self-Rated Health	.59	.40	.10	.612	.40	.10
IV						
Skin Tone	-1.16	.38	-.19**	-1.17	.38	-.20**
Ethnic Identification (EI)	.77	.37	.14*	.69	.37	.12
Skin Tone X EI				.70	.37	.12
R ²		.48			.50	
F for ΔR^2		25.45***			3.67	

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Table 11

Hierarchical Regressions of Skin Tone, Ethnic Identification, Covariates, and Interaction Predicting Mental Health

Predictor Variables	Model 1			Model 2		
	B	S.E.	β	B	S.E.	β
Covariates						
Socioeconomic Status	.69	.44	.10	.65	.43	.10
Self-Esteem	3.65	.47	.57***	3.70	.46	.57***
Self-Rated Health	1.00	.48	.14*	.85	.47	.12
IV						
Skin Tone	.93	.47	.13*	.94	.45	.13*
Ethnic Identification (EI)	.57	.45	.08	.65	.44	.10
Skin Tone X EI				-1.25	.42	-.18**
R ²		.46			.49	
F for ΔR^2		22.92***			8.74**	

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Table 12

Hierarchical Regressions of Skin Tone, Ethnic Identification, Interaction, and Covariates Predicting Self-Rated Health

Predictor Variables	Model 1			Model 2		
	B	S.E.	β	B	S.E.	β
Covariates						
Socioeconomic Status	.07	.08	.08	.07	.08	.08
Mental Health	.22	.10	.22*	.20	.11	.20
Self-Esteem	.14	.10	.16	.16	.10	.17
IV						
Skin Tone	-.19	.08	-.19*	-.18	.08	-.18*
Ethnic Identification (EI)	-.00	.08	-.00	.00	.08	.00
Skin Tone X EI				-.06	.08	-.06
R ²		.19			.19	
F for ΔR^2		6.19***			.54	

* $p \leq .05$, ** $p \leq .01$, *** $p \leq .001$

Figure 1. Effect (Borderline Significant) of Socioeconomic Status on the Relationship Between Skin Tone and General Mental Health

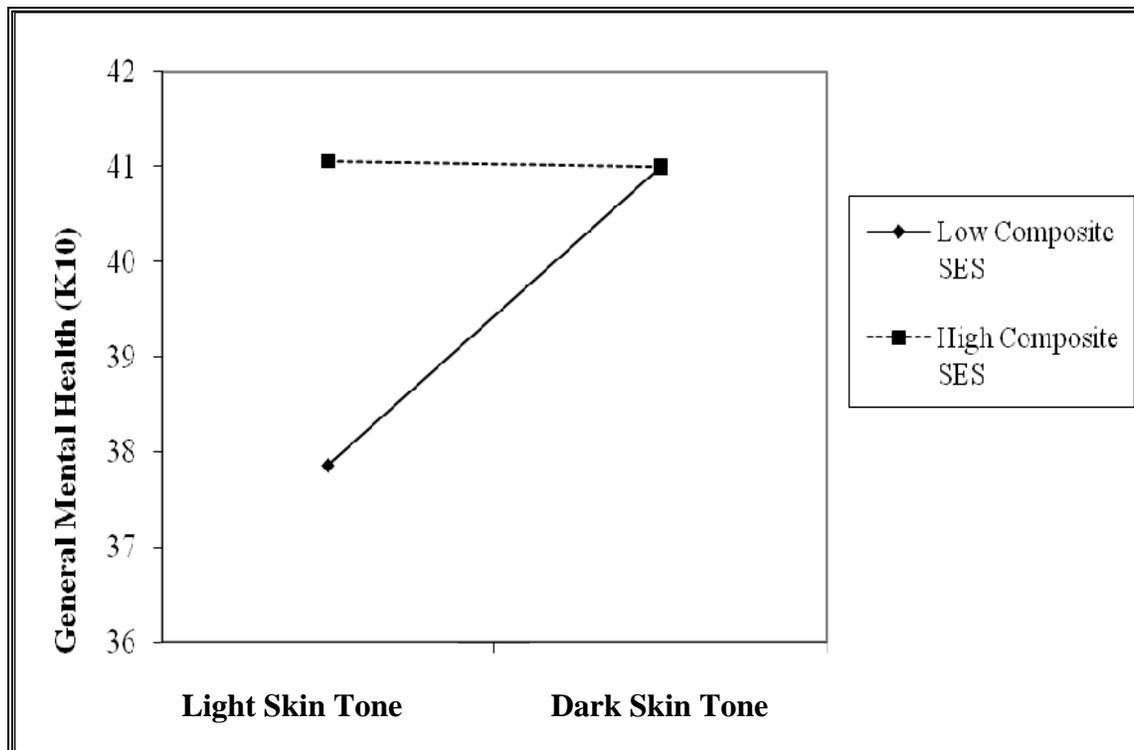
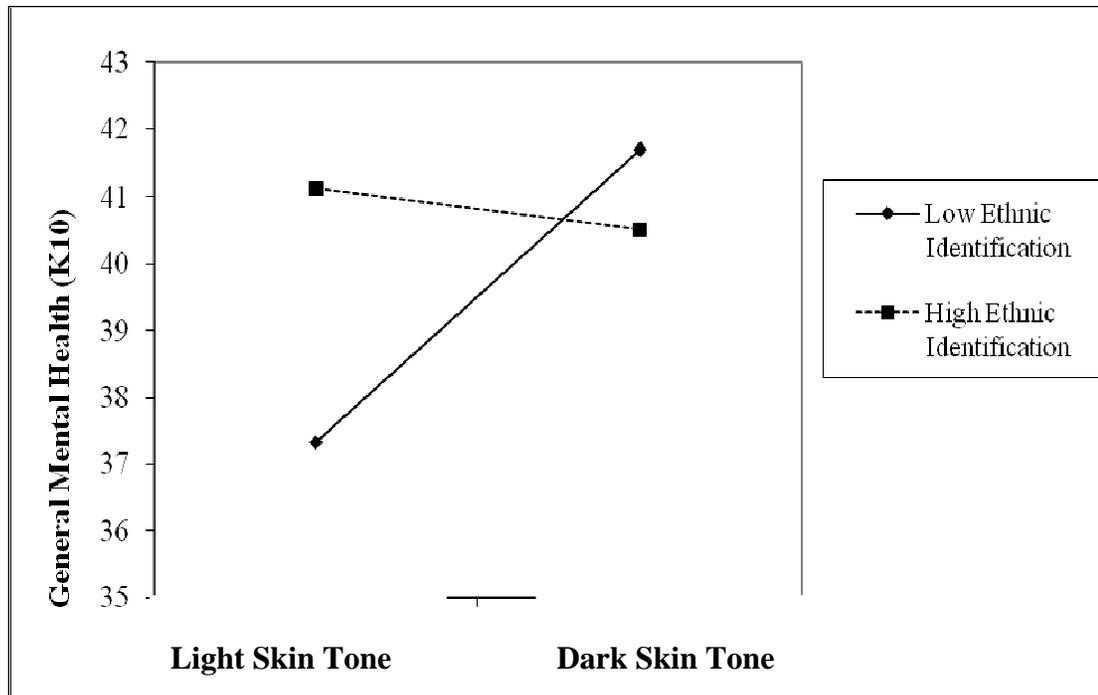


Figure 2. Effect of Ethnic Identification on the Relationship Between Skin Tone and General Mental Health.



APPENDIX B

P-values for Hypotheses 1, 3, 4, and Exploratory Analyses

Hypothesis	Hypothesis Summary	p-value
1	Skin tone predicting mental health (MH)	.048*
1	Skin tone predicting self-esteem (SE)	.003* ⁺⁺
1	Skin tone predicting self-rated health (SRH)	.024*
3	Socioeconomic status (SES) moderation of skin tone - MH association	.041*
3	SES moderation of skin tone – SE association	.123
3	SES moderation of skin tone – SRH association	.170
4	Gender moderation of skin tone – SE association	.968
Exploratory Analyses	Ethnic identification (EI) moderation of skin tone - MH association	.004* ⁺⁺
Exploratory Analyses	EI moderation of skin tone – SE association	.057
Exploratory Analyses	EI moderation of skin tone – SRH association	.464

* reported significant in current study, ⁺⁺ significant using Benjamini and Hochberg (1995), Hochberg (1988), and Bonferroni (Abdi, 2007)

Note. See Footnote 1. P-values for Hypothesis 2 (mediational hypotheses) are not included because confidence intervals

provided in bootstrap analyses of indirect effects do not provide usable p-values for the familywise error rate correction techniques mentioned here.