

**Hair Today, Gone Tomorrow: Investigating Adolescent Body Hair Attitudes, Satisfaction,
and Removal Practices**

by

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Introduction: For girls and women living in Eurocentric cultures, body hair removal is a pervasive standard of beauty. However, there is a dearth of research on body hair attitudes and removal practices, particularly among adolescents. Grounded in objectification theory (Fredrickson & Roberts, 1997) and intersectionality theory (Crenshaw, 1989), this thesis examines attitudes and behaviors regarding body hair among an ethnically and racially diverse sample of adolescent girls and boys. *Method:* Data for this study were collected from large, suburban and urban schools in the United States during the Fall of 2021 ($n = 1,023$, aged 11-18). Three separate two-way ANCOVAs determined if there was an interaction effect between gender and race/ethnicity on attitudes towards girls' body hair, body hair satisfaction, and body hair removal frequency. Among the subsample of adolescent girls, a linear regression assessed if body hair satisfaction mediated the relationship between self-objectification and body hair removal frequency. Two moderated mediation models were explored based on this model. Race/ethnicity was investigated as a moderator of the association between self-objectification and both body hair satisfaction and body hair removal frequency. Among the subsample of girls of color, ethnic and racial identity (ERI) commitment was investigated as a moderator of these associations. *Results:* Compared to boys, girls were more likely to approve of body hair on girls, were less likely to feel satisfied with their body hair, and reported more frequent body hair removal. The interaction between gender and race on body hair removal was significant. Among girls, self-objectification

was negatively associated with body hair satisfaction, which, in turn, was negatively associated with body hair removal; the indirect effect of the linear regression mediation analysis was not significant. This relationship remained consistent across different racial/ethnic groups. ERI commitment did not significantly buffer the relationship between self-objectification and body hair satisfaction among girls of color. *Discussion:* These findings highlight that body hair growth is not simply an outcome of pubertal development. While a quintessential adolescent experience, body hair growth is associated with attitudes and behaviors which reflect societal beauty standards.

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Preface

I am grateful for all the support I received which made this thesis possible. I would like to thank the current and former members of the Teen and Young Adult Lab (Emily Gotkiewicz, Daniel Labrousse, Brianna Ladd, Dr. Annie Maheux, Rachel Martino, Courtney Medina, and Savannah Roberts), my fantastic advisor (Dr. Sophia Choukas-Bradley), and my committee members (Dr. Daphne Henry and Dr. Jennifer Silk). I would also like to thank Dr. Scott Fraundorf and Dr. Colin Vize for consulting on the analyses for this project. Additionally, thank you to the Character Lab Research Network for their support in data collection and the study participants for sharing their experiences. Finally, I would like to thank all my friends and family who engaged in countless conversations about body hair—I am sure there will be more in the future!

1.0 Introduction

During puberty, adolescents undergo vast biological developments, including visible body hair growth (Dorn et al., 2019; Sawyer et al., 2012). These changes occur for adolescents amid great pressure to engage in gender conformity (Cook et al., 2019; Kornienko et al., 2016; Nielson et al., 2020), which largely centers appearance (Oransky & Fisher, 2009; Tolman & Porche, 2000). Notably, prior work suggests that gender conformity may differ among adolescents of different racial and ethnic backgrounds (e.g., Gadson & Lewis, 2022; Onnie Rogers et al., 2022; Thomas et al., 2011). Grounded in objectification theory (Fredrickson & Roberts, 1997) and intersectionality theory (Crenshaw, 1989), this thesis examines attitudes and behaviors regarding body hair among an ethnically and racially diverse sample of adolescent girls and boys. Prior work with a sample of undergraduate students and a sample of adult women has demonstrated a relationship between self-objectification and pubic hair removal (Grossman & Annunziato, 2018; Smolak & Murnen, 2011). This thesis focuses on the relationship between self-objectification and general body hair removal among adolescent girls, exploring variations at the intersection of gender and race/ethnicity. Furthermore, it investigates the potential of ethnic and racial identity commitment to serve as a protective buffer for adolescent girls of color. There is a dearth of research on body hair attitudes, satisfaction, and removal practices among adolescents, despite its developmental salience. Moreover, much of the existing work has focused on White adolescents (e.g., Basow, 1991; Tiggemann & Hodgson, 2008; Tiggemann & Kenyon, 1998; Toerien et al., 2005). This thesis will therefore contribute to an underexplored area of research.

1.1 Adolescent Development

Adolescence is a developmental period of opportunity, marked by rapid biological, psychological, and social changes (Dahl et al., 2018; Dorn et al., 2019; Telzer et al., 2022). Adolescence begins with the onset of puberty, a biological process involving significant external changes including height and weight gain, increased perspiration and oil production in the hair and skin, and body hair growth (Dorn et al., 2019; Sawyer et al., 2012). For adolescents assigned male at birth, puberty is marked by growth in the testicles and penis and the deepening of the voice; for adolescents assigned female at birth, pubertal development includes menarche and breast growth (Dorn et al., 2019; Sawyer et al., 2012).

Adolescence is also a period of neurocognitive development, including pronounced changes in the prefrontal cortex (Choudhury et al., 2006) associated with increased sensitivity to social evaluation and identity development (Sebastian et al., 2008; Somerville, 2013). The questioning of the self and increased awareness of others is best exemplified by a cognitive experience known as the “imaginary audience,” wherein adolescents believe themselves to be the focus of others’ attention, which may result in increased self-consciousness (Elkind, 1967; Elkind & Bowen, 1979). These neurocognitive changes occur alongside peer relationship development. Adolescents spend increased time with peers and decreased time with parents, and their relationships also become more complex—for example, with the emergence of romantic relationships (Brown & Larson, 2009). Additionally, great importance is placed on peers, particularly those of higher status, which can influence many behaviors, including substance use, academic performance, and prosociality (Brehwald & Prinstein, 2011; Giletta et al., 2021). Given these drastic changes, it is unsurprising that adolescence is associated with increased body

dissatisfaction and depressive symptoms, particularly for girls whose weight gain moves them away from the socially constructed ideal body (Markey, 2010; Rapee et al., 2019).

1.2 Adolescent Gender Identity Development

Gender identity development begins at an early age, exemplified by children's awareness of gender stereotypes as young as age three (Martin & Ruble, 2010). Yet, gender identity development is particularly salient during adolescence given the drastic physical changes brought about by puberty, the cognitive ability to think about gender as an abstract concept, and the growing importance of peer relationships (Leaper & Farkas, 2015; Perry & Pauletti, 2011). The importance of gender identity during this developmental period is marked by the disproportionate mental health concerns influencing adolescent cisgender girls relative to cisgender boys (Campbell et al., 2021; Centers for Disease Control and Prevention, 2023).

Adolescents feel pressure to engage in gender conformity from several sources, including parents, peers, and the media (Cook et al., 2019; Kornienko et al., 2016; Nielson et al., 2020). Gender conformity largely centers appearance (Oransky & Fisher, 2009; Tolman & Porche, 2000). For example, young adults may associate masculinity with having muscles and being hairy, whereas femininity may be associated with being small and wearing makeup (Parent et al., 2020). These gender conceptualizations may have negative consequences: gender nonconforming adolescents may experience peer victimization, contributing to negative mental health experiences, particularly for boys (Jewell & Brown, 2014; Smith & Juvonen, 2017). However, peer acceptance can play a powerful role in buffering negative mental health outcomes for gender nonconforming adolescents (Smith & Leaper, 2006).

1.3 Objectification Theory

Sociocultural context influences adolescent identity development, exemplified by objectification theory. Proposed by Fredrickson and Roberts (1997), objectification theory suggests that girls and women internalize society's tendency to sexually objectify their bodies, resulting in self-objectification. Self-objectification, defined as the perception of oneself as an object of sexual attraction, leads girls to feel self-conscious and engage in habitual body monitoring (Fredrickson & Roberts, 1997). This is relevant during puberty, as adolescent girls increasingly experience evaluation and sexualization, particularly by boys and men (Fredrickson & Roberts, 1997). In fact, recent evidence suggests that some girls learn to self-objectify even prior to puberty (Daniels et al., 2020).

Recent qualitative work exemplifies the developmental relevance of self-objectification, with adolescent girls revealing that after puberty they increasingly observed their bodies and became aware of how others were observing them (Riboli et al., 2022). Several sources may contribute to girls' engagement in self-objectification (Daniels et al., 2020), including mothers (Arroyo & Andersen, 2016; Katz-Wise et al., 2013; Perez et al., 2018), peers (Lunde & Frisén, 2011; Strauss et al., 2015; Tiggemann & Slater, 2015), and the media (Slater & Tiggemann, 2015; Tiggemann & Slater, 2015; Vandebosch et al., 2017). Ultimately, self-objectification is associated with several negative mental health consequences for adolescent girls (Daniels et al., 2020), including depression (Grabe et al., 2007; Tiggemann & Slater, 2015; Tolman et al., 2006), non-suicidal self-injury (Duggan et al., 2015), and disordered eating (Dakanalis et al., 2015; Slater & Tiggemann, 2010).

Research with women demonstrates the relationship between self-objectification and appearance behaviors, such as wearing painful, restricting, or distracting clothing (Engeln & Zola,

2021); indoor tanning (Choukas-Bradley et al., 2019); and removing pubic hair (Grossman & Annunziato, 2018; Smolak & Murnen, 2011). Recent work even suggests that women who engage in more self-objectification are less likely to feel cold when wearing scant clothing, hypothesized to be a function of focusing more on appearance than bodily sensations (Felig et al., 2022). Notably, an unexplored appearance behavior that may be associated with self-objectification is body hair removal beyond pubic hair, particularly among adolescents.

1.4 Ethnic and Racial Identity and Intersectionality Theory

Ethnic and racial identity (ERI) is central to the developmental experiences of youth of color (Rivas-Drake et al., 2014; Umaña-Taylor et al., 2014). Whereas ERI during childhood is marked by the ability to label the identity of the self and others, the social and cognitive growth of adolescence, such as improved perspective-taking, allows for ERI exploration (Umaña-Taylor et al., 2014). This period of exploration may allow for eventual ERI commitment (Phinney, 1990; Phinney & Ong, 2007; Umaña-Taylor et al., 2014). Generally, positive ERI commitment buffers the negative effects of discrimination and is associated with beneficial psychosocial and academic outcomes for adolescents of color (Rivas-Drake et al., 2014; Yip, 2018; Yip et al., 2019).

Intersectionality theory, articulated by legal scholar Kimberlé Crenshaw (1989), emphasizes the importance of understanding how individuals' multiple identities intersect to create unique experiences. Crenshaw's original work focuses on the experience of Black women, highlighting how the intersection of gender and race is critical to understanding lived experiences with discrimination, as well as how these experiences are interpreted through antidiscrimination

law (Crenshaw, 1989). Intersectionality theory provides an important framework for understanding adolescent identity development.

Gender conformity is connected to appearance (Oransky & Fisher, 2009; Tolman & Porche, 2000); therefore, it is important to consider how the concept of gender conformity may differ among adolescents of different racial and ethnic backgrounds. For example, qualitative work with Black adolescent girls reveals that while Eurocentric beauty standards are pervasive, there are other beauty ideals specific to Black adolescent girls (e.g., regarding skin tone and hair; Gadson & Lewis, 2022; Onnie Rogers et al., 2022; Thomas et al., 2011). Additionally, in a previous study of Black adolescents, felt pressure for gender conformity was negatively associated with self-esteem, and gender typicality was positively associated with self-esteem (Skinner et al., 2018). Notably, the latter association was weaker for adolescents with higher racial centrality, suggesting it may be a protective factor for Black adolescents (Skinner et al., 2018).

It is also important to consider the unique influence of racialized objectifying experiences on adolescent girls of color. While research in this area remains scant, a recent study of adolescent girls found that race moderated the relationship between body surveillance and depression, suggesting that the consequences of self-objectification may be larger for Black adolescent girls (Grower et al., 2021). More specifically, the study reported that while Black and White adolescent girls engaged in similar levels of body surveillance, increased body surveillance was associated with increased depressive symptoms only among Black adolescent girls (Grower et al., 2021). Culturally relevant appearance ideals may influence self-objectification among adolescents of color, beyond Eurocentric beauty ideals. Recent work with a sample of Black adolescent boys and girls suggests that satisfaction with skin tone, hair, and face is associated with higher appearance esteem, lower self-objectification, and lower depressive symptoms (Ladd et al., 2022).

1.5 Body Hair Attitudes and Removal

For girls and women living in Eurocentric cultures, body hair removal is a pervasive standard of beauty (Smelik, 2015; Toerien & Wilkinson, 2003; Trujillo, 2021). However, there is a dearth of research on body hair attitudes and removal practices, particularly among adolescents. Body hair research emerged in the late twentieth and early twenty-first centuries. Empirical work conducted during this time suggests that the hairless ideal is a White beauty norm, exemplified by predominantly White college students viewing a White woman with body hair as less sexually and interpersonally attractive than a White woman without body hair (Basow & Braman, 1998; Basow & Willis, 2001). Research with predominantly White samples in the United States (U.S.), Australia, and the United Kingdom highlights the pervasiveness of this norm during the 1990s and early 2000s (Basow, 1991; Tiggemann & Hodgson, 2008; Tiggemann & Kenyon, 1998; Toerien et al., 2005). The majority of samples of predominantly White adult women, undergraduate students, and adolescent girls reported removing their underarm and leg hair, and they did so for two main reasons: attractiveness and social norms (Basow, 1991; Tiggemann & Hodgson, 2008; Tiggemann & Kenyon, 1998; Toerien et al., 2005). Notably, these women reported beginning to remove underarm and leg hair during puberty (Basow, 1991; Tiggemann & Hodgson, 2008; Toerien et al., 2005), suggesting the importance of investigating body hair attitudes and removal practices among adolescents.

While it may be expected that beauty norms have changed since the 1990s and early 2000s, more recent work suggests that body hair on girls and women is still viewed negatively in Eurocentric cultures (Borkenhagen et al., 2020; Terry et al., 2018; Terry & Braun, 2013). In a study conducted ten years ago, a sample of adults in New Zealand perceived body hair removal as socially acceptable for both men and women; however, maintaining natural body hair was viewed

quite differently (Terry & Braun, 2013). The majority of the sample agreed that retaining body hair was socially acceptable for men, whereas only a minority of the sample agreed that retaining body hair was socially acceptable for women (Terry & Braun, 2013). A more recent qualitative study among women in New Zealand highlights this tension surrounding body hair removal practices (Terry et al., 2018). On the one hand, participants stated that women should have agency and choice over body hair removal, or lack thereof (Terry et al., 2018). On the other hand, participants noted that there is a powerful social norm regarding women's body hair removal, which can be hard to resist (Terry et al., 2018).

Body hair removal appears to be common; in fact, the vast majority of women and men have removed body hair, although when excluding facial hair removal, women are more likely than men to report that they currently remove body hair (Borkenhagen et al., 2020; Terry & Braun, 2013). Where and when body hair is removed may also differ. In one study, men reported frequently removing body hair from the face, pubic region, and chest, whereas women reported frequently removing hair from the lower legs, armpits, and pubic region (Terry & Braun, 2013). Women also reported first removing body hair at a significantly younger age than men (Terry & Braun, 2013). Indeed, a recent qualitative study in Italy suggests that adolescent girls may feel dissatisfied with body hair growth spurred by puberty, leading to body hair removal (Riboli et al., 2022). Moreover, younger women may be especially likely to report currently removing body hair relative to older women (Borkenhagen et al., 2020), demonstrating the importance of investigating body hair attitudes and removal practices with a developmental lens.

Interestingly, most body hair research specifically focuses on pubic hair. Though the focus of this thesis is on general body hair removal and does not investigate pubic hair removal specifically, much can be learned from this line of work. The hairless ideal appears to apply to

pubic hair: the majority of women in multiple samples (ranging from age 16 to 68) report currently, or previously, removing their pubic hair (Butler et al., 2015; Caron, 2022; Deans et al., 2023; DeMaria et al., 2014, 2016; DeMaria & Berenson, 2013; Grossman & Annunziato, 2018; Herbenick et al., 2010, 2013; Obst et al., 2019; Prabhune et al., 2019; Rowen et al., 2016; Terry & Braun, 2013; Tiggemann & Hodgson, 2008). While most research has focused on women, studies suggest that the majority of men (ranging from age 18 to 65) have also engaged in pubic hair removal, although perhaps to a lesser extent (Butler et al., 2015; Caron, 2022; Deans et al., 2023; Gaither et al., 2017; Prabhune et al., 2019; Terry & Braun, 2013). Notably, prior work suggests younger adults report currently removing pubic hair more frequently relative to older adults (Butler et al., 2015; DeMaria & Berenson, 2013; Gaither et al., 2017; Herbenick et al., 2010, 2013; Rowen et al., 2016).

Pubic hair removal practices appear to begin during adolescence (Caron, 2022; DeMaria et al., 2016; DeMaria & Berenson, 2013), which is similar timing to the suggested onset of underarm and leg hair removal (Basow, 1991; Tiggemann & Hodgson, 2008; Toerien et al., 2005). In fact, the majority of a diverse sample of adolescent girls and young women in the U.S. reported routinely removing their pubic hair (Bercaw-Pratt et al., 2012). Young women and men report removing pubic hair for several reasons, including for hygiene, comfort, appearance, social norms, religion, and sex preparation (Butler et al., 2015; Caron, 2022; Deans et al., 2023; DeMaria et al., 2016; Gaither et al., 2017; Prabhune et al., 2019; Rowen et al., 2016; Smolak et al., 2014; Smolak & Murnen, 2011; Terry & Braun, 2013; Tiggemann & Hodgson, 2008). For adolescents and young adults, choosing to remove pubic hair is also influenced by friends, family, and the media (Bercaw-Pratt et al., 2012; DeMaria et al., 2016; Li & Braun, 2017).

Much of the work on pubic hair removal has focused on predominantly White samples (e.g., Butler et al., 2015; Caron, 2022; DeMaria et al., 2016; Herbenick et al., 2010, 2013; Obst et al., 2019; Smolak & Murnen, 2011; Tiggemann & Hodgson, 2008) or has not collected or reported on the racial/ethnic demographics of the sample (e.g., Deans et al., 2023; Terry & Braun, 2013). While some work has found no difference in pubic hair removal by race/ethnicity (Herbenick et al., 2013), other work suggests the hairless norm for pubic hair may in fact be a White norm. Prior work suggests total pubic hair removal may be more common among White undergraduate women compared to Asian/Asian American undergraduate women (Butler et al., 2015), and Black undergraduate women may be more likely to have at least some hair on their genitals (as opposed to having no hair) compared to White undergraduate women (DeMaria et al., 2016). Moreover, additional work in the U.S. suggests that the majority of adults (ranging from age 16 to 65) in all racial/ethnic groups are current pubic hair groomers, but White adults are significantly more likely to be current pubic hair groomers (DeMaria & Berenson, 2013; Rowen et al., 2016). These mixed findings suggest that the hairless norm may vary across racial/ethnic groups; however, racial/ethnic differences have not yet been explored among body hair removal more generally.

1.6 The Current Study

There is a dearth of research on adolescent body hair attitudes, satisfaction, and removal practices, despite its developmental salience. The current study examines adolescents' attitudes and behaviors regarding body hair, with a specific focus on the association between self-objectification and body hair removal frequency among adolescent girls. Moreover, this study has an exploratory focus among adolescent girls of color, investigating the potential protective role of

ERI commitment. All analyses will include body hair growth as a covariate. This study has five aims:

1. Aim 1 will present descriptive statistics for the full sample, as well as within boys and girls by race/ethnicity, given the minimal existing research on adolescent body hair attitudes, satisfaction, and removal practices.
2. Adolescents feel pressure to engage in gender conformity (Cook et al., 2019; Kornienko et al., 2016; Nielson et al., 2020), which largely centers appearance (Oransky & Fisher, 2009; Tolman & Porche, 2000). Building on intersectionality theory (Crenshaw, 1989), it is important to consider how gender conformity and beauty ideals may differ among adolescents of different racial and ethnic backgrounds (e.g., Gadson & Lewis, 2022; Onnie Rogers et al., 2022; Thomas et al., 2011). Moreover, some prior work suggests that the hairless ideal may differ across racial/ethnic groups with regards to pubic hair (Butler et al., 2015; DeMaria & Berenson, 2013; DeMaria et al., 2016; Rowen et al., 2016), although this has not yet been explored with body hair more generally. Aim 2 will take into consideration the intersection of gender and race/ethnicity, exploring sociodemographic differences in body hair satisfaction, attitudes towards girls' body hair, and body hair removal frequency among the full sample (girls and boys). Given the limited research on adolescent perspectives and behaviors regarding body hair, as well as the variability in prior results concerning racial/ethnic differences in pubic hair removal practices, this aim is exploratory.
3. Prior research with women demonstrates a relationship between self-objectification and pubic hair removal (Grossman & Annunziato, 2018; Smolak & Murnen, 2011).

- Among the subsample of adolescent girls, Aim 3 will examine the association between self-objectification and body hair removal frequency, with body hair satisfaction as a mediating variable (Figure 1). It is hypothesized that greater self-objectification will be associated with more frequent body hair removal and that lower body hair satisfaction will mediate this relationship.
4. Culturally relevant appearance ideals may influence self-objectification among adolescents of color beyond Eurocentric beauty ideals (Ladd et al., 2022). Among the subsample of adolescent girls, Aim 4 will explore a moderated mediation model, with race/ethnicity examined as a moderator of the association between (1) self-objectification and body hair satisfaction and (2) self-objectification and body hair removal frequency in the proposed Aim 3 model (Figure 2). This aim is exploratory due to the dearth of research on adolescent body hair attitudes and removal practices, particularly among adolescents of color.
 5. ERI commitment appears to provide beneficial psychosocial effects for adolescents of color (Yip, 2018; Yip et al., 2019). Among the subsample of adolescent girls of color, Aim 5 will explore an additional moderated mediation model, with ERI commitment examined as a potential moderator of the association between (1) self-objectification and body hair satisfaction and (2) self-objectification and body hair removal frequency in the proposed Aim 3 model (Figure 3). It is hypothesized that greater ERI commitment will buffer the association between self-objectification and body hair satisfaction, such that adolescents of color with greater ERI commitment will have greater body hair satisfaction, and in turn, lower body hair removal frequency.

2.0 Method

2.1 Positionality Statement

The lead author on this project is a White, queer, cisgender woman. Given the limited research in this area, in proposing these analyses, she reflected on her personal connection to body hair as an adolescent and adult. The lead author recognizes that she does not have lived experiences related to beauty standards for women of color. While using existing literature to generate her aims, the analyses among adolescents of color are largely exploratory.

2.2 Data

Data for this study are from the baseline of a three time point longitudinal study. Data were collected by the Character Lab Research Network (CLRN), a consortium of schools and researchers working collaboratively across the U.S. None of the measures of interest were collected during the second and third waves.¹ Participants ($N = 1,663$, aged 11-18) in the parent study were recruited from large, diverse, suburban and urban schools in the Fall of 2021. All

¹ The data were collected in the context of a divisive sociopolitical climate (e.g., schools facing challenges related to the COVID-19 pandemic and critical race theory). Given that CLRN is a collaboration between schools and researchers, the study measures were edited after the first wave to provide the best chance at study facilitation, based on school requests.

participants assented to participate in the study, completing Qualtrics surveys during classroom periods. The University of Delaware Institutional Review Board approved all procedures which met ethical guidelines for research with human subjects.

2.3 Measures

2.3.1 Socio-Demographic Data

The schools provided data regarding participants' age, grade, and eligibility for free and reduced-price lunch (a proxy for socioeconomic status). The schools provided race/ethnicity data (White, Hispanic, Black, Asian, Pacific Islander, American Indian, multiracial). Participants identified as White and Hispanic were categorized as Hispanic. Otherwise, participants identified as having more than one race/ethnicity were categorized as multiracial.

Participants self-reported gender identity (female, feminino, male, masculino, other, prefer not to say) with an item dictated by school data collection procedures. Participants who identified as female or feminino were categorized as girls. Participants who identified as male or masculino were categorized as boys. Participants who selected "other" or "prefer not to say" were categorized as "another gender identity."

2.3.2 Body Hair Growth

Body hair growth was assessed with a single-item measure from the self-report Pubertal Development Scale (Petersen et al., 1988). Participants indicated the extent of their body hair

growth using a four-point scale (1 = has not yet begun to grow, 2 = has barely started to grow, 3 = is definitely underway, 4 = seems completed). Body hair was defined for participants as “hair any place other than your head, such as under your arms.” Participants could indicate if they did not know the extent of their body hair growth. Participants who selected “I don’t know” were excluded from analyses.

2.3.3 Attitudes Towards Girls’ Body Hair

Attitudes towards girls’ body hair were assessed with a questionnaire originally developed to measure attitudes towards women’s body hair among an undergraduate student sample (Basow & Braman, 1998). The questionnaire was adapted by changing the term “women” to “girls” and changing the term “men” to “boys” for all items. One item (i.e., “Women need to remove body hair in order to appeal to men”) was removed to be developmentally appropriate for use with an adolescent sample. Participants responded to 12 statements (e.g., “Body hair on girls is ugly”) on a five-point Likert scale (1 = strongly disagree, 5 = strongly agree). Two items were reverse scored. Items were averaged, with higher scores indicating greater disapproval towards body hair on girls. The measure showed good internal consistency in the current sample, $\alpha = 0.86$.

2.3.4 Body Hair Satisfaction

Participants indicated their body hair satisfaction with items adapted from the Multidimensional Body-Self Relations Questionnaire—Body Areas Satisfaction Scale (MBSRQ-BASS; Brown et al., 1990). Using a 5-point scale (1 = very dissatisfied, 5 = very satisfied), participants indicated their satisfaction with three different types of body hair: leg hair, underarm

hair, and other body hair. Items were averaged, with higher scores indicating greater satisfaction with body hair. The measure showed good internal consistency, $\alpha = 0.88$.

2.3.5 Body Hair Removal Frequency

To measure body hair removal frequency, participants responded to two statements, indicating how often they removed their leg hair and underarm hair in the past four weeks on a 5-point scale (1 = never, 2 = rarely, 3 = sometimes, 4 = often, 5 = always). Items were averaged, with higher scores indicating more frequent body hair removal in the past four weeks. The measure showed good internal consistency, $\alpha = 0.87$.

2.3.6 Self-Objectification

Self-objectification was measured using the body surveillance subscale of the Objectified Body Consciousness Scale (OBCS), which has demonstrated reliability and validity among young adult samples (McKinley & Hyde, 1996) and has been used in adolescent samples (Slater & Tiggemann, 2002). Participants responded to 8 statements (e.g., “During the day, I think about how I look many times”) on a 7-point scale (1 = strongly disagree, 7 = strongly agree). Six items were reverse scored. Items were averaged, with higher scores indicating greater engagement in self-objectification (i.e., frequently surveilling the body and viewing the body based on how it looks; McKinley & Hyde, 1996). The measure showed acceptable internal consistency, $\alpha = 0.79$.

2.3.7 Ethnic and Racial Identity Commitment

ERI commitment was measured using the commitment subscale of the Multigroup Ethnic Identity Measure—Revised (MEIM–R), which has demonstrated reliability and validity (Phinney & Ong, 2007). Using a five-point scale (1 = strongly disagree, 5 = strongly agree), participants responded to three statements (e.g., “I have a strong sense of belonging to my own ethnic group”). Items were averaged. Higher scores indicate greater ERI commitment. The measure showed good internal consistency, $\alpha = 0.87$.

2.4 Analyses

All analyses were conducted using R version 4.1.2.

Aim 1: Descriptive statistics described body hair attitudes and behaviors, as well as socio-demographic characteristics, of the sample. Bivariate correlations between attitudes towards girls’ body hair, body hair satisfaction, body hair removal frequency, gender, race/ethnicity, and self-objectification were calculated and presented within gender.

Aim 2: While controlling for body hair growth, three separate two-way ANCOVAs determined if there was an interaction effect between gender and race/ethnicity on (1) attitudes towards girls’ body hair, (2) body hair satisfaction, and (3) body hair removal frequency.

Aim 3: Among the subsample of adolescent girls, a linear regression assessed if body hair satisfaction mediated the relationship between self-objectification and body hair removal frequency while controlling for body hair growth (Figure 1).

Aim 4: In an exploratory moderated mediation model for the subsample of adolescent girls, race/ethnicity was investigated as a moderator of the association between (1) self-objectification and body hair satisfaction and (2) self-objectification and body hair removal frequency, in the context of the Aim 3 mediation model (Figure 2).

Aim 5: In a final moderated mediation model for the subsample of girls of color, ERI commitment was investigated as a moderator of the association between (1) self-objectification and body hair satisfaction and (2) self-objectification and body hair removal frequency in the context of the Aim 3 mediation model (Figure 3).

3.0 Results

There were 1,663 participants in the full sample. After removing non-student participants (i.e., people testing the survey and teachers), the sample became 1,622. After removing participants who were missing all variables of interest (i.e., self-objectification, body hair satisfaction, body hair removal frequency, attitudes towards girls' body hair, ERI commitment, and body hair growth), the final sample was 1,023.

A chi-square test with Yates' continuity correction revealed no gender differences in missing data between boys and girls ($\chi^2 = 0.91$, $df = 1$, $p = .34$). However, there were significant racial/ethnic differences ($\chi^2 = 20.08$, $df = 4$, $p < .001$). A pairwise chi-square test with Bonferonni correction revealed that Black participants (adjusted $p < .05$) and Hispanic participants (adjusted $p < .01$) were more likely to have missing data compared to non-Hispanic White participants. American Indian and Pacific Islander participants were excluded from these analyses due to small sample sizes, with both participants who identified as American Indian missing data. Regarding grade, seventh graders were more likely to have missing data compared to eleventh graders ($\chi^2 = 7.12$, $df = 1$, $p < .01$). Due to small sample sizes, all other grades were excluded from this analysis. Additionally, participants eligible for free and reduced-price lunch were more likely to have missing data compared to ineligible participants ($\chi^2 = 4.74$, $df = 1$, $p < .05$).

3.1 Aim 1: Descriptive Statistics

Participant sociodemographic information is presented in Table 1. The average age of the sample was 13.55, and most participants were in seventh ($n = 690$, 67.45%) or eleventh ($n = 325$, 31.77%) grade. Most participants identified as Hispanic ($n = 331$, 32.36%), non-Hispanic White ($n = 331$, 32.36%) or Black ($n = 167$; 16.32%). With regard to gender identity, most participants identified as a boy ($n = 464$; 45.36%) or as a girl ($n = 479$; 46.82%). About one-third of the sample was eligible for free and reduced-price lunch ($n = 365$, 35.68%).

Bivariate correlations between attitudes towards girls' body hair, body hair satisfaction, body hair removal frequency, self-objectification, body hair growth, gender, and race/ethnicity among the full sample are presented in Table 2. For these analyses, race/ethnicity (0 = Non-Hispanic White, 1 = American Indian, Asian, Black, Hispanic, Multiracial, Pacific Islander) and gender (0 = girl, 1 = boy) were treated as dichotomous variables. Given the number of significant correlations between gender and relevant study variables, bivariate correlations are presented by gender in Table 3.

3.2 Aim 2: Interactions Between Gender and Race/Ethnicity on Body Hair Attitudes and Behaviors

Almost all participants reported that their body hair had started to grow (94.15%, 660/701). Generally, most boys were satisfied with or impartial to their body hair (i.e., mean score ≥ 3 ; 79.39%, 312/393). On the contrary, most girls were dissatisfied with or impartial to their body hair (i.e., mean score ≤ 3 ; 76.49%, 309/404). Among participants who responded to the body hair

removal item, 41.84% of boys (164/392) and 86.45% of girls (351/406) removed some amount of body hair in the past four weeks. Among the girls who reported removing some body hair, 27.35% (96/351) reported removing body hair frequently. Most participants generally disagreed with or adopted a neutral position on statements disapproving of body hair on girls (i.e., mean score ≤ 3 ; total: 77.81%, 698/897; girls: 85.98%, 368/428; boys: 67.17%, 266/396).

Average body hair growth, body hair removal frequency, body hair satisfaction, attitudes towards girls' body hair, and self-objectification are presented by full sample and by gender and race/ethnicity in Table 4.

3.2.1 Interaction Between Gender and Race/Ethnicity on Attitudes Towards Girls' Body Hair

A two-way ANOVA was conducted on attitudes towards girls' body hair while controlling for body hair growth ($n = 887$). One factor was gender (girls, boys), and the other factor was race/ethnicity (Non-Hispanic White, Asian, Black, Hispanic, Multiracial). The main effect of gender was significant, $F(1, 559) = 66.04, p < .001, \eta^2p = .11$. Compared to boys ($M = 2.81, SD = 0.79$), girls ($M = 2.25, SD = 0.77$) were more likely to approve of body hair on girls. The main effect of race was also significant, $F(4, 559) = 3.11, p < .05, \eta^2p = .02$. To better understand the effect of race/ethnicity, post-hoc tests were conducted comparing teens by race/ethnicity, collapsing across gender. The p-values reported for these contrasts were corrected for multiple comparisons using Holm's method. Multiracial adolescents ($M = 2.20, SD = 0.83$) were significantly more likely to approve of girls' body hair compared to Black adolescents ($M = 2.54, SD = 0.82$), $p < .05$; Hispanic adolescents ($M = 2.55, SD = 0.82$), $p < .05$; and non-Hispanic White

adolescents ($M = 2.55$, $SD = 0.84$), $p < .01$. The interaction between gender and race/ethnicity was not significant, $F(4, 559) = 1.67$, $p = .16$, $\eta^2p = .01$.²

3.2.2 Interaction Between Gender and Race/Ethnicity on Body Hair Satisfaction

A two-way ANOVA was conducted on body hair satisfaction while controlling for body hair growth, with gender and race/ethnicity as factors ($n = 887$). The main effect of gender was significant, $F(1, 561) = 28.17$, $p < .001$, $\eta^2p = .05$. Boys ($M = 3.18$, $SD = 0.95$) were more likely to feel satisfied with their body hair compared to girls ($M = 2.79$, $SD = 1.06$). The main effect of race/ethnicity was not significant, $F(4, 561) = 1.30$, $p = .27$, $\eta^2p = .01$. The interaction between gender and race/ethnicity was not significant, $F(4, 561) = 1.70$, $p = .15$, $\eta^2p = .01$.³

3.2.3 Interaction Between Gender and Race/Ethnicity on Body Hair Removal Frequency

A two-way ANOVA was conducted on body hair removal frequency while controlling for body hair growth, with gender and race/ethnicity as factors ($n = 887$). The main effect of gender was significant, $F(1, 563) = 288.66$, $p < .001$, $\eta^2p = .34$. Girls ($M = 3.40$, $SD = 1.33$) reported more body hair removal over the past four weeks compared to boys ($M = 1.77$, $SD = 1.10$). The main

² The assumption of normality of residuals was not met, as determined by a Shapiro-Wilk test ($p < .001$). The residuals were further assessed with a QQ plot, which revealed a slight departure from normality (Appendix A, Figure A1). Notably, ANOVA tests can handle moderate violations of normality, particularly with larger sample sizes (i.e., $N > 30$; Sawyer, 2009).

³ A Shapiro-Wilk test determined that the assumption of normality of residuals was not met ($p < .001$). A QQ plot revealed a slight departure from normality (Appendix A, Figure A2).

effect of race/ethnicity was also significant, $F(4, 563) = 4.88, p < .001, \eta^2p = .03$. Post-hoc tests compared teens by race/ethnicity, collapsing across gender, with p-values corrected for multiple comparisons using Holm's method. Hispanic adolescents ($M = 2.72, SD = 1.39$) reported more body hair removal than Black adolescents ($M = 2.41, SD = 1.45$), $p < .001$.

The interaction between gender and race/ethnicity was also significant, $F(4, 563) = 7.96, p < .001, \eta^2p = .05$. Post-hoc tests were conducted comparing teens across different racial/ethnic identities within each gender, using Holm's method to correct the p-values for multiple comparisons. Hispanic boys ($M = 2.01, SD = 1.16$) reported more body hair removal compared to non-Hispanic White boys ($M = 1.46, SD = 0.84$), $p < .01$. Hispanic girls ($M = 3.51, SD = 1.19$) reported more body hair removal compared to Asian girls ($M = 2.72, SD = 1.56$), $p < .05$, and Black girls ($M = 3.01, SD = 1.43$), $p < .001$. Non-Hispanic White girls ($M = 3.75, SD = 1.22$) also reported more body hair removal than Asian girls, $p < .01$, and Black girls, $p < .001$.⁴

⁴ Based on the results of a Shapiro-Walk test, the assumption of normality for residuals was unmet ($p < .001$). A mild deviation of normality was indicated by a QQ plot (Appendix A, Figure A3). The assumption of homogeneity of variances was also not met, as evidenced by Levene's Test ($p < .001$). A Scale-Location Plot further assessed whether the spread of residuals was roughly constant across the range of fitted values (Appendix A, Figure A4).

3.3 Aim 3: The Relationship Between Self-Objectification, Body Hair Satisfaction, and Body Hair Removal Frequency Among Girls

Among the subsample of adolescent girls, a linear regression mediation analysis examined the relationship between self-objectification and body hair removal, with body hair satisfaction as a mediating variable, while controlling for body hair growth.

Self-objectification was negatively associated with body hair satisfaction ($\beta = -.18$, $SE = 0.05$, 95% CI [-0.28, -0.07], $t(293) = -3.37$, $p < .001$), and body hair satisfaction was negatively associated with body hair removal ($\beta = -.14$, $SE = 0.07$, 95% CI [-0.27, -0.002], $t(292) = -2.00$, $p < .05$). Self-objectification was not associated with body hair removal after controlling for the mediator, body hair satisfaction ($\beta = .06$, $SE = 0.06$, 95% CI [-0.07, 0.18], $t(292) = 0.920$, $p = .36$; Figure 4). Approximately 11% of the variance in body hair removal was accounted for by the predictors ($R^2 = .11$, $F(3, 292) = 14.46$, $p < .001$).

The causal mediation analysis was tested using nonparametric bootstrap confidence intervals with the percentile method, and 1000 simulations were conducted ($\beta = .03$, 95% CI [-0.002, 0.06], $p = .07$). The indirect effect was not statistically significant, as the 95% bootstrap confidence interval included zero.

Post-hoc sensitivity analyses were conducted to examine the smallest population effect sizes the present study would have been well-powered to detect. 1,000 simulated samples of the outcome variable (i.e., body hair removal) were generated using Monte Carlo simulation with the observed predictor (i.e., self-objectification) and mediator (i.e., body hair satisfaction; Donnelly et al., 2022). Estimated power to reject the null hypothesis assuming a population effect size of 0.14 for each path in the mediation model (i.e., a small effect size; Cohen, 1988) was 0.82 for the a path, 0.68 for the b path, 0.81 for the c' path, 0.54 for the indirect path (i.e., $a*b$), and 0.90 for the

total path. Estimated power to reject the null hypothesis given a population effect size of 0.36 (i.e., medium effect size; Cohen, 1988) was 1.00 for the a path, b path, c' path, indirect path, and total path.⁵

3.4 Aim 4: The Relationship Between Self-Objectification, Body Hair Satisfaction, Body Hair Removal Frequency, and Race/Ethnicity Among Girls

Among the subsample of adolescent girls who identify as Asian, Black, Hispanic, Multiracial, and non-Hispanic White, a moderated mediation analysis investigated the potential moderated mediation effect of self-objectification on body hair removal through body hair satisfaction, with race/ethnicity as the moderator. The analysis controlled for body hair growth. Each level of the categorical race/ethnicity variable was compared to the grand mean of the dependent variable using effect coding (Davis, 2010). Unlike dummy coding, there is no one reference group with effect coding. Therefore, no singular racial/ethnic group was positioned as normative for understanding racial/ethnic differences (Mayhew & Simonoff, 2015).

With effect coding, one racial/ethnic group must be omitted from the analysis, and thus not compared to the grand mean. While examining multiracial adolescents as one combined group is a common practice, it has been validly critiqued. Though some experiences may be shared among multiracial people (e.g., identity flexibility), there is vast racial/ethnic diversity within the

⁵ This analysis (i.e., Aim 3) is the most highly powered model. The subsequent moderated-mediation models have smaller sample sizes and involve additional interaction terms; thus, it can be assumed that they will have similar, or even less, power to detect effects of interest (Fairchild & MacKinnon, 2009).

population (Charmaraman et al., 2014; Gaither, 2015). As such, using one multiracial group in analyses may lead to overgeneralizations of a shared experience, when one may not exist. As gendered appearance pressures may vary among adolescents of different racial and ethnic backgrounds (e.g., Gadson & Lewis, 2022), we theorize this may be the case *within* the group of multiracial adolescents, perhaps due to racial phenotypicality (Gaither, 2015). Therefore, we omitted the multiracial group from the analysis, as the heterogeneity of the group may make it difficult to draw inferences.

Self-objectification was negatively associated with body hair satisfaction ($\beta = -.18$, $SE = 0.07$, 95% CI [-0.31, -0.05], $t(260) = -2.70$, $p < .01$). No interaction effects of self-objectification and race/ethnicity were associated with body hair satisfaction (Asian vs. mean: $\beta = -.17$, $SE = 0.15$, 95% CI [-0.47, 0.13], $t(260) = -1.11$, $p = .27$; Black vs. mean: $\beta = -.01$, $SE = 0.11$, 95% CI [-0.22, 0.20], $t(260) = -0.11$, $p = .91$; Hispanic vs. mean: $\beta = .07$, $SE = 0.11$, 95% CI [-0.14, 0.28], $t(260) = 0.68$, $p = .50$; non-Hispanic White vs. mean: $\beta = -.12$, $SE = 0.10$, 95% CI [-0.31, 0.06], $t(260) = -1.29$, $p = .20$). Thus, we did not find evidence to suggest that race/ethnicity moderates the relationship between self-objectification and body hair satisfaction. The difference in R^2 between a model with and without the interaction term was .02 and was not statistically significant ($p = .36$).

Body hair satisfaction was negatively associated with body hair removal ($\beta = -.14$, $SE = 0.07$, 95% CI [-0.28, -0.003], $t(259) = -2.02$, $p < .05$). The direct effect of self-objectification on body hair removal was not significant ($\beta = .02$, $SE = 0.08$, 95% CI [-0.13, 0.17], $t(259) = 0.25$, $p = .81$). No interaction effects of self-objectification and race/ethnicity were associated with body hair removal (Asian vs. mean: $\beta = -.23$, $SE = 0.17$, 95% CI [-0.57, 0.11], $t(259) = -1.34$, $p = .18$; Black vs. mean: $\beta = -.06$, $SE = 0.12$, 95% CI [-0.29, 0.18], $t(259) = -0.46$, $p = .65$; Hispanic vs.

mean: $\beta = -.01$, $SE = 0.12$, 95% CI [-0.25, 0.22], $t(259) = -0.11$, $p = .91$; non-Hispanic White vs. mean: $\beta = .11$, $SE = 0.11$, 95% CI [-0.10, 0.32], $t(259) = 1.00$, $p = .32$). Therefore, there is no evidence to suggest that race/ethnicity moderates the relationship between self-objectification and body hair satisfaction (Figure 5). The difference in R^2 between a model with and without the interaction term is .01 and is not statistically significant ($p = .50$).

The 95% confidence interval for the index of moderated mediation does not contain zero; however, it is not statistically significant ($\beta = .03$, 95% CI [0.001, 0.07], $p = .07$). Consequently, there is no indication that there are differences between the indirect effects among girls of various racial/ethnic backgrounds.

3.5 Aim 5: The Relationship Between Self-Objectification, Body Hair Satisfaction, Body Hair Removal Frequency, and ERI Commitment Among Girls of Color

Among the subsample of adolescent girls of color (i.e., those who are American Indian, Asian, Black, Hispanic, multiracial, and Pacific Islander), a moderated mediation analysis investigated the potential effect of self-objectification on body hair removal through body hair satisfaction, with ethnic and racial identity (ERI) commitment as the moderator. The analysis controlled for body hair growth.

Results indicated that self-objectification was not associated with body hair satisfaction ($\beta = .30$, $SE = 0.27$, 95% CI [-0.23, 0.83], $t(171) = 1.12$, $p = .27$). The interaction effect of self-objectification and ERI commitment was also not associated with body hair satisfaction ($\beta = -.11$, $SE = 0.07$, 95% CI [-0.25, 0.02], $t(171) = -1.63$, $p = .11$). Thus, there is no evidence indicating that ERI commitment moderates the relationship between self-objectification and body hair

satisfaction among adolescent girls of color. The difference in R^2 between a model with and without the interaction term is .02 and is not statistically significant ($p = .11$).

Body hair satisfaction was not associated with body hair removal ($\beta = -.13$, $SE = 0.09$, 95% CI [-0.31, 0.06], $t(3, 170) = -1.33$, $p = .19$). The direct effect of self-objectification on body hair removal was also not significant ($\beta = .23$, $SE = 0.33$, 95% CI [-0.43, 0.88], $t(170) = 0.69$, $p = .49$). The interaction effect of self-objectification and ERI commitment was not associated with body hair removal ($\beta = -.05$, $SE = 0.09$, 95% CI [-0.22, 0.12], $t(170) = -0.62$, $p = .54$; Figure 6). Hence, there is no evidence to suggest that ERI commitment moderates the relationship between self-objectification and body hair removal among adolescent girls of color. The difference in R^2 between a model with and without the interaction term is .002 and is not statistically significant ($p = .54$).

The 95% confidence interval for the index of moderated mediation contained zero ($\beta = .01$, 95% CI [-0.01, 0.06], $p = .36$). Therefore, no evidence suggests differences between the indirect effects across varied levels of ERI commitment.

4.0 Discussion

In general, body hair removal appeared to be a common practice among adolescents. There were prominent gender differences, with girls reporting less body hair satisfaction and more frequent body hair removal compared to boys. Within boys and within girls, there may be some differences in body hair removal across racial/ethnic identity. Among girls, self-objectification was negatively associated with body hair satisfaction, which, in turn, was negatively associated with body hair removal; the indirect effect of the linear regression mediation analysis was not significant. This relationship remained consistent across different racial/ethnic groups. ERI commitment did not significantly buffer the relationship between self-objectification and body hair satisfaction among girls of color; however, this may be a reflection of insufficient power to reject the null hypothesis assuming a small effect size.

4.1 Adolescent Body Hair Attitudes, Removal Practices, and Satisfaction

The hairless ideal is still a pervasive beauty standard, particularly for girls and women in Eurocentric cultures (Borkenhagen et al., 2020; Terry et al., 2018; Terry & Braun, 2013). Compared to the adolescent boys in our sample, the adolescent girls had more positive attitudes towards girls' body hair. Interestingly, more than 85% of girls had engaged in some degree of body hair removal during the past month. This reflects a sentiment shared by some women in prior qualitative work: women should have the agency to decide whether they want to remove body hair, yet it is difficult to resist powerful social norms (Terry et al., 2018). Our measure of approval

towards body hair on girls was rather broad (e.g., “body hair on girls is disgusting”). Further querying if there are limits to approving of body hair on women (e.g., comparing the acceptability of underarm hair versus leg hair, exploring how thickness of hair influences approval) may be an area of future interest. Further, we did not assess our sample’s attitudes towards body hair on boys and nonbinary people, which is a warranted area of further study.

Preliminary research with adults suggests women are more likely than men to remove body hair, reflective of the hairless norm (Borkenhagen et al., 2020; Terry & Braun, 2013). Our finding that adolescent girls are more likely to remove their leg and underarm hair compared to adolescent boys is in line with, and extends, this prior work. Notably, almost our entire sample (aged 11-18) had reported that their body hair had started to grow. Previous work suggests pubic hair removal may begin during adolescence (Caron, 2022; DeMaria et al., 2016; DeMaria & Berenson, 2013), which is similar timing to the onset of general body hair removal indicated by other preliminary studies (Basow, 1991; Terry & Braun, 2013; Tiggemann & Hodgson, 2008; Toerien et al., 2005). An important future direction may be to investigate age of onset for body hair removal practices beyond pubic hair, which only begins growing during puberty (Dorn et al., 2019). It may be that some children engage in body hair removal even *prior* to puberty, on areas of the body with noticeably visible hair (e.g., eyebrows), or even on areas where hair is tiny and virtually colorless (e.g., legs and arms; Randall, 2008).

Our finding that adolescent girls are less satisfied with their body hair compared to adolescent boys suggests that body hair growth is an extension of appearance-related gender conformity. It may be that body hair is reflective of masculinity (Parent et al., 2020); thus, adolescent girls may be dissatisfied with body hair growth, while adolescent boys may be satisfied. Of important consideration is how adolescent body hair dissatisfaction may contribute to the

broader literature on body image. Body dissatisfaction, which refers to subjective displeasure with some aspect of one's appearance, is common during adolescence (Bucchianeri et al., 2013). In fact, body dissatisfaction remains relatively constant from adolescence through adulthood, suggesting adolescence is a critical period of body image development (Wang et al., 2019). Notably, body dissatisfaction is associated with several psychiatric concerns, such as depressive symptoms (Bornioli et al., 2021), suicidal ideation (Perkins & Brausch, 2019), and disordered eating (Cruz-Sáez et al., 2020; Stice et al., 2011). As such, an area of future study may be how body hair dissatisfaction is associated with measures of well-being. Furthermore, some popular measures assessing satisfaction with different parts of the body (e.g., MBSRQ-BASS; Brown et al., 1990) do not specifically assess body hair satisfaction. Incorporating this construct into existing measures may lead to a more holistic understanding of body image.

Some prior work suggests pubic hair removal may reflect a White beauty standard (Butler et al., 2015; DeMaria et al., 2016; DeMaria & Berenson, 2013; Rowen et al., 2016), while other work has found no differences in pubic hair removal by race/ethnicity (Herbenick et al., 2013). Our preliminary analyses found no evidence for racial/ethnic differences in general body hair satisfaction. However, the interaction between gender and race/ethnicity was significantly associated with body hair removal practices. Hispanic boys reported significantly more body hair removal compared to non-Hispanic White boys. Hispanic girls and non-Hispanic White girls both reported significantly more body hair removal compared to Asian girls and Black girls. One potential direction may be to further explore how body hair relates to gendered racial identity development through qualitative interviews.

4.2 Self-Objectification and Body Hair Among Adolescent Girls

Girls and women are subject to the sexualized male gaze, which is reflected in interpersonal encounters and visual media (Fredrickson & Roberts, 1997). Objectification theory posits that girls and women internalize this gaze, resulting in self-objectification (Fredrickson & Roberts, 1997). Prior work revealed a relationship between self-objectification and appearance behaviors, such as removing pubic hair, among women (Grossman & Annunziato, 2018; Smolak & Murnen, 2011). Our finding that self-objectification is negatively associated with body hair satisfaction, which, in turn, is negatively associated with body hair removal frequency among adolescent girls extends this literature. First, it suggests the importance of exploring the relationship between self-objectification and appearance-related behaviors prior to adulthood. This is in line with objectification theory, which suggests self-objectification begins at the onset of puberty (Fredrickson & Roberts, 1997), or perhaps even prior to puberty (Daniels et al., 2020). Second, pubic hair removal is a unique appearance behavior due to its relationship with sexual activity (Bercaw-Pratt et al., 2012; Tiggemann & Hodgson, 2008). However, self-objectification may influence body hair removal beyond just pubic hair. Thus, future research on body hair satisfaction and removal practices should extend beyond the focus on pubic hair.

Exploring the relationship between self-objectification, body hair satisfaction, and body hair removal among boys and non-binary youth may also be an area of future study. Boys also engage in self-objectification during adolescence, though to a lesser extent than girls (Daniels et al., 2020). Importantly, prior work suggests varied applicability of objectification theory for men, for example, with regards to the association between self-objectification and drive for muscularity (Daniel & Bridges, 2010; Davids et al., 2019; Heath et al., 2016; Parent & Moradi, 2011). However, drive for muscularity is only one of many appearance-related behaviors; thus, the

relationship with body hair may be different. The original objectification theory focuses on the binary gender system (i.e., the traditional, oversimplified conceptualization of gender as two opposite categories: male and female; Fredrickson & Roberts, 1997), and minimal research has explored how it may apply to non-binary people. However, one recent qualitative study with non-binary people suggests that sexual objectification is a common experience, which may result in appearance modification to guard against sexual advances and/or conform to gender expectations (Pradell, 2023).

4.3 Self-Objectification, Body Hair, and ERI Commitment Among Adolescent Girls of Color

We did not find evidence for racial/ethnic differences in the association between adolescent girls' self-objectification and body hair satisfaction. This suggests that increased self-objectification is associated with decreased body hair satisfaction across race/ethnicity. Recent work with Black adolescents found that increased satisfaction with culturally-relevant appearance ideals was associated with decreased self-objectification (Ladd et al., 2022). Importantly, ethnic and racial identity (ERI) commitment buffered this relationship, such that adolescents with higher ERI commitment reported stronger associations (Ladd et al., 2022). Another recent study found that ERI commitment did not buffer the association between self-objectification and body shame among a sample of Black women, though body appreciation did (Davies et al., 2021). Our study did not find evidence for ERI commitment buffering the negative association between self-objectification and body hair satisfaction among adolescent girls of color, though this may be a reflection of insufficient power to reject the null hypothesis assuming a small effect size. Both

prior studies were conducted specifically with Black adolescents and adults, whereas our analysis was conducted among a diverse group of adolescent girls of color. It may therefore be important to replicate the analyses *within* individual racial/ethnic groups, rather than among a heterogeneous group of adolescents of color.

Additionally, in conducting this analysis among adolescent girls of color, we have critically evaluated the decision to categorize all adolescents who were not Non-Hispanic White together (Suzuki et al., 2021). Indeed, we previously acknowledged how there is vast racial/ethnic diversity among the population of multiracial adolescents (Charmaraman et al., 2014; Gaither, 2015); thus, using one multiracial group in analyses may lead to overgeneralizations of a shared experience when one may not exist. However, the same can, and should, be said about conducting analyses among adolescent girls of color—the vast racial/ethnic diversity among the sample may lead to overgeneralizations of findings.

4.4 Additional Limitations and Future Directions

A notable limitation in this study is the lack of sexual orientation or comprehensive gender identity data. Data were collected through the Character Lab Research Network, a collaboration between schools and researchers. The data were collected in the context of a divisive sociopolitical climate, reflected by schools facing challenges regarding LGBTQ-inclusive curricula. As of October 2023, only six states in the U.S. explicitly required the inclusion of LGBTQ topics in state curricular standards, and seven states censored discussions of LGBTQ topics (Movement Advancement Project, 2023). Based on school requests, sexual orientation and comprehensive gender identity could not be collected.

Some prior work has explored body hair removal and satisfaction differences by sexual orientation, though exclusively with adult samples. Lesbian and bisexual women may have more positive attitudes towards body hair and may remove body hair less frequently compared to heterosexual women (Hayfield et al., 2017). Moreover, gay men may be more likely than heterosexual men to remove their back, buttocks, and pubic hair at least once in their lives (Martins et al., 2008). While no work has explored body hair removal among transgender people, body hair attitudes and behaviors may be reflective of gender expression (i.e., the way a person presents their gender). For some transgender and nonbinary people, body hair growth (or lack thereof) may be associated with gender dysphoria (Galupo et al., 2021; Pulice-Farrow et al., 2020), while for others, it may be associated with feelings of gender euphoria (i.e., a term used by transgender and non-binary people to describe powerfully positive feelings related to one's gender identity or expression; Beischel et al., 2021; Bradford et al., 2021; Jacobsen & Devor, 2022). Clearly, an important future area of study involves exploring the intersection of adolescents' gender identity and sexual orientation in relation to body hair attitudes and behaviors.

Pubic hair attitudes, satisfaction, and removal practices were also not assessed, given the context of data collection. While most prior body hair research has focused on pubic hair, few studies have centered adolescent attitudes or behaviors (e.g., Bercaw-Pratt et al., 2012). This is an important area of future exploration, given the unique relationship between pubic hair and sexual activity (Bercaw-Pratt et al., 2012; Tiggemann & Hodgson, 2008) and the importance of sexual development during adolescence (Tolman & McClelland, 2011). Given the established positive relationship between body image and sexual experiences (Gillen & Markey, 2019), it may be that pubic hair satisfaction is associated with sexual behavior. Sexual behaviors during adolescence may predict adult sexual behaviors (e.g., Prendergast et al., 2019). Thus, working to improve body

image, including pubic hair satisfaction, during adolescence may improve sexual experiences, contributing to a healthier and more pleasurable adult sexual life.

The cross-sectional design of this study allows for preliminary group comparisons and analysis between variables; however, it cannot determine cause-and-effect. As such, while relationships between variables can be identified, no directionality can be established. For example, in our study, decreased body hair satisfaction was associated with increased body hair removal among adolescent girls. It may be that a decrease in body hair satisfaction leads to an increase in body hair removal. It may also be that an increase in body hair removal leads to a decrease in body hair satisfaction. Alternatively, a third variable may cause both a decrease in body hair satisfaction and an increase in body hair removal. Employing a longitudinal design in future research may provide better insight into the directionality between variables.

4.5 Conclusion

The current study provides a preliminary understanding of adolescent body hair attitudes, satisfaction, and removal behaviors. Body hair removal was common among our sample, particularly adolescent girls, with some significant differences at the intersection of gender and race/ethnicity. Compared to adolescent boys, girls reported less body hair satisfaction, but more positive attitudes regarding body hair on girls. This study also extends the objectification theory literature (Fredrickson & Roberts, 1997), suggesting that self-objectification is negatively associated with body hair satisfaction, which is negatively associated with body hair removal frequency among adolescent girls. These findings highlight that body hair growth is not simply an outcome of pubertal development (Dorn et al., 2019). While a quintessential adolescent

experience, body hair growth is associated with attitudes and behaviors which reflect societal beauty standards (Smelik, 2015; Toerien & Wilkinson, 2003; Trujillo, 2021).

5.0 Figures and Tables

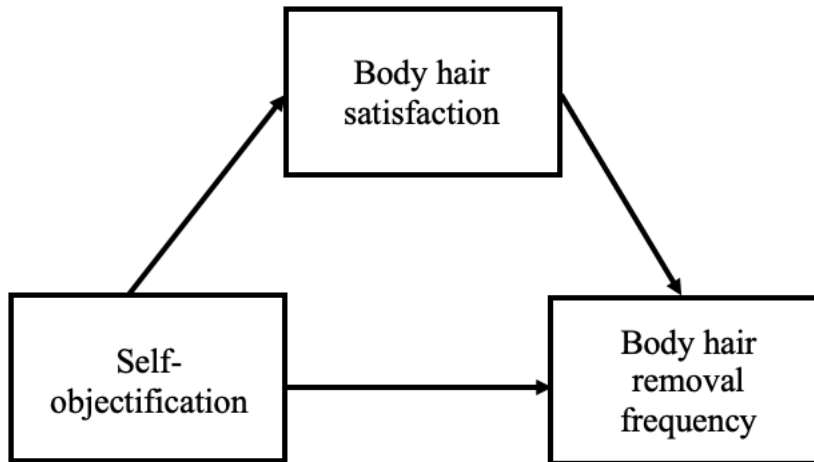


Figure 1. Proposed Aim 3 mediation model: Relationship between self-objectification and body hair removal frequency as mediated by body hair satisfaction among adolescent girls

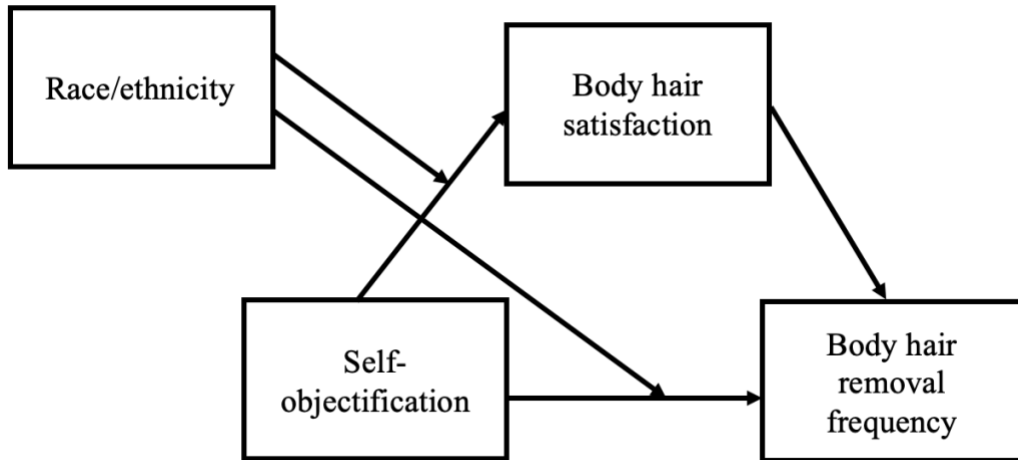


Figure 2. Proposed Aim 4 moderated mediation model: Race/ethnicity moderating the association between (1) self-objectification and body hair satisfaction and (2) self-objectification and body hair removal frequency among adolescent girls

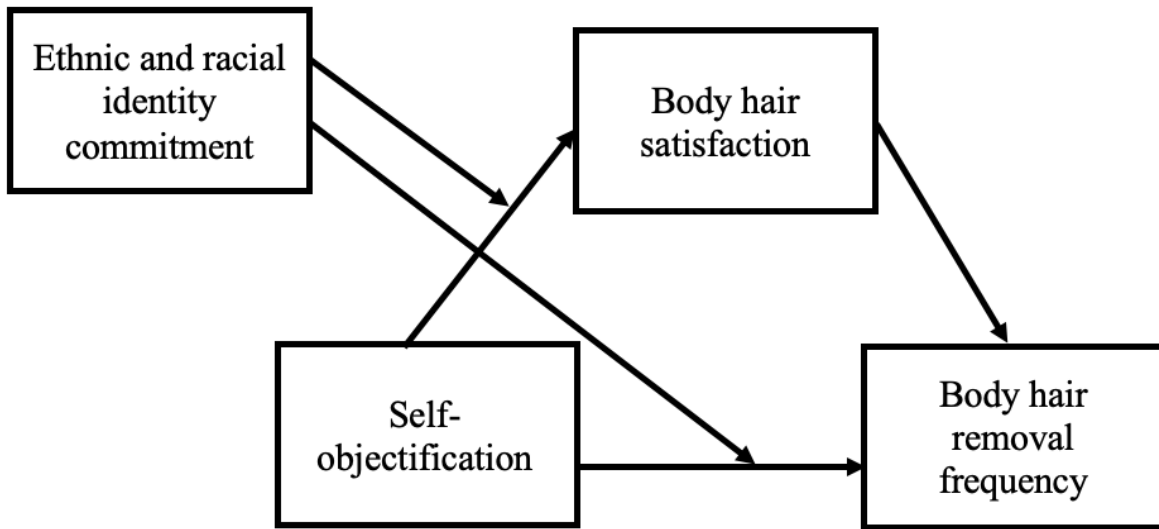


Figure 3. Proposed Aim 5 moderated mediation model: Ethnic and racial identity commitment moderating the association between (1) self-objectification and body hair satisfaction and (2) self-objectification and body hair removal frequency among adolescent girls of color

Table 1. Socio-demographics of full sample

Socio-demographics	Full sample N = 1,023 n (%)
Racial/ethnic identity	
American Indian	0 (0%)
Asian	56 (5.47%)
Black	167 (16.32%)
Hispanic	331 (32.36%)
Multiracial	72 (7.04%)
Pacific Islander	4 (0.39%)
Non-Hispanic White	331 (32.36%)
Racial/ethnic identity not reported	62 (6.06%)
Gender identity	
Boy	464 (45.36%)
Girl	479 (46.82%)
Another gender identity	62 (6.06%)
Gender identity not reported	18 (1.76%)
Grade	
6 th Grade	2 (0.2%)
7 th Grade	690 (67.45%)
8 th Grade	0 (0.0%)
9 th Grade	1 (0.1%)
10 th Grade	1 (0.1%)
11 th Grade	325 (31.77%)
Grade not reported	4 (0.39%)
Eligibility for free and reduced-price lunch	
Eligible	365 (35.68%)
Ineligible	596 (58.26%)
Eligibility not reported	62 (6.06%)
	M (SD)
Age (range: 10-18) ^a	13.55 (1.93)

^a Four participants did not report their age. One participant reported that they were 22 years old and was excluded from this calculation.

Table 2. Bivariate correlations among the full sample (N = 1,023)

Variable	1	2	3	4	5	6	7
1. Attitudes towards body hair on girls^a	1						
2. Body hair satisfaction^b	.02	1					
3. Body hair removal^c	-.05	-.15***	1				
4. Self-objectification^d	-.17***	-.18***	.22***	1			
5. Body hair growth^e	-.18***	-.01	.27***	.21***	1		
6. Gender^f	.33***	.19***	-.56***	-.3***	-.28***	1	
7. Race/ethnicity^g	-.01	-.02	-.02	-.01	-.07	0	1

*** $p < .001$

^a Higher scores indicate greater disapproval towards body hair on girls.

^b Higher scores indicate greater body hair satisfaction.

^c Higher scores indicate more frequent body hair removal over the past four weeks.

^d Higher scores indicate greater engagement in self-objectification.

^e Higher scores indicate greater body hair growth.

^f 0 = girl, 1 = boy

^g 0 = Non-Hispanic White, 1 = American Indian, Asian, Black, Hispanic, Multiracial, Pacific Islander

Table 3. Bivariate correlations by gender

Variable	1	2	3	4	5	6
1. Attitudes towards body hair on girls^a		-.2***	.17***	-.08	-.18**	.01
2. Body hair satisfaction^b	.13*		-.07	-.17***	-.07	-.04
3. Body hair removal^c	.18***	.02		.12*	.30***	-.19***
4. Self-objectification^d	-.08	-.06	.01		.20***	-.05
5. Body hair growth^e	.05	.20***	-.01	.07		-.04
6. Race/ethnicity^f	-.08	-.02	.20***	.05	-.09	

* $p < .05$, ** $p < .01$, *** $p < .001$

Note: Correlations for girls ($n = 479$) displayed above the diagonal; correlations for boys ($n = 464$) displayed below the diagonal.

^a Higher scores indicate greater disapproval towards body hair on girls.

^b Higher scores indicate greater body hair satisfaction.

^c Higher scores indicate more frequent body hair removal over the past four weeks.

^d Higher scores indicate greater engagement in self-objectification.

^e Higher scores indicate greater body hair growth.

^f 0 = Non-Hispanic White, 1 = American Indian, Asian, Black, Hispanic, Multiracial, Pacific Islander

Table 4. Body hair attitudes, behaviors, and self-objectification among the full sample and by gender and race

	Body hair growth^a	Body hair removal^b	Body hair satisfaction^c	Attitudes towards body hair on girls^d	Self-objectification^e
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Full sample (<i>N</i> = 1,023)	3.18 (0.90)	2.61 (1.46)	2.97 (1.02)	2.49 (0.83)	4.27 (1.23)
Girls (<i>n</i> = 479)	3.43 (0.81)	3.41 (1.34)	2.79 (1.06)	2.26 (0.78)	4.60 (1.21)
Asian (<i>n</i> = 30)	2.85 (1.09)	2.72 (1.56)	2.89 (1.30)	2.39 (0.86)	4.33 (1.18)
Black (<i>n</i> = 85)	3.47 (0.84)	3.01 (1.43)	2.69 (1.15)	2.33 (0.76)	4.39 (1.29)
Hispanic (<i>n</i> = 147)	3.47 (0.77)	3.51 (1.19)	2.76 (0.96)	2.25 (0.76)	4.64 (1.12)
Multiracial (<i>n</i> = 34)	3.50 (0.81)	3.00 (1.44)	2.77 (1.23)	2.02 (0.86)	4.68 (1.19)
Non-Hispanic White (<i>n</i> = 151)	3.47 (0.73)	3.75 (1.22)	2.85 (1.03)	2.23 (0.74)	4.68 (1.30)
Boys (<i>n</i> = 464)	2.92 (0.91)	1.77 (1.10)	3.18 (0.94)	2.81 (0.78)	3.87 (1.14)
Asian (<i>n</i> = 26)	2.50 (0.89)	1.74 (1.06)	3.02 (0.99)	2.71 (0.75)	3.70 (1.24)
Black (<i>n</i> = 77)	2.95 (0.89)	1.76 (1.17)	3.44 (0.81)	2.76 (0.83)	3.94 (1.33)
Hispanic (<i>n</i> = 160)	2.94 (0.93)	2.01 (1.16)	3.00 (0.95)	2.83 (0.77)	4.04 (1.13)
Multiracial (<i>n</i> = 27)	2.71 (0.85)	2.06 (1.43)	3.55 (0.90)	2.45 (0.72)	3.49 (1.10)
Non-Hispanic White (<i>n</i> = 150)	3.05 (0.86)	1.46 (0.84)	3.22 (0.96)	2.90 (0.80)	3.81 (1.03)

^a Range: 1-4. Higher scores indicate greater body hair growth.

^b Range: 1-5. Higher scores indicate more frequent body hair removal over the past four weeks.

^c Range: 1-5. Higher scores indicate greater body hair satisfaction.

^d Range: 1-5. Higher scores indicate greater disapproval towards body hair on girls.

^e Range: 1-7. Higher scores indicate greater engagement in self-objectification.

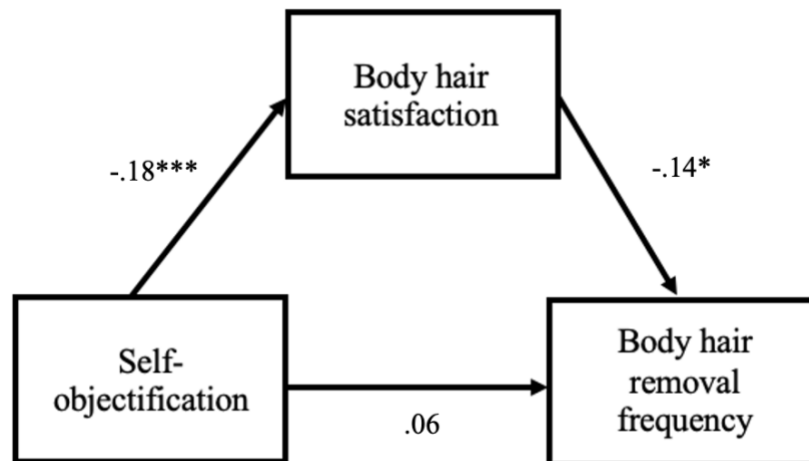


Figure 4. Statistical path diagram of Aim 3: Relationship between self-objectification and body hair removal frequency as mediated by body hair satisfaction among adolescent girls ($n = 296$)

* $p < .05$, *** $p < .001$

Note: The indirect effect was not statistically significant, as the 95% bootstrap confidence interval included zero ($\beta = .03$, 95% CI [-0.002, 0.06], $p = .07$).

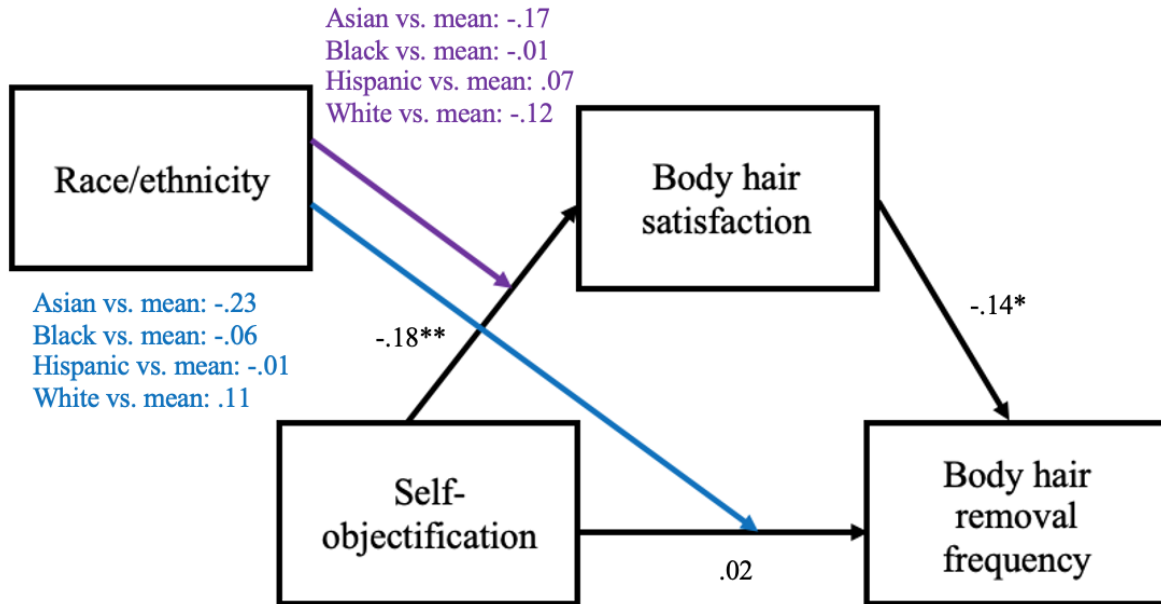


Figure 5. Statistical path diagram of Aim 4: Relationship between self-objectification and body hair removal frequency as mediated by body hair satisfaction among adolescent girls, with race/ethnicity as a moderator ($n = 271$)

* $p < .05$, ** $p < .01$

Note: The 95% confidence interval for the index of moderated mediation was not statistically significant ($\beta = .03$, 95% CI [0.001, 0.07], $p = .07$).

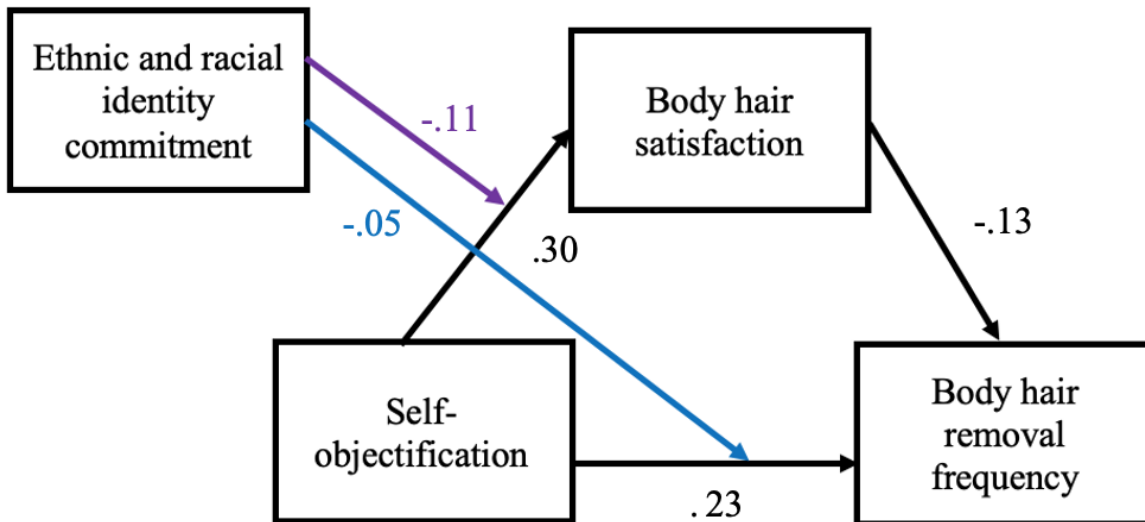


Figure 6. Statistical path diagram of Aim 5: Relationship between self-objectification and body hair removal frequency as mediated by body hair satisfaction among adolescent girls of color, with ethnic and racial identity commitment as a moderator ($n = 176$)

Note: The 95% confidence interval for the index of moderated mediation was not statistically significant ($\beta = .01$, 95% CI [-0.01, 0.06], $p = .36$).

Appendix

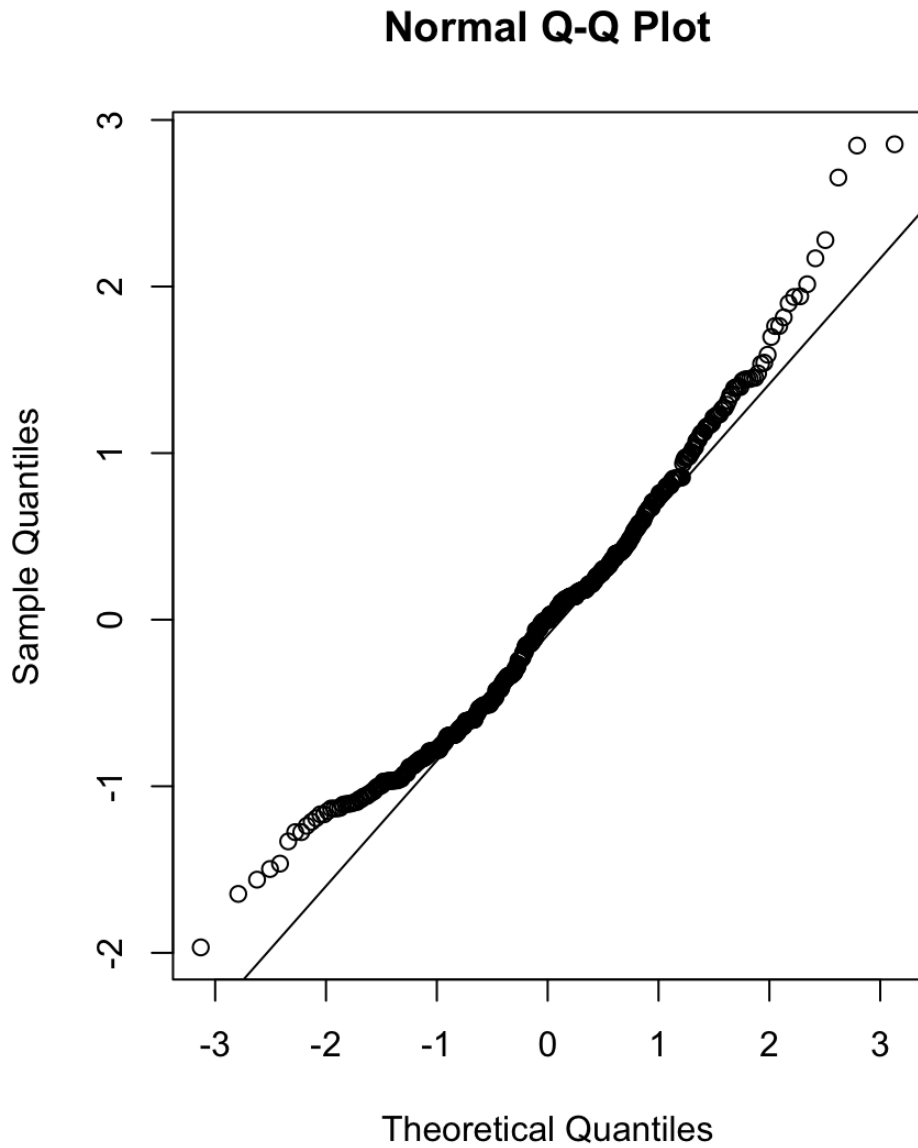


Figure A1. Q-Q plot of residuals for the two-way ANOVA assessing attitudes towards girls' body hair among the sub-sample of boys and girls identifying as Non-Hispanic White, Asian, Black, Hispanic, or Multiracial

Normal Q-Q Plot

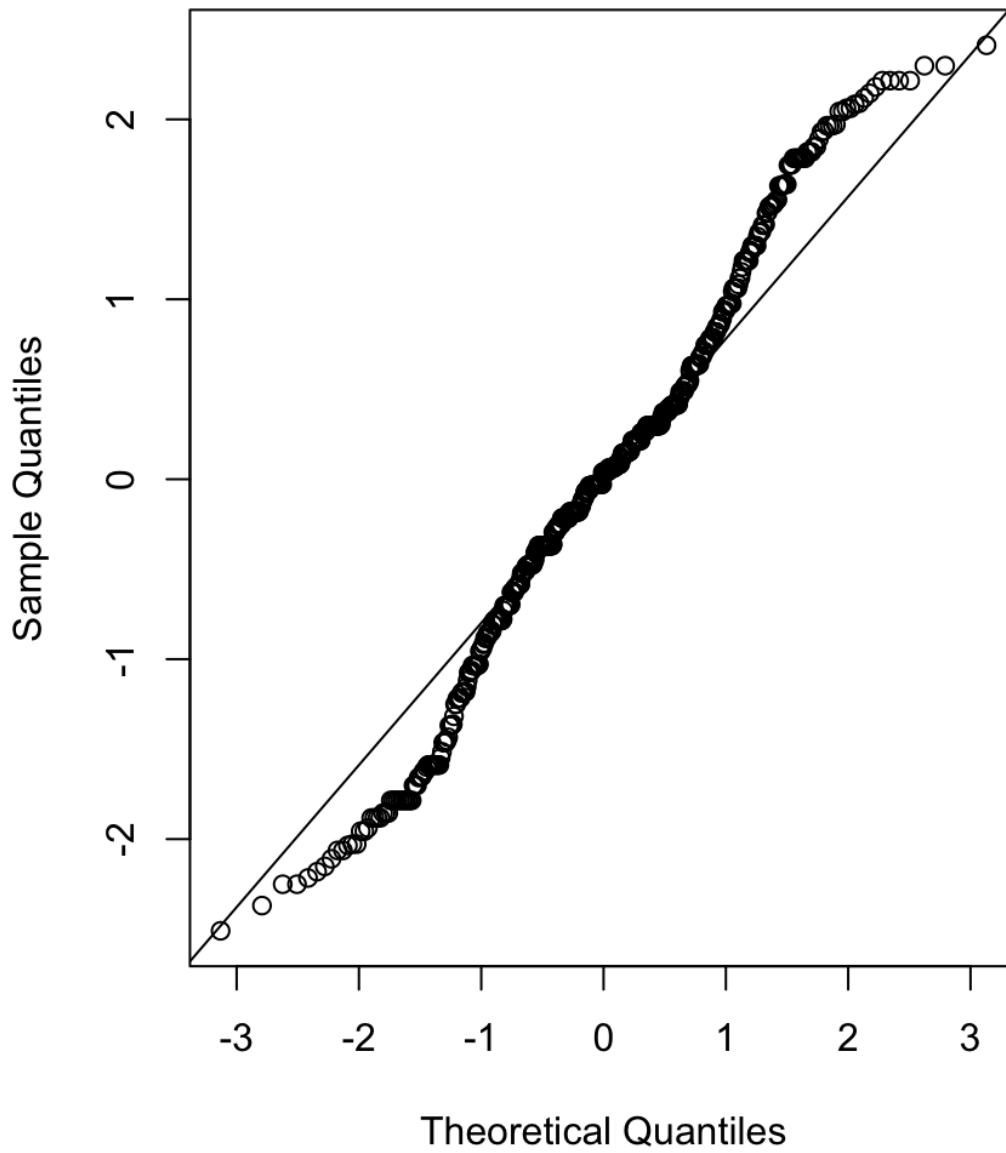


Figure A2. Q-Q plot of residuals for the two-way ANOVA assessing body hair satisfaction among the subsample of boys and girls identifying as Non-Hispanic White, Asian, Black, Hispanic, or Multiracial

Normal Q-Q Plot

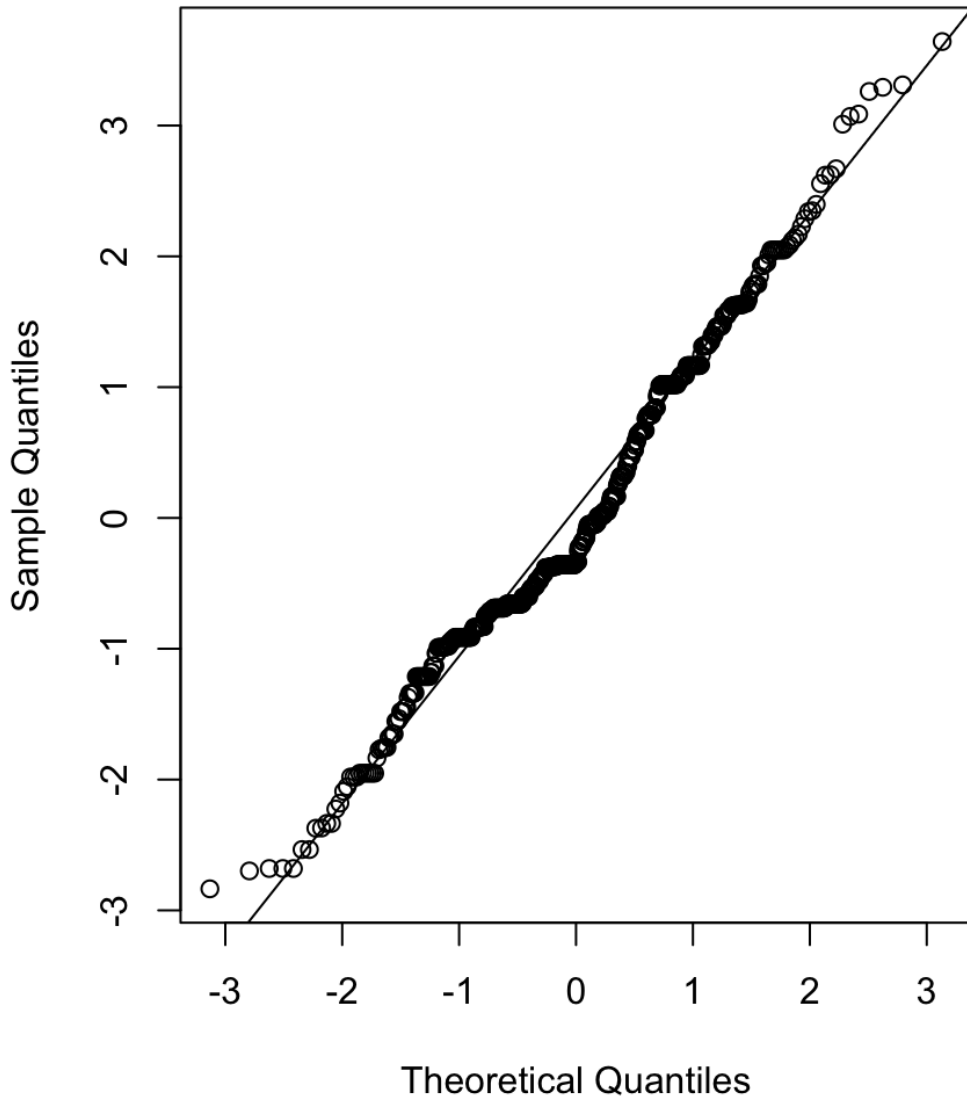


Figure A3. Q-Q plot of residuals for the two-way ANOVA assessing body hair removal frequency among the sub-sample of boys and girls identifying as Non-Hispanic White, Asian, Black, Hispanic, or Multiracial

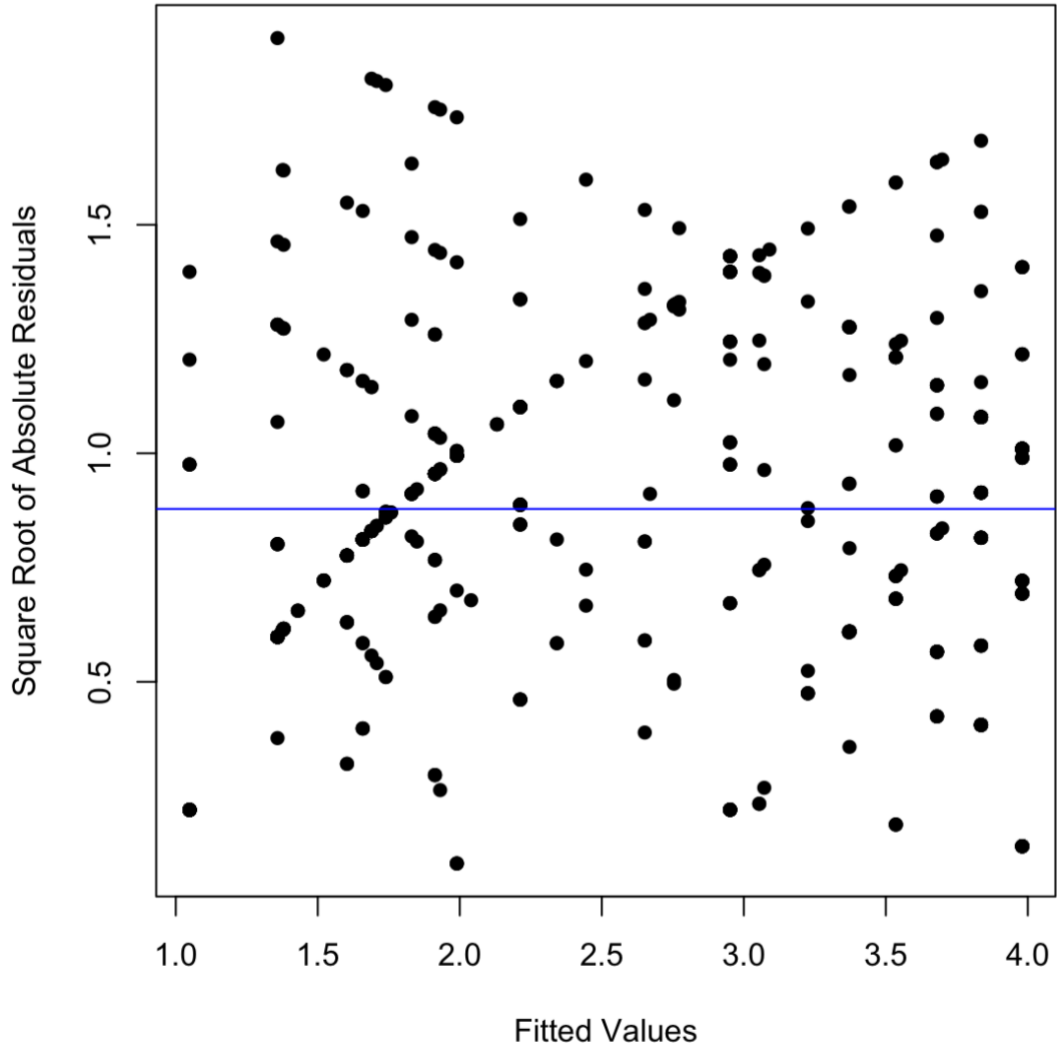


Figure A4. Scale-location plot of residuals for the two-way ANOVA assessing body hair removal frequency among the sub-sample of boys and girls identifying as Non-Hispanic White, Asian, Black, Hispanic, or Multiracial

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