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The Developmental Significance of Looks from Middle Childhood to Early Adolescence

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Abstract

Physical appearance during the transition into adolescence matters for youths' socioemotional development. This study explored these implications by adding visual data to the NICHD Study of Early Child Care and Youth Development (n = 1,049) to test how others' ratings of youths' looks (1 = very unattractive to 5 = very attractive) at the beginning (grade 3) and end (grade 9) of this transition shaped their emotional well-being, popularity/likability, and dating/sexual behavior. Results revealed recency effects of grade 9 looks on popularity/likability and dating/sexual behaviors and a lingering amplification effect of grade 3 looks on popularity/likability at the start of high school. Few associations were evident for emotional well-being. Thus, physical appearance offers an important lens for studying adolescent development.

Keywords

attractiveness; dating; emotional well-being; looks; physical appearance; popularity; sexual behavior; transition into adolescence

INTRODUCTION

Lookism—prejudice and discrimination based on appearance—creates significant inequalities in access to the resources, supports, and opportunities that are vital to human development (Gordon, Crosnoe, & Wang, 2013; Hamermesh, 2011). Studies of lookism in adulthood have documented many ways that different aspects of appearance (e.g., physical attractiveness, cleanliness, weight) are associated with mental health, employment, and family formation (Gangestad & Scheyd, 2005; Jæger, 2011). These adult patterns have roots earlier in the life course. Developmental studies have shown that cute children and youth garner more positive attention and treatment from adults and peers alike that translate

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into a host of social advantages (Gordon et al., 2013; Schein & Langlois, 2015). Linking these childhood and adulthood periods is a span of years encompassing the transition into adolescence. Characterized by dramatic changes in appearance, accelerated socioemotional development, and the navigation of multiple levels of schooling of increasing size and complexity, this transition is a critical period in understanding how looks and lookism shape the development of young people.

This study extends the literature on this period by capturing overall appearance at two time points—the middle of elementary school and the beginning of high school—and how they relate to the emotional well-being, perceived popularity and likability, and the dating and sexual behaviors of young people. First, rather than considering single aspects of appearance (e.g., weight, height, facial attractiveness, and grooming; Cawley, Joyner, & Sobal, 2006; Ge, Conger, & Elder, 2001; Mares, Leeuw, Scholte, & Engels, 2010; Martin-Storey & Crosnoe, 2015; Xie, Ishibashi, Lin, Peterson, & Susman, 2013), it examines how others rate the *overall looks* of a young person. This global assessment of attractiveness (e.g., very unattractive to very attractive) captures how adolescents assimilate multiple aspects of appearance into snap judgments of attractiveness (Currie & Little, 2009). Such snap judgments are important to youth during the transition into high school when they must identify potential friends and partners among a sea of new peers (Pivnick, Gordon, & Crosnoe, 2020). Second, this study goes beyond prior research which used assessments from single time points by considering looks at two bookends of development—when youth are immersed in the setting of middle elementary vs. the start of high school, when most have not yet started puberty vs. most have completed puberty (Borch, Hyde, & Cillessen, 2011; Gordon et al., 2011; Ha, Overbeek, & Engels, 2010; Karraker, Sicinski, & Moynihan, 2017; Vannatta, Gartstein, Zeller, & Noll, 2009; Zimmer-Gembeck, Siebenbruner, & Collins, 2004). In doing so, this study considers the possibility of additive, lagged, and recency effects of looks on young people's lives.

In order to take this dual-time-point approach to others' overall assessments of looks at the start and end of the transition into adolescence, this study drew on novel looks ratings added to an extant dataset of long-standing prominence in developmental science—the NICHD Study of Early Child Care and Youth Development, or SECCYD—to test a series of hypotheses about the potential roots and consequences of lookism. Specifically, it investigated the extent to which others' ratings of attractiveness correlated with youths' self-reported emotional well-being, popularity and likability, and dating and sexual behaviors. Results from this study have theoretical and practical implications that may help develop solutions that make an immediate difference in the lives of young people as well as having downstream consequences for labor market outcomes and healthy socioemotional development in later adolescence and adulthood.

Looks and Adolescent Development

Why would others' perceptions of attractiveness matter to social and emotional development during the transition into adolescence? The primary theoretical framework used to answer this question is grounded in the social psychological conceptualization of halo and horn effects. In *halo effects*, good looks suggest to others that an adolescent possesses a range

of other positive traits, consistent with status characteristics theory (Berger & Fisek, 2006; Dion, Berscheid, & Walster, 1972; Forgas & Laham, 2016; Griffin & Langlois, 2006; Webster & Driskell, 1983). These assumed positive traits may include greater social skills and competence (LaFontana & Cillessen, 2002), which guide how youth select friends and partners. Although youth may have these nonphysical traits regardless of how they look, evolutionary theorists posit that the influence of these traits on desirability is largely contingent on the physical attractiveness of the person in question (Ehlebracht, Stravrova, Fetchenhaur, & Farrelly, 2018). Following status characteristics and evolutionary theories, attractiveness serves an adaptive or signaling function whereby youth perceived as attractive may be seen as more desirable friendship candidates and sexual partners whose companionship contributes to higher chances of thriving in adolescence (Little, Jones, & Debruin, 2011). Specifically, according to these theories, youths' looks signal that they have additional, unseen traits that may offer peers status, opportunities for achieving social goals (e.g., dating), and other social benefits (Dijkstra, Cillessen, Lindenberg, & Veenstra, 2010). Youth who are more attractive may, furthermore, internalize positive attention from others, coming to see themselves in the same favorable light and behaving in accordance with their self-images (Thornton & Ryckman, 1991).

In *horn effects*, unattractive youth experience the opposite, whereby their perceived unattractiveness filters into other domains of worth in the eyes of peers and encourages others to avoid or mistreat them (Forgas & Laham, 2016). Indeed, Leets and Sunwolf (2005) reported that unattractiveness was the most common rationale adolescents used to socially exclude youth from their peer groups in order to protect their groups' status. This pattern was echoed in Gordon et al.'s (2013) framing of unattractiveness as a stigmatized identity during adolescence that constrained both young people's opportunities to achieve academically and their development of social skills that prepared them to date (see also Blöte, Miers, & Westenberg, 2015; Vannatta et al., 2009). On the flipside of halos, the stigma perspective contends that statuses like unattractiveness that are devalued by certain groups, especially conventional mainstream groups, can generate negative social experiences that are internalized (Gordon et al., 2013; Link & Phelan, 2001). Following this line of thought, negative feedback from peers about appearance is assimilated into self-perceptions, as young people perceived as conventionally unattractive incorporate others' perceptions into a sense of lacking value, which leads to further social withdrawal (Crosnoe, Frank, & Mueller, 2008). As such, internalized unattractiveness can become an enduring form of stress in young people's lives that creates challenges to healthy identity construction and maintenance, regardless of how they end up looking later in life. In other words, even those youth that have transformed from a child seen as conventionally unattractive to a teenager seen as conventionally attractive may still suffer internally from the stigma of ever having been perceived as not meeting the mainstream benchmark for good looks (Jussim, Palumbo, Chatman, Madon, & Smith, 2000).

In line with this conceptualization of halo and horn effects, past research has linked adolescents' overall looks to a variety of developmental outcomes. Youth rated as attractive by others generally received higher grades (Gordon et al., 2013), enjoyed more status among school peers (Vannatta et al., 2009; Zakin, Blyth, & Simmons, 1984), experienced better emotional well-being (Borch et al., 2011; Zakin et al., 1984), and—for better or for

worse—engaged in dating and sex at higher rates (Ha et al., 2010; Zimmer-Gembeck et al., 2004) than youth rated as unattractive. These implications of perceived attractiveness in adolescence have been shown to carry forward to influence social and psychological trajectories into and through adulthood (Gordon et al., 2013; Karraker et al., 2017).

Although rich in a number of ways, this literature on halo and horn effects is limited by relying on one-time measures of overall looks and their contemporaneous associations with dimensions of adolescent adjustment and functioning. It can, therefore, be further enriched by a dual-time-point perspective on halo and horn effects that can consider the possibility of additive, lagged, and recency effects of good or bad looks at the bookends of the transition to adolescence in order to better illuminate how looks shape socioemotional development in this critical period. Another way to improve this literature is to ground the conceptualization of halo and horn effects within specific age periods. Past studies of mixed-age children and adolescents (i.e., participants ranging in age within the same study; see Borsch et al., 2011; Gordon et al., 2013; Ha et al., 2010; Karraker et al., 2017; Rosenblum & Lewis, 1999; Vannatta et al., 2009; Zimmer-Gembeck et al., 2004) might have missed unique insights about the ecologies in which appearance develops at specific age periods in youths' lives. For instance, by early adolescence relative to middle childhood, most young people have changed schools, experienced the gradual expansion of their social networks, gained more autonomy in their everyday lives from parents, and seen their physical appearance transformed by puberty (Simmons, Burgeson, & Carlton-Ford, 1987).

This study, therefore, takes a dual-time-point approach to halo and horn effects with a conceptual model situated within the unique circumstances of middle childhood and early adolescence. This model focuses on others' perceptions of overall looks at middle childhood and early adolescence and the way those perceptions influence early adolescent emotional well-being, self-perceived popularity and likability, and dating and sexual behaviors as young people explore new social identities and dyadic relationships within widening ecological contexts (Connolly, Craig, Goldberg, & Pepler, 2004).

Looks Between Middle Childhood and Early Adolescence

Figure 1 illustrates the conceptual model. A main component of the model is that it draws attention to how physical appearance can differ over time (Pinyerd & Zipf, 2005; Rosenblum & Lewis, 1999). The figure depicts this dual-time-point approach by representing looks at grades 3 and 9 in its two major panels, with rows representing the ways in which looks at the two time points may matter for the three focal outcomes. Specifically, the model depicts additive and lingering effects as competing hypotheses for the outcome of emotional wellbeing and recency effects as a hypothesis for the outcomes of popularity/likability and dating/sexual behaviors. For *additive effects*, the consequences of looks at each time point sum up. In other words, this additive process captures the way in which repeated experiences in a specific state or status accumulate over time (Burnette, O'Boyle, VanEpps, Pollack, & Finkel, 2013; Smith et al., 2018).

In contrast, *lingering effects* suggest that an earlier halo or horn phenomenon from middle childhood may be evident without any benefit of conventionally good looks or detriment of bad looks in early adolescence (Carr & Jaffe, 2012). In other words, early experiences

may cement self- and other-perceptions of value and serve as a foundation for future social and psychological functioning that may be more impervious to new and discrepant information and feedback (Harter & Whitesell, 2003). In this way, the halo or horn from middle childhood sticks.

Alternatively, *recency effects* would mean that the current halo or horn phenomena are most important. Here, good or bad looks in early adolescence associate with positive development, with no effect evident from looks in middle childhood. In other words, current looks swamp prior looks, as past experiences fade with time in the minds of the self and others.

Looks and Specific Developmental Domains

As noted, the salience of each of these conceptual effects may vary by developmental domain (emotional well-being, self-perceived popularity and likability, and dating and sexual behaviors) given that each could be uniquely responsive to others' perceptions of appearance.

First, *emotional well-being* in middle childhood and early adolescence is especially sensitive to the internalization processes already discussed, whereby social experiences are incorporated into views of self (Burnette et al., 2013; Harter & Whitesell, 2003). Given that other studies have found that emotional distress in childhood can increase vulnerabilities to psychological symptoms in high school and beyond (Sánchez-García, Lucas-Molina, Fonseca-Pedrero, Pérez-Albéniz, & Paino, 2018), we anticipate that both *additive* and *lingering effects* are possible. The *additive effect hypothesis* (H1a) is that both earlier looks from middle childhood and current looks at early adolescence will independently associate with emotional well-being at the start of high school. In contrast, the *lingering effect hypothesis* (H1b) is that emotional well-being at the start of high school will either be driven by or contingent on how youth looked in middle childhood. Both additive (Martin-Storey & Crosnoe, 2015; Xie et al., 2013) and lingering effects (Rosenblum & Lewis, 1999) have been found for various aspects of looks (e.g., weight) from early childhood through adolescence, although they have not been systematically studied between middle childhood and early adolescence with a focus on overall looks.

Second, we expect the contemporaneous social mirror to be particularly salient for youths' *self-perceived popularity and likability*. This expectation is based on evidence that social standing becomes more central to youths' lives as they move from middle childhood into early adolescence and look to an expanding peer group for approval (Brendgen, Vitaro, Turgeon, & Wanner, 2004). It also reflects evidence that adolescent social status increasingly depends on physical appearance and social dominance whereas popularity and likability in childhood largely reflect prosocial attributes such as kindness and helpfulness (Putarek & Keresteš, 2016). We therefore expect the *recency effect hypothesis* (H2) to be salient for self-perceptions of popularity and likability. Although previous studies have found that popularity and likability in adolescence are strongly associated with contemporaneous perceived attractiveness (Borch et al., 2011; Bruyn & Boom, 2005), these studies did not use multiple time points to consider whether the association between looks and social standing

during the transition into high school was uniquely due to adolescent looks or was also indicative of cuteness in childhood.

Third, similar to perceived popularity and likability, we posit a *recency effect hypothesis* (H3) for the role of overall looks in *dating and sexual behaviors*. Budding romantic and sexual interest coincides with the transition into high school, which brings youth together with new peers many of whom are older and more sexually mature (Cawley et al., 2006; Connolly et al., 2004; Ha et al., 2010). Immediate physical attractiveness draws youth to new peers seen as potential romantic and sexual partners to satisfy their blooming desires. Past studies support the logic of recency effect hypotheses for dating and sexual behaviors (Cawley et al., 2006; Ha et al., 2010; Zimmer-Gembeck et al., 2004) in connection to specific elements of adolescents' appearance (e.g., body size). They have not, however, ruled out whether high school dating and sexual activities uniquely reflect good looks at early adolescence or whether middle childhood looks also shape progression along the dating/sex continuum in high school.

In sum, this study builds on a rich theoretical and empirical literature to compare different hypotheses about links between looks and adolescent socioemotional well-being. The focus is on overall looks as perceived by others at two time points—middle childhood and early adolescence, coinciding with prepubescence/postpubescence and elementary/high school—and the consideration of how looks might matter differently across developmental domains.

METHOD

The SECCYD recruited 1,364 families with newborn children in 1991 from hospitals in 10 sites across the United States. Although this sample was not nationally representative, participating families were similar to hospital catchment areas on major demographic characteristics. Of the original 1,364 children, 1,049 were followed through grade 9, with demographic, social, emotional, academic, and visual information gathered at 11 time points. This study used SECCYD data collected from surveys and videotapes featuring activities between the study children and a parent during two data collection waves in middle childhood (grade 3) and high school (grade 9). To adjust for confounds both preceding and contemporaneous with the focal period, data on several sociodemographic characteristics and psychosocial adjustment were included as covariates, including several collected prior to grade 3.

Measurement of Focal Independent Variables

Others' ratings of SECCYD participants' overall attractiveness at grade 3 and grade 9 were the driving force of the conceptual model. Seven-second clips were manually extracted by the research team from videotaped interactions at both the grade 3 and grade 9 data collection waves to best represent the study child (i.e., showed the child's face and body) and to include visible cues (e.g., makeup, clothing) that contributed to overall attractiveness. Such an approach draws on social psychological research that posits that adolescents integrate a variety of visible cues when making judgments about attractiveness and about who they want to befriend or avoid (Pivnick et al., 2020). Other potentially biasing visual (e.g., parents, room décor) and auditory (e.g., slang, accent) cues were edited out.

Next, 60 undergraduates at two universities who were from approximately the same birth cohort as the SECCYD youth rated the youths' overall looks from these seven-second clips. These undergraduate raters would have transitioned into adolescence and high school at the same historical time as the SECCYD youth. This rating strategy differs from that of other national studies that had middle-aged study staff rate youth attractiveness (Wong & Penner, 2016). Having same-cohort peers rate attractiveness, although retrospectively, addressed the possibility of cohort-specific norms of attractiveness (Foos & Clark, 2011).

The rater pool was racially and ethnically diverse (27% identified as Hispanic, 25% as White, 13% as Black, 35% as Asian or other), represented multiple genders (80% female, 18% male, 2% nonbinary), and spanned both study sites (80% attended the Midwest university, 20% Southwest). During the 2017–2018 school year, the undergraduate raters logged into an online interface (REDCap) where they were presented with random subsets of video clips of the SECCYD youth from each time point. Prior to rating youth on overall looks, they attended a training session during which they were informed of the purpose of the study, told to rate youth based on snap judgments of attractiveness, and explained data confidentiality protocols.

Each week thereafter, raters logged into the online interface and rated a set of SECCYD youth. Following standard practice, raters were first shown a set of still images from the videos that demonstrated the range of attractiveness among the youth. Raters then began the rating task, in which each short video was presented in its entirety and raters were asked to use snap judgments to rate attractiveness. The rating prompt asked raters 'How attractive (cute) is this child overall?' They could choose from five responses: (1) very unattractive (not at all cute), (2) unattractive (not cute), (3) about average, (4) attractive (cute), and (5) very attractive (very cute).

To reduce random error, the team increased the signal-to-noise ratio by having 20 raters rate each youth. To reduce systematic error, the team used randomization. Each rating group's members rated the same random set of videos from the same data collection wave, with order randomized within each group, so that raters within the same rating group would see the same videos but in a different order. Even with randomization, averages could be systematically higher or lower than true scores, to the extent that a rating group contained a set of harsher raters. To address this possibility, all raters rated a subset of the same 30 SECCYD videos ('anchors') for each of the two data collection waves to estimate each rater's harshness. The team then calculated adjusted scores for each SECCYD youth by first subtracting rater harshness (a rater's average discrepancy from other raters on the anchor clips) from individual scores before calculating youths' average scores. These adjusted average attractiveness scores served as the overall looks scores used in analyses. Reliability was high for the 20-rater averages, with intraclass correlation coefficients being .91 and .97 when based on exact agreement and .97 and .99 when based on rank-order agreement. Across youth the adjusted scores had a mean of 3.09 (SD = 0.45) at grade 3 and 2.78 (SD = 0.66) at grade 9. Appendix S1 features the distribution of both grade 3 and grade 9 continuous looks scores for the analytic sample.

Measurement of Focal-Dependent Variables and Covariates

Appendix S2 provides a detailed description of all variables, which are briefly summarized below.

Emotional well-being.—SECCYD youth completed survey items regarding their depressive symptomatology, loneliness, and body image during grade 9 using the Children's Depressive Inventory Short Form, the Loneliness and Social Dissatisfaction Questionnaire, and the Perceived Competence Scale (Cronbach's α = .81, α = .90, and α = .90, respectively; Asher, Hymel, & Renshaw, 1984; Harter, 1982; Kovacs, 1992). Both depressive symptomatology and loneliness scores were reverse-coded so that higher scores indicated better emotional well-being. We conceptualized emotional well-being as a latent factor comprised of these three variables, with a latent mean constrained to zero and latent variance constrained to one.

Perceived popularity and likability.—Youth also indicated how many people in their grade thought they were popular, likable, unpopular, and unlikable, ranging from 1 = 'almost no one' to 7 = 'almost everyone' (Sandstrom & Cillessen, 2006). Specifically, we created a latent popularity and likability factor comprised of responses to these items, with the latter two items reverse-coded. The resulting latent mean for this factor was constrained to zero, and latent variance was constrained to one.

Dating and sexual behaviors.—Also in grade 9, youth answered sets of true or false questions regarding whether they went on one-on-one dates, went on group dates, went out with coed groups at night, attended coed dances or parties, had ever had oral sex, and had ever had sexual intercourse. We created a latent variable within an item-response theory (IRT) framework using these dating and sexual behavior items. The IRT framework allowed for the conceptualization of dating and sexual behaviors along a continuum, with attending a dance or party being something most youth might do, whereas having sexual intercourse would be more restricted to a subset of youth furthest along the dating/sex continuum. Resulting latent variable scores represent how advanced youth are in this dating and sexual behavior progression. Loadings of dichotomous indicators were constrained to one, the latent mean was constrained to zero, and latent variance was estimated to be 1.186.

Covariates.—To account for factors that correlate with looks and outcomes, control variables measured youths' sex-gender, race-ethnicity, data collection site, maternal education at childbirth, and family income-to-needs ratio in grade 9. Youth in the analytical sample were 50% female, 77% non-Hispanic White, and were generally distributed evenly across 10 study sites (see Table 1). Around 38% were born to mothers with at least a bachelor's degree. Family income-to-needs ratio was computed by SECCYD staff by dividing the family's total 2005/2006 pretax income by the poverty threshold for a household of the family's size, with higher scores indicating higher income (e.g., a value of 2 means that the family's income is twice the poverty level). Youth had an overall mean family income-to-needs ratio of 5.04 (SD = 5.39, range: 0–64). In other words, families' incomes averaged about five times the federal poverty threshold.

To address confounds related to the pubertal transition, pubertal timing and tempo were based on Tanner stages which were estimated using examinations of each youth by a healthcare professional (Chaku & Hoyt, 2019; Marceau, Ram, Houts, Grimm, & Susman, 2011). Tanner Stage 2 represented the onset of puberty, with Tanner Stage 1 being the classification for prepubescent youth. Tanner Stage 5 indicated the age at which the pubertal transition was fully completed, meaning the youth was postpubescent. SECCYD staff estimated the age at which youth entered the intermediary stages using a generalized linear mixed model with a logistic link function capturing the examiner's assessment of breast (for girls) and genital (for boys) development. As shown in Table 2, youth in the sample entered Tanner Stages 2–5 at ages 10, 12, 13, and 14, on average, with standard deviations of about 0.76–0.92. We include these variables as covariates since youth who entered each Tanner Stage later were rated lower on grade 9 looks (Appendix S3), even though the Tanner stage variables did not significantly associate with the focal outcomes of emotional well-being, popularity and likability, or dating and sexual behaviors (Appendix S4).

At the grade 3 and grade 9 laboratory visits, SECCYD staff measured each participant's height and weight twice and averaged the two measurements. If a pair of measurements differed by more than half an inch (height) or more than four ounces (weight), two additional measurements were taken, and the two out of four most similar measures were averaged. Using these metrics, the SECCYD team calculated body mass indices at both time points based on standard cut-offs for normal vs. overweight (BMI ≥ 85 percentile; Centers for Disease Control & Prevention, 2019). Classifications from each grade were cross-classified to create four categories: Normal-Normal (58.9%), Normal-Overweight (9.7%), Overweight-Normal (8.4%), and Overweight-Overweight (23.1%) at grade 3 and grade 9, respectively.

SECCYD investigators chose outcome measures they determined to be developmentally appropriate. As a result, most grade 9 measures comprising the focal latent outcomes were not collected at grade 3. We are, thus, unable to account for autoregressive relationships. To account for previous emotional well-being and social behaviors, we used maternal grade 1 assessments of child internalizing behaviors (Child Behavior Checklist, CBCL; Achenbach, Edelbrock, & Howell, 1987) and social skills development (Social Skills Rating System, SSRS; Gresham & Elliott, 1990). Sample youth had an overall mean internalizing *t* score of 48.26 (*SD* = 8.89, range: 31–100; Cronbach's α = .81) and SSRS percentile rank of 58.37 (*SD* = 26.85, range: 0–100, Cronbach's α = .88).

Plan of Analysis

Prior to analyses, item-level missing data for all variables was sequentially imputed using chained equations within the *mi impute* suite of commands in Stata 15 (StataCorp, 2017). This process generated 50 replicate datasets. All item-level missing values were successfully recovered, resulting in all 1,049 adolescents being included in every model. The *mi impute* prefix in Stata 15 (StataCorp, 2017) combined estimates from the 50 replicates based on Rubin's rules. We used generalized structural equation models implemented by Stata's *gsem* command to regress each latent outcome on youths' rated looks and all covariates. We estimated a series of five models altering how the looks variables were included in order

to test the hypotheses: (1) grade 3 looks only (Model 1), (2) grade 9 looks only (Model 2), (3) both grade 3 and grade 9 looks (Model 3), (4) the interaction of grade 3 and grade 9 looks (Model 4), and (5) the quadratic functions of grade 3 and grade 9 looks (Model 5). Follow-up calculations estimated conditional effects in the presence of statistically significant interactions or quadratic terms. For additive effects, we looked for evidence that both looks variables were statistically significant in Model 3, with no interaction or curvilinear effects in Models 4 and 5. Lingering effects were assessed in two ways: whether looks at grade 3 solely predicted the outcome with grade 9 looks controlled (Models 3); or whether there was a significant interaction in Model 4, with conditional effects showing outcomes at grade 9 contingent on looks at grade 3. Finally, a recency effect would be evident if, within Model 3, only grade 9 looks—and not grade 3 looks—predicted each outcome, with no interaction or curvilinear effects.

When discussing results below, we present significant standardized regression coefficients (β), standard errors (β *SE*), and *p*-values (*p*) to illustrate effect sizes. Tables 2 through 4 present results for all models. Conditional slopes (also known as simple slopes) for significant continuous interaction models are visualized graphically in Figure 2 and listed in text.

Sensitivity Analyses

We additionally assessed whether pubertal timing and tempo moderated the association between looks at grade 3 and grade 9 and each outcome, controlling for all covariates (see Appendix S5). Because no interactions between Tanner Stage and looks were significant, we feature the unmoderated results.

RESULTS

Covariates Predicting Differences in Looks

Youth developmental outcomes often differed according to the covariates (see Appendix S4). Specifically, girls averaged lower scores on all three latent outcomes. Average scores also varied across study sites for two outcomes (e.g., popularity/likability and dating/sexual behaviors). Further, grade 1 internalizing behaviors predicted lesser emotional well-being and lower popularity/likability at grade 9. Three covariates—race-ethnicity, mother's education, and weight pattern—significantly predicted only one outcome. Specifically, non-Hispanic Black youth averaged higher self-perceptions of popularity/likability than all other groups, overweight ninth-graders who were previously normal weight (i.e., Normal Overweight) reported significantly worse emotional well-being than peers who were normal weight in grade 9 (i.e., Normal-Normal and Overweight Normal), and youth born to mothers with at most a high school degree had significantly more advanced dating and sexual behaviors than their peers. Family income-to-needs ratio, estimated age at which children entered each Tanner Stage, and grade 1 social skills did not significantly predict any outcomes in multivariate regression models.

Other-Perceived Looks and Adolescents' Self-Reported Emotional Well-being

Turning to the focal hypotheses, we found neither additive nor lingering effects for emotional wellbeing, contrary to our expectations. That is, grade 3 looks were not significant in any of the five models (see Table 2). Instead, we saw some evidence of a recency effect, whereby grade 9 looks significantly predicted emotional well-being when entered in the model on its own (Model 2, β = .107, β *SE* = .046, *p* = .020). Furthermore, grade 9 looks remained marginally significant when grade 3 looks were added to the model (Model 3, β = .092, β *SE* = .047, *p* = .052). In both cases, a one standard deviation increase in grade 9 looks was associated with about a tenth of a standard deviation increase in emotional well-being. Last, the interaction between looks at both time points and their quadratic terms were nonsignificant (Models 4 and 5).

Other-Perceived Looks and Adolescents' Self-Perceptions of Popularity/Likability and Dating/Sexual Behaviors

Evidence emerged to support the hypothesized recency effect for both self-perceived popularity/likability and dating/sexual behaviors. Specifically, grade 9 looks significantly predicted the outcomes when included in the model on their own (Model 2 in Tables 3 and 4) and in models that controlled for grade 3 looks (Model 3 in Tables 3 and 4). A one standard deviation unit increase in ninth-grade looks was associated with over a fourth of a standard deviation increase in perceived popularity/likability (Model 3 in Table 3; β = .283, β *SE* = .047, *p* < .001) and over a third of a standard deviation increase in progression along the dating/sex continuum (Model 3 of Table 4; β = .339, *SE* = .061, *p* < .001), even after accounting for grade 3 looks.

An unexpected lingering effect emerged for popularity/likability, as evidenced by a significant interaction between grade 3 looks and grade 9 looks (β = .075, β *SE* = .036, *p* = .035). The conditional effects graphed in Figure 2 along with upper and lower bounds for regions of significance show that the effect of contemporaneous grade 9 looks was stronger among youth who had been more attractive in grade 3, an unanticipated 'amplification' effect of previous good looks. Specifically, youths' grade 9 looks were most strongly associated with their perceptions of their own popularity and likability when they had the lingering 'halo' of better looks from grade 3. Among youth who had the lingering 'horn' of lower looks from grade 3, their contemporaneous grade 9 looks were unassociated with their assessments of their social standing in this domain. Specifically, the region of significance for grade 9 looks ranged from a standardized level of grade 3 looks from −1.81 to 4.24 (corresponding to looks ratings of 2.28 and 5.00 in the unstandardized metric), where the conditional (simple) slopes were β = .152, β *SE* = .078, *p* = .050 and β = .605, β *SE* = .160, *p* < .001, respectively.

This lingering effect was not evident for progression along the dating/sex continuum. Although grade 3 looks significantly predicted dating and sexual behavior when considered on their own (Model 1), these associations fell to nonsignificance when grade 9 looks were added (Model 3), and the interaction was nonsignificant (Model 4). The small increase in the standard error for grade 3 looks from Model 1 to Model 3 (β *SE* = .058 vs. .060) reflected minimal collinearity (VIF for grade 3 looks = 1.50 in Model 3). Thus, the decrease of the

effect from Model 1 to Model 3 suggests that grade 9 looks captured bids for dating/sex for those who had been good looking in elementary school and were still attractive at high school entry and for new high school entrants who had been less attractive in grade 3 but were attractive by grade 9.

DISCUSSION

This study tested different hypotheses about the developmental significance of overall looks during the transition from childhood into adolescence. Results do not support additive nor lingering effects of looks on emotional well-being at grade 9. Findings for social standing and social achievement were most consistent with recency effects, with good-looking ninth-graders—irrespective of their former looks—having higher self-perceived popularity and likability and more advanced dating and sexual behaviors than their less attractive peers. Emergent findings suggest potential recency effects of looks on emotional well-being at grade 9, as well as an unanticipated lingering effect of grade 3 looks on grade 9 popularity, whereby prior attractiveness amplified the effect of contemporaneous good looks.

Together, these results bring up several themes for discussion, namely (1) the importance of understanding how looks during adolescence lay the foundation for later life opportunities and risks; (2) the amplification effect of looks on popularity/likability but not dating/sexual behaviors; (3) the surprising irrelevance of current or past looks for youths' emotional well-being; and (4) the practical and policy applications of looks-based research in promoting healthy social and emotional development in adolescence. This study also complements and pushes the current literature on lookism in adolescence forward, pointing to new avenues of research.

First, the results expand on what is theoretically known about the early roots of the 'beauty wage premium' and related lookism in adulthood. The dominance of recency effects in the results both suggests that beauty premiums exist far before the transition into adulthood and that the transition into high school is a key developmental moment for understanding how attractiveness shapes life chances. We find that attractive youth, compared to their peers, are better able to meet the heightened emotional and physical needs for peer approval and social achievement associated with the teenage years. Social success and resulting socioemotional skill development in high school may then serve as the foundation for future success on the job and marriage markets (Benner, 2011; Langenkamp, 2010; Rosen, Principe, & Langlois, 2013; Simmons, Burgeson, Carlton-Ford, & Blyth, 1987). At the same time, attractive youth may have more opportunities to engage in risk-laden activities (e.g., dating, having sex) that are developmentally appropriate, but have potentially negative and far-reaching consequences (e.g., sexual transmitted infections, teen pregnancy, and relationship violence; Eyre & Millstein, 1999; Savolainen, Brauer, & Ellonen, 2020). Thus, attractiveness in adolescence is a double-edged sword that may contribute to later life beauty premiums but also predispose attractive youth to risk.

Second, the interplay of grade 3 looks and grade 9 looks mattered to perceived social status but not to progression along the dating/sex continuum. Although results for both outcomes demonstrated recency effects, the association between grade 9 looks and perceived social

status—and not dating and sexual behaviors—was amplified by how youth used to look. At the transition into high school, youths' immediate looks are often the only indicator of their desirability to unknown peers, which can then influence the opportunities they have to engage in dating and sex (Pivnick et al., 2020; Zakin et al., 1984). On the other hand, youths' assessments of their grade 9 popularity/likability not only reflect how they *currently* see themselves but also how these current perceptions compare to their *past* experiences. Thus, the implications that the transition to high school has for youths' social status—but not their dating/sexual behaviors—is likely a function of how they see themselves in relation to their former selves.

Third, a surprising finding that emerged is the irrelevance of looks for emotional well-being among youth, regardless of their current or past looks. Although results from this study hint at recency effects of contemporaneous looks on grade 9 emotional well-being, this finding is only marginally significant. One potential explanation is that appearance is only one component that contributes to emotional well-being. Youth have many other positive traits that may balance out the effects of being unattractive (e.g., humor, athleticism, intelligence) on emotional well-being (Becker & Luthar, 2007; Markovic & Bowker, 2015). Another explanation is the role of peer crowd membership (e.g., Anime/Mangas, Smarts, Athletes) in increasing social belonging and fostering meaningful friendships around shared values and interests that can protect youth—regardless of their appearance—from experiencing negative affect (Crabbe, Pivnick, Bates, Gordon, & Crosnoe, 2018; La Greca & Harrison, 2005).

Fourth, these findings lay the groundwork for practical and policy applications of looks-based research in promoting healthy socioemotional development in adolescence. They can be used to inform structural interventions geared toward helping young people develop their social skills, strengthen their self-concept, appreciate their physical and nonphysical attributes, and form healthy relationships during the transition into high school. Such interventions may take place at the school-level in the form of concerted efforts to integrate socioemotional learning into elementary, middle, and high school curricula so that all children—regardless of looks—have the tools and confidence to navigate friendships and potential relationships across the transition into high school in healthy and positive ways. Another promising route is harnessing social media platforms as a force for good through advertising and media campaigns (Perloff, 2014). For example, companies that market to young people (e.g., Dove and Aerie) have begun featuring models of different shapes and sizes to dispel singular norms of attractiveness and promote body positivity (Selensky & Carels, 2021). Looks-based research can, thus, influence school programs and social media presence in ways that reduce lookism and its consequences in adolescence.

Despite the innovation of using newly available ratings of overall looks and the applicability of the findings to developmental scholars and public health practitioners, this study has several important limitations. For example, the time lag between the two points in which looks were assessed is substantial. Although this study gives an informative, big-picture understanding of looks at both the start of adolescence and the high school transition, future studies may provide additional nuances as to how looks unfold between these two bookends of development. Two promising approaches include collecting visual data from time points

that correspond to major pubertal moments as opposed to chronological age, or capturing weekly snapshots from study participants' social media accounts.

This study also posited that others' ratings of overall attractiveness predict social and emotional well-being and behaviors. Given that youths' self-perceptions also shape self-concept, future studies should assess whether youth accurately recognize changes in their attractiveness over time and how these self-perceptions contribute to well-being. Similarly, youth may incorrectly gauge how others see them, which can also shape their social and emotional well-being. Although we addressed how youth thought others saw them from a social status standpoint (e.g., popularity, likability), future research can expand on these findings by examining how youth perceptions of others' assessments of their emotional and social well-being can also shape actual mental states and social behaviors.

A final limitation is that, although video data provided rich samples of appearance, videos differed between SECCYD study sites in systematic ways (e.g., lighting in the room where videos were taken). Although this study controlled for study site, future studies should address additional ways in which videos may differ.

In sum, results from this study highlight how visual data can be harnessed by developmental researchers to understand how looks at critical moments interact and shape future opportunities that have socioemotional consequences during the transition into high school and beyond. These methods allow researchers to uncover when and for whom looks matter, which is information that can be used by policy makers and practitioners to craft structural interventions that protect youth from experiencing the harmful direct and indirect effects of lookism.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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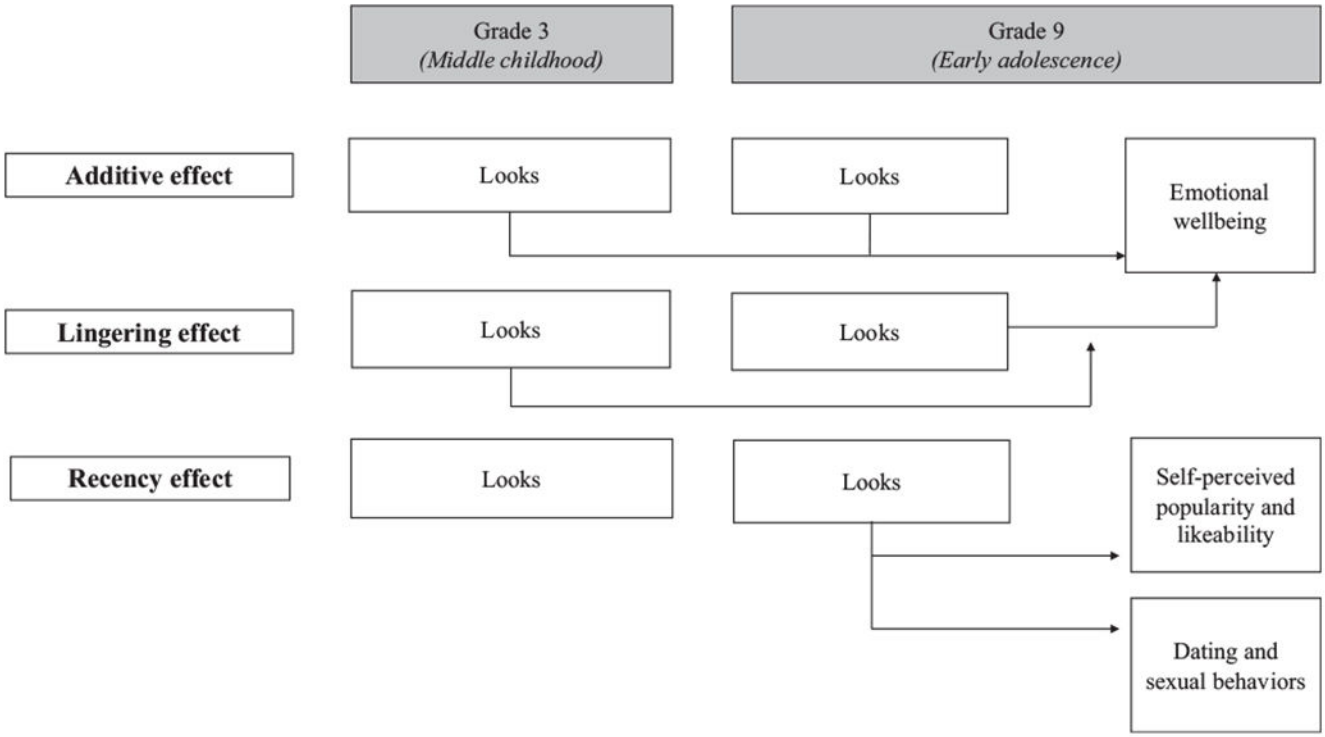

FIGURE 1.
Conceptual model linking looks to each developmental outcome of interest.

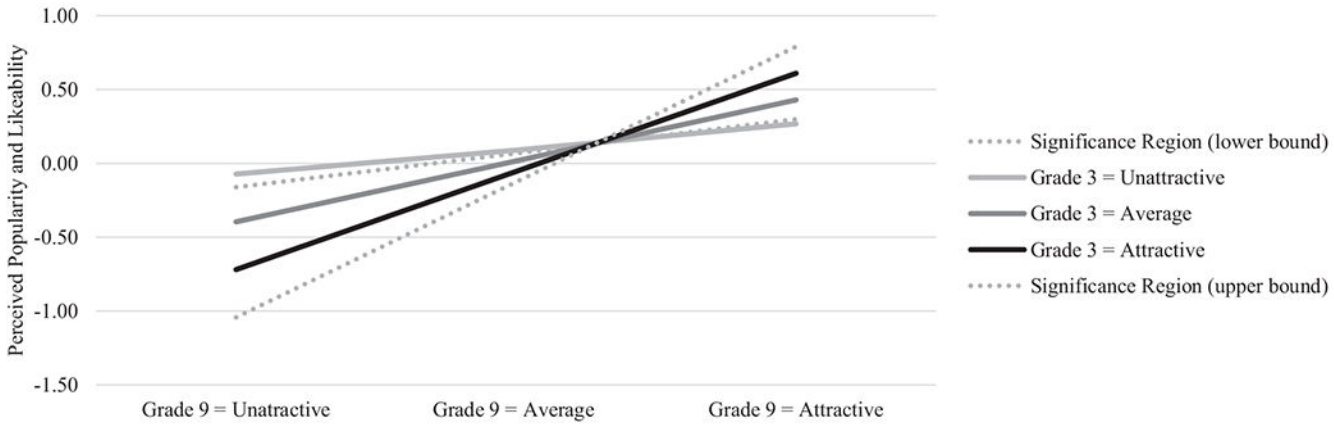

FIGURE 2.

Predicted means for standardized continuous interaction model predicting popularity and likability by looks. *Note.* Solid lines reflect predicted means for the significant continuous interaction model predicting popularity and likability, presented in Table 3. Dotted lines indicate the upper and lower bounds of regions of significance. Values in parentheses are three standardized intermediary levels corresponding to the unstandardized scores of unattractive (2), average (3), and attractive (4) on the original scale. Results were based on 50 replicates of multiply imputed data with n = 1,049 cases. Models also control for covariates as described in main manuscript.

TABLE 1

Descriptive Statistics for the Analytical Sample

Variable	M or *proportion*	SD	*Min.*	*Max.*
Looks				
Overall looks at grade 3	3.09	0.45		
Overall looks at grade 9	2.78	0.66		
Emotional well-being at grade 9[a]	0.000	1.000		
Popularity and likability at grade 9[a]	0.000	1.000		
Dating and sexual behaviors at grade 9[a]	0.000	1.186		
Covariates				
Child female at birth	0.499			
Race-ethnicity				
Non-Hispanic White	0.769			
Non-Hispanic Black	0.122			
Non-Hispanic Other	.047			
Hispanic	0.062			
Mother’s education at birth				
Less than high school	0.087			
High school	0.204			
Some college	0.332			
Bachelor’s degree	0.228			
Beyond bachelor’s degree	0.150			
Family income-to-needs ratio at grade 9	5.035	5.387	0.066	63.553
Age at which child entered Tanner Stage 2	10.077	0.763	8.864	12.738
Age at which child entered Tanner Stage 3	11.796	0.914	9.378	14.951
Age at which child entered Tanner Stage 4	12.996	0.836	9.889	15.603
Age at which child entered Tanner Stage 5	14.324	0.868	10.969	16.156
Weight patterns at third-grade and ninth-grade				
Normal-Normal	0.589			
Overweight-Normal	0.084			
Normal-Overweight	0.097			

Variable	M or *proportion*	SD	*Min.*	*Max.*
Overweight-Overweight	0.231			
Mother-reported internalizing behaviors at grade 1	48.259	8.893	33.000	79.000
Mother-reported social skills at grade 1	58.373	26.849	2.000	97.000
Site				
0	0.094			
1	0.109			
2	0.097			
3	0.102			
4	0.103			
5	0.103			
6	0.098			
7	0.101			
8	0.094			
9	0.098			

Note. Results were based on 1,049 complete cases.

[a]Latent means were constrained to zero.

J Res Adolesc. Author manuscript; available in PMC 2023 March 01.

TABLE 2

Results from Models Predicting Emotional Well-being by Continuous Looks

	Emotional well-being (SD = 1)														
	Model 1			***Model 2***			***Model 3***			***Model 4***			***Model 5***		
Looks	**b**	**SE**	**p**	**b**	**SE**	**p**	**B**	**SE**	**p**	**b**	**SE**	**p**	**b**	**SE**	**p**
Continuous looks at grade 3	.079	.047	.091				.055	.049	.261	.052	.049	.286	.054	.049	.274
Continuous looks at grade 9				0.107	.046	.020	.092	.047	.052	.091	.047	.054	.096	.047	.044
Interaction term															
Grade 3 × Grade 9 looks Quadratic terms										−.037	.037	.316			
Quadratic terms															
Grade 3 × Grade 3													.018	.030	.545
Grade 9 × Grade 9													−.057	.031	.068

Note. SD = standard deviation of latent variable.

Values were standardized coefficients, standard errors, and exact *p*-values. Highlighted cells signify *p*-values below .05 for two-tailed hypotheses tests). Results were based on 50 replicates of multiply imputed data with n = 1,049 cases. Models also controlled for covariates as described in main manuscript.

TABLE 3

Results from Models Predicting Popularity and Likability by Continuous Looks

	Popularity and likability (SD = 1)														
	Model 1			***Model 2***			***Model 3***			***Model 4***			***Model 5***		
Looks	***β***	***β* SE**	**p**	***β***	***β* SE**	**p**	***β***	***β* SE**	**p**	***β***	***β* SE**	**p**	***β***	***β* SE**	**p**
Continuous looks at grade 3	.018	.044	.692				−.064	.047	.179	−.057	.047	.225	−.057	.047	.231
Continuous looks at grade 9				.264	.044	.000	.283	.047	.000	.287	.047	.000	.287	.047	.000
Interaction ter															
Grade 3 × Grade 9 looks										.075	.036	.035			
Quadratic terms															
Grade 3 × Grade 3													.046	.029	.111
Grade 9 × Grade 9													−.035	.031	.257

Note. SD = standard deviation of latent variable.

Values were standardized coefficients, standard errors, and exact *p*-values. Highlighted cells signify *p*-values below .05 for two-tailed hypotheses tests). Results were based on 50 replicates of multiply imputed data with *n* = 1,049 cases. Models also controlled for covariates as described in main manuscript.

TABLE 4

Results from Models Predicting Dating and Sexual Behaviors by Continuous Looks

	Dating and sexual behaviors (SD = 1.186)													
	Model 1			***Model 2***			***Model 3***			***Model 4***			***Model 5***		
Looks	***β***	***β* SE**	**p**	***β***	***β* SE**	**p**	***β***	***β* SE**	**p**	***β***	***β* SE**	**p**	***β***	***β* SE**	**p**
Continuous looks at grade 3	.138	.058	.018				.040	.060	.506	.042	.060	.488	.034	.060	.575
Continuous looks at grade 9				.350	.058	.000	.339	.061	.000	.340	.061	.000	.341	.061	.000
Interaction term															
Grade 3 × Grade 9 looks										.024	.044	.581			
Quadratic terms															
Grade 3 × Grade 3													−.006	.037	.869
Grade 9 × Grade 9													−.054	.040	.177

Note. SD = standard deviation of latent variable.

Values were standardized coefficients, standard errors, and exact *p*-values. Highlighted cells signify *p*-values below .05 for two-tailed hypotheses tests. Results were based on 50 replicates of multiply imputed data with n = 1,049 cases. Models also controlled for covariates as described in main manuscript.