

Biopsychosocial indicators of early adolescent maturation:
Relations to girls' adjustment in two ethnic groups

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INTRODUCTION

The challenges facing adolescent girls have received attention within an ethnic group dichotomy. On the one hand, researchers have examined traditionally "white" higher socioeconomic mental health issues of self-esteem, body image, and depression. On the other hand, much of the recent investigation of African-American development has been driven by policy concerns about social behavior, such as teen pregnancy. The present study seeks to understand the developmental processes underlying adolescent girls' adjustment across psychological and behavioral outcomes and across this ethnic group dichotomy.

The biological, psychological and social transitions of early adolescence are inherently somewhat stressful. In addition, moving through them in temporal isolation from peers has been proposed to be a particular source of stress, and thus more likely to contribute to the development of mental health difficulties or less adaptive social choices. Researchers have already demonstrated negative consequences of early pubertal maturation for European and European-American girls in the form of increased mental health difficulties and more advanced or deviant social activity (i.e., dating, sexual behavior, delinquency) (cf. Stattin & Magnusson, 1989). While empirical evidence thus far has provided more support for "stage-termination" hypotheses* that propose developing *earlier* than age-mates as the primary venue for maladaptation, it is also possible that developing *later* than age-mates creates vulnerabilities for adolescent girls.

To date, researchers have primarily focused on the biological domain, (i.e., pubertal development) and assessed a corresponding set of psychological and social responses to the timing of puberty. However, it is also likely that the timing of salient transitions during early adolescence would affect girls' mental health and sense of self.

* Note. Stage-termination hypothesis suggests that psychological distress will occur when the tasks of the previous developmental stage are interrupted before they can be consolidated. In this case, early development would be distressing because it occurs before latency tasks are well-integrated. Off-time hypotheses suggest that it is the experience of making important transitions significantly *before* or *after* salient peer groups which would create psychological distress.

PRESENT STUDY

The present study seeks to investigate relations between the timing of maturation and girls' mental health, sense of self, and concerns about the future for both European-American and African-American early adolescents of comparable socioeconomic backgrounds.

1. To examine ways in which ethnic group membership moderates the relations between maturation and adjustment.
2. To include two other markers of development central to early adolescence: one psychological (perception of maturational timing) and one social (entry into dating culture), in addition to the typical biological (pubertal) indicator used in previous studies.
3. To investigate stage-termination versus off-time models of development within both ethnic groups and across each of these indicators.

METHOD

Participants

The girls included in this study were participants in the second wave of the Maryland Adolescent Development in Context Study (MADICS; Eccles & Sameroff, P.I.), a longitudinal investigation of adolescent development. Data were collected from girls and their mothers during the summer after the eighth grade (age range 13-14 years old).

| | <u>European- American Girls</u> | <u>African- American Girls</u> |
|--------------------------------------|-------------------------------------|------------------------------------|
| N | 177 | 270 |
| Family Income | \$49,000. | \$42,500. |
| % living in Intact 2-parent homes | 68% | 50% |

MATURATIONAL TIMING MEASURES

The three maturational variables were used both as continuous and as categorical predictors. The categorical variables were created to reflect Early, On-Time and Late groups of girls, based on the following criteria:

Biological: Menarche “In what grade did you get your first period?”

| | |
|---------|--|
| Early | before 6 th grade |
| On-Time | 6 th or 7 th grade |
| Late | after 7 th grade |

Psychological: Perception of Timing “Compared to other girls your age, would you say you are physically developing...”

| | |
|---------|---|
| Early | 1= a lot before most girls, 2= a little before most girls |
| On-Time | 3= about the same as most girls |
| Late | 4= a little later than most girls, 5= a lot later than most girls |

Social: Advanced Social Activity

Five (5) item scale: number of older friends, peer pressure to have sex, age at first unsupervised date, frequency of dating in past month, and unsupervised time with friends. (Alpha= .64)

| | |
|---------|---|
| Early | 20% highest scores on scale, determined within ethnic group |
| On-Time | 80% of sample |
| Late | Not specified given normative age range for beginning social activity |

MEASURES

| | Range | Euro- Amer. | African- Amer. | T-Test * |
|-------------------------------|-------|----------------|-------------------|----------|
| TIMING MEASURES | | | | |
| Biological | | | | |
| Menarche | 1-3 | 2.09 | 1.80 | *** |
| Psychological | | | | |
| Perception of Timing | 1-5 | 3.00 | 2.90 | ns |
| Social | | | | |
| Social Activities | 1-5 | 3.88 | 3.94 | ns |
| OUTCOME MEASURES | | | | |
| Mental Health | | | | |
| Depression (CDI) | 1-44 | 9.96 | 9.67 | ns |
| Eating Disturbance | 1-6 | 2.36 | 2.03 | *** |
| Anger | 1-5 | 2.04 | 2.41 | *** |
| Sense of Self | | | | |
| Global self-esteem | 1-5 | 3.46 | 3.87 | *** |
| Feminine self-esteem | 1-5 | 3.14 | 3.87 | *** |
| Popularity | 1-7 | 4.41 | 5.29 | *** |
| Concerns for Future | | | | |
| <i>Girls:</i> mental health | 1-6 | 1.38 | 1.27 | * |
| sexual activity | 1-6 | 1.37 | 1.40 | ns |
| <i>Mothers:</i> mental health | 1-6 | 1.89 | 1.61 | * |
| sexual activity | 1-6 | 1.98 | 1.86 | ns |

RESULTS

1. Linear Associations between Timing and Adjustment

See Table 1.

Mental Health~

European-American girls' mental health suffers with earlier maturation in all three domains. Strongest associations are with earlier menarche. African-American girls' mental health is not associated with any of these indicators or maturation.

Sense of Self~

For both European-American and African-American girls, perception of timing was related to feminine self esteem and popularity, such that earlier perceived maturation related to higher estimations of esteem and popularity.

Concerns for the Future~

Earlier menarcheal timing related to greater concerns about future mental health problems and sexual behavior for both African-American and European-American girls. Only African-American mothers' concerns for their daughters' future sexual behavior were significantly associated with maturational timing. Earlier menarche and earlier perceptions of development were both related to increased maternal concerns, earlier dating activity was related to fewer maternal concerns.

2. Curvilinear associations between Timing and Adjustment

Perception of Timing: Four significant curvilinear associations are shown in Figures 1-4.

For European-Americans:

~Self Esteem: Girls who reported themselves to be developing at "about the same time" as age-mates indicated highest self-esteem compared to both earlier or later maturers.

~Eating Disturbance: Girls who reported themselves to be developing "a lot earlier" than age-mates reported more eating disorder symptoms than all other groups.

For African-Americans:

~Anger: Girls who perceived themselves to be either earlier or later than age-mates reported higher levels of anger than those who perceived themselves to be "on time."

~Depression: Girls who perceived themselves to be "a lot later" than peers reported the highest levels of depression.

3. Formal Test of Moderation

Regression analyses using continuous indices of maturation and interaction terms were conducted to test formal moderation effects for each timing variable. Significant moderation is shown in Figures 5-

7. Only the curvilinear or linear estimate of the timing of menarche was formally moderated in three domains of adjustment:

~Eating Disturbance: Early maturing European-American girls reported the highest levels of eating disturbance.

~Self Esteem: African-American girls' self esteem increased with earlier menarche, while European-American girls' decreased with earlier menarche.

~Maternal Concerns about Daughters' Sexual Future: African-American mothers' concerns increased with earlier menarche, while European-American mothers' reports remained stable across maturational levels.

MAIN POINTS/Summary of Findings

Ethnic Group Dichotomy

Differences

- European-American girls experienced greater mental health distress as early maturers across domains of maturation.
- African-American girls' mothers expressed concerns for their daughter's futures in response to earlier development across domains.

Similarities

- Across ethnic group, perception of timing related to self esteem and concept, and girls' concerns for their futures related to timing of menarche.

Stage Termination vs Off-Time Models

- For menarche and dating, stage-termination models fit better than off-time.
- For perception of timing, off-time models fit as well or better than stage-termination.

Effects by Domain of Maturation

- Timing of Menarche: Mental Health and Future Concerns.
- Perception of Timing: Self esteem and Popularity
- Dating Timing: Mental health and Maternal Concerns

DISCUSSION

First, with regard to the ethnic group dichotomy noted above, we see that European-American girls do in fact experience greater mental health distress in response to maturation than do their African-American peers. Across domains of mental health assessed, and across biological, psychological and social domains of maturation, European-American girls reported greater difficulties with earlier maturation. These differences are probably best explained by cultural differences around ideal body image, and the meanings of reaching sexual maturity, such that there is less distress around these transitions for African-American girls.

Second, we find that social policy makers are not the only ones concerned about African-American girls' sexual behavior. We find that girls' maturational timing affects both their own, and African-American mothers' concerns for their sexual futures. However, we also find that African-American mothers, not European-American mothers are responsive to their daughters' developmental timing in their concerns for their daughters' futures. The "backwards" finding that African-American mothers of earlier daters were *less* likely to report fears regarding their daughters' sexual activity is likely due to actions taken in response to concerns. That is, parents who are worried about sexual behavior may set more restrictive policies around social interactions and dating for their daughters.

Third, this data shows that in other respects, African-American and European-American girls' experiences are more similar than different. For both groups, esteem was related to perception of timing, and concern for the future was related to earlier menarche. This set of findings also points to the unique, and often curvilinear influence of girls' perceptions of "off-time" development independent of their actual developmental timing.

Finally, both stage-termination and off-time models received support. While findings were more often linear in nature, and thus more supportive of stage termination models, we were not in a good position to examine a truly late group of daters, and perception of timing did yield some evidence of negative consequences of viewing oneself as significantly different than peers in either direction.

Table 1. Correlations between timing of maturation and mental health, self esteem and concerns for future.

| European-American Girls (n=170) | | | |
|---------------------------------|---------|------------|--------|
| | Biology | Psychology | Social |
| <u>Mental Health</u> | | | |
| Depressed Mood | -.14+ | .02 | -.16+ |
| Eating Disturbance | -.30*** | -.15* | -.09 |
| Anger | -.23** | -.14+ | -.16+ |
| <u>Self</u> | | | |
| Global Self Esteem | .12 | -.09 | .04 |
| Feminine Self Esteem | -.05 | -.22** | -.07 |
| Popularity | -.13 | -.30*** | -.13 |
| <u>Concerns for the Future</u> | | | |
| Daughters: Mental Health | -.21** | .00 | -.03 |
| Daughters: Sexual Activity | -.21** | -.13+ | -.03 |
| Mothers: Mental Health | -.05 | .05 | .06 |
| Mothers: Sexual Activity | -.01 | -.04 | .07 |
| | | | |
| African-American Girls (n=270) | | | |
| | Biology | Psychology | Social |
| <u>Mental Health</u> | | | |
| Depressed Mood | -.05 | .08 | -.01 |
| Eating Disturbance | -.03 | -.04 | -.06 |
| Anger | -.09 | -.07 | -.05 |
| <u>Self</u> | | | |
| Global Self Esteem | -.02 | -.10+ | -.15* |
| Feminine Self Esteem | -.12* | -.20*** | -.08 |
| Popularity | -.09 | -.17** | -.07 |
| <u>Concerns for the Future</u> | | | |
| Daughters: Mental Health | -.14* | .00 | .11 |
| Daughters: Sexual Activity | -.12* | -.10 | -.05 |
| Mothers: Mental Health | -.10 | -.08 | .09 |
| Mothers: Sexual Activity | -.22*** | -.14* | .18* |

+p<.10 *p<.05 **p<.01 ***p<.001

FIGURE 1

Anger by Perception of Timing: Curvilinear Effects for African-American Girls

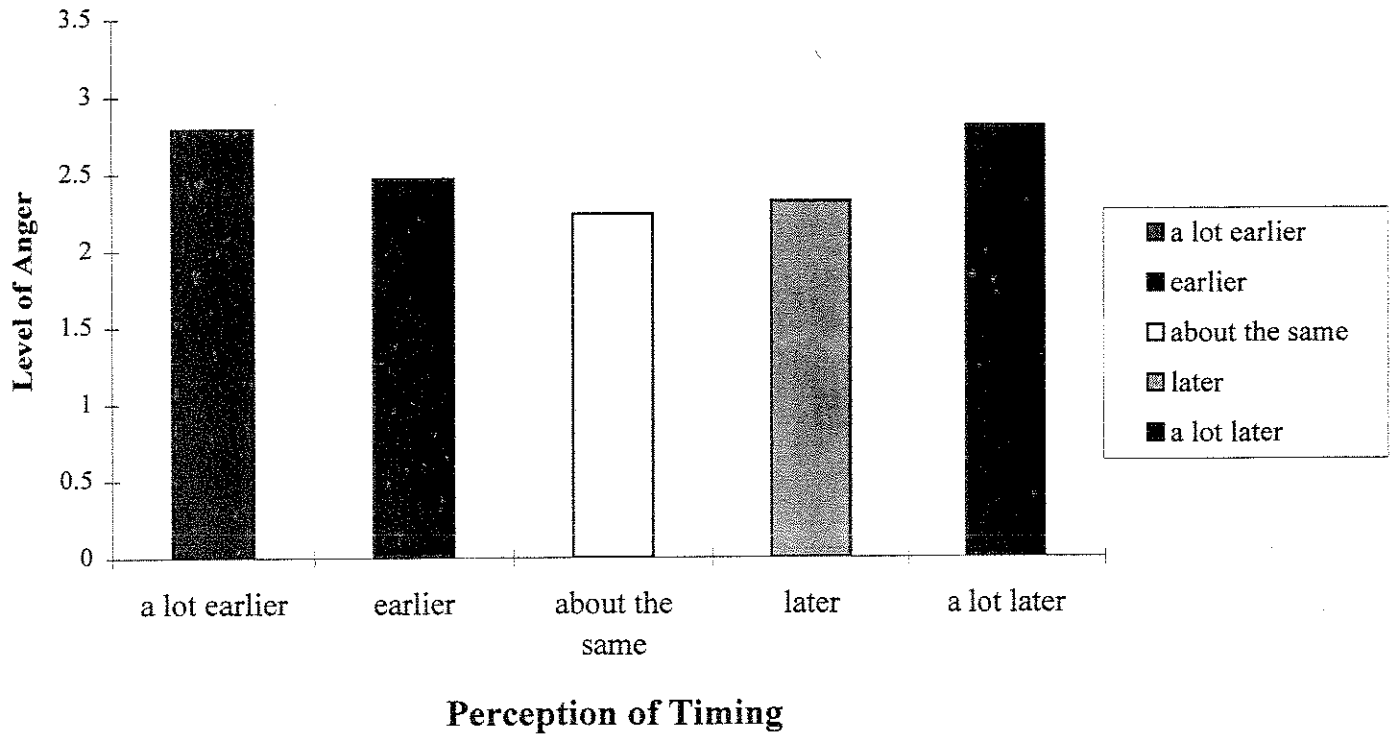
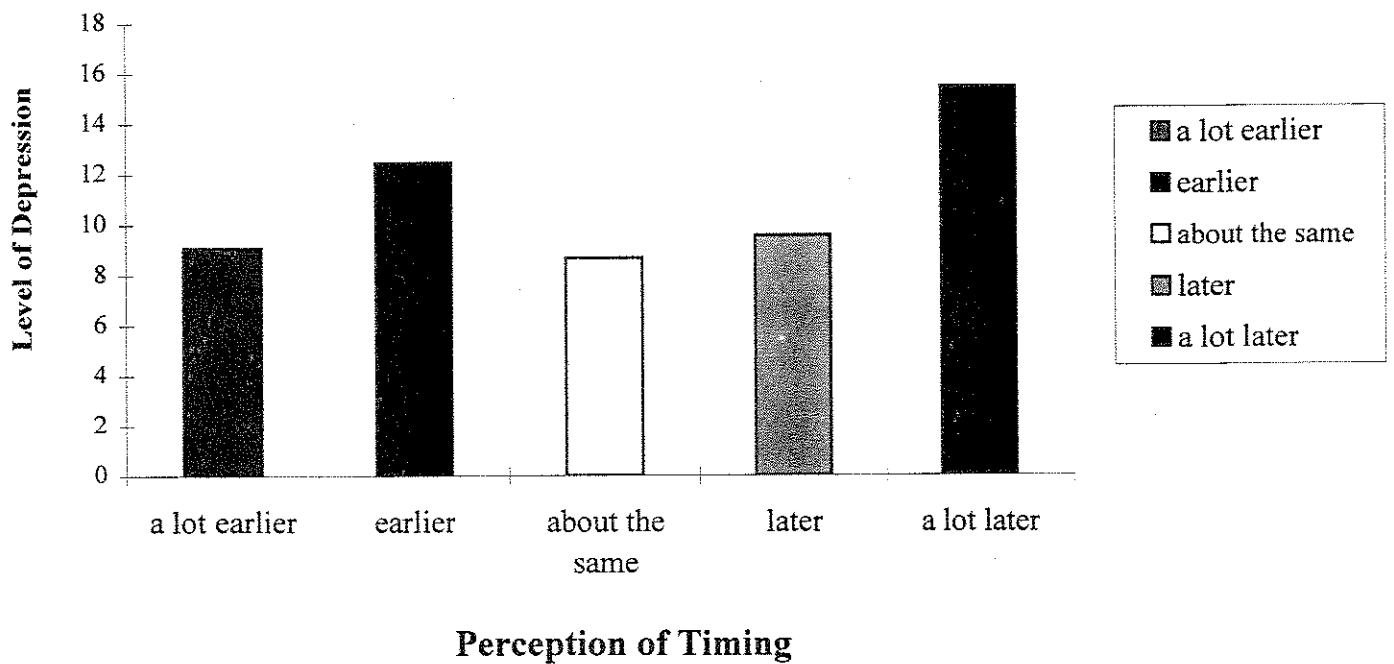


FIGURE 2

Depression by Perception of Timing: Linear and Curvilinear Effects for African-American Girls



**Self-Esteem by Perception of Timing:
Curvilinear Effect for European-American Girls**

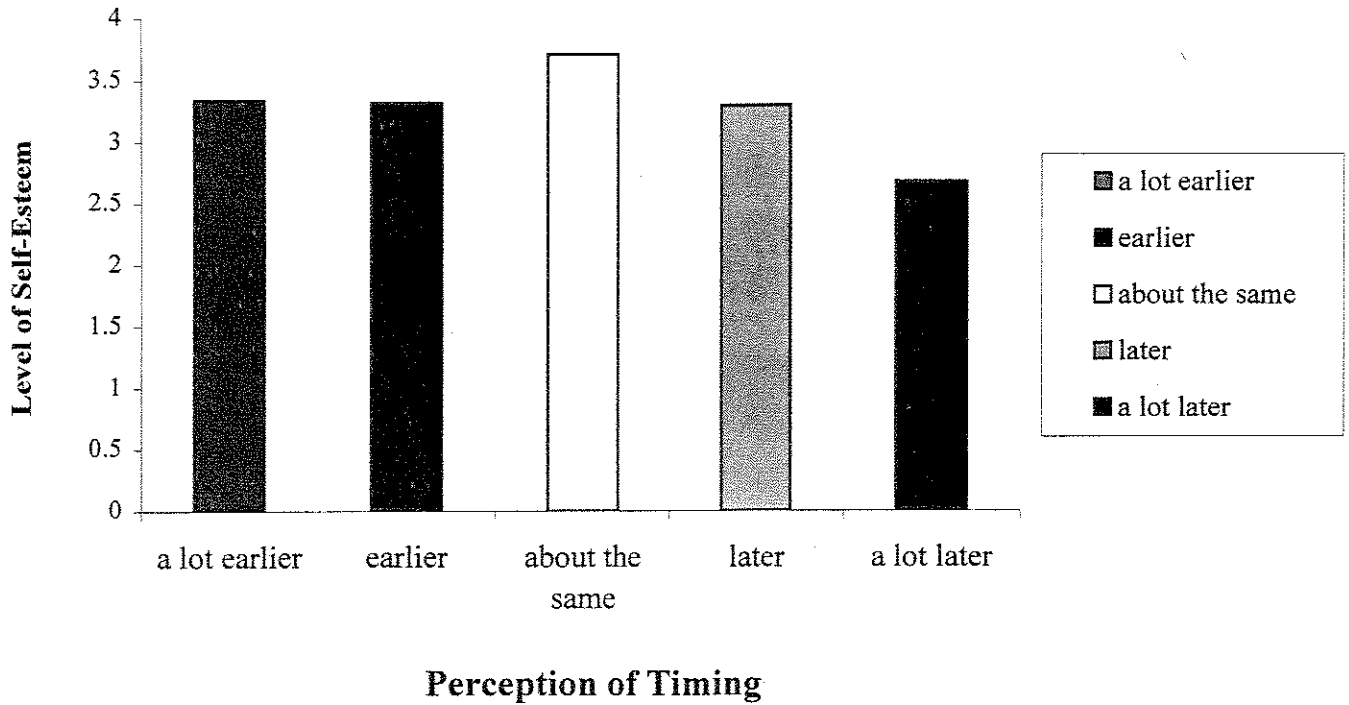


Fig. 4

**Eating Disturbance by Perception of Timing:
Linear and Curvilinear Effects for European-American Girls**

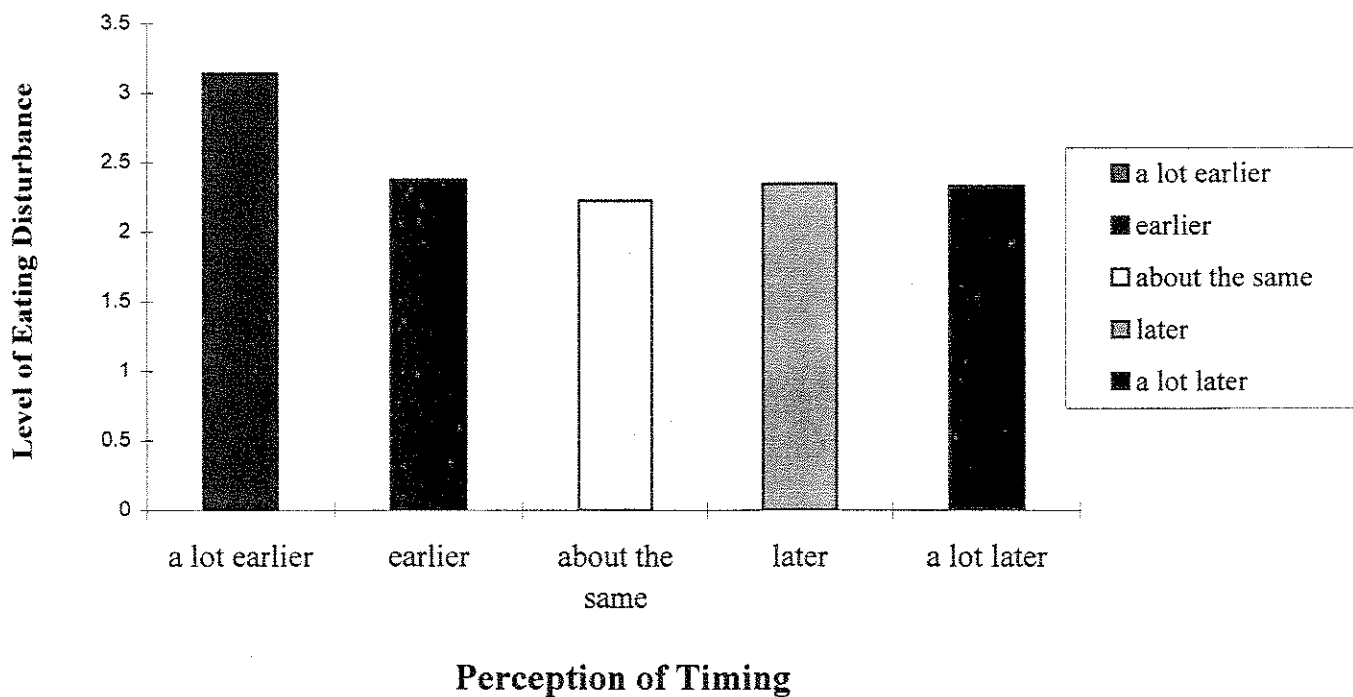


FIGURE 5

Ethnic group moderation of the relation between Timing of Menarche and Maternal Concerns for Daughter's Sexual Behavior

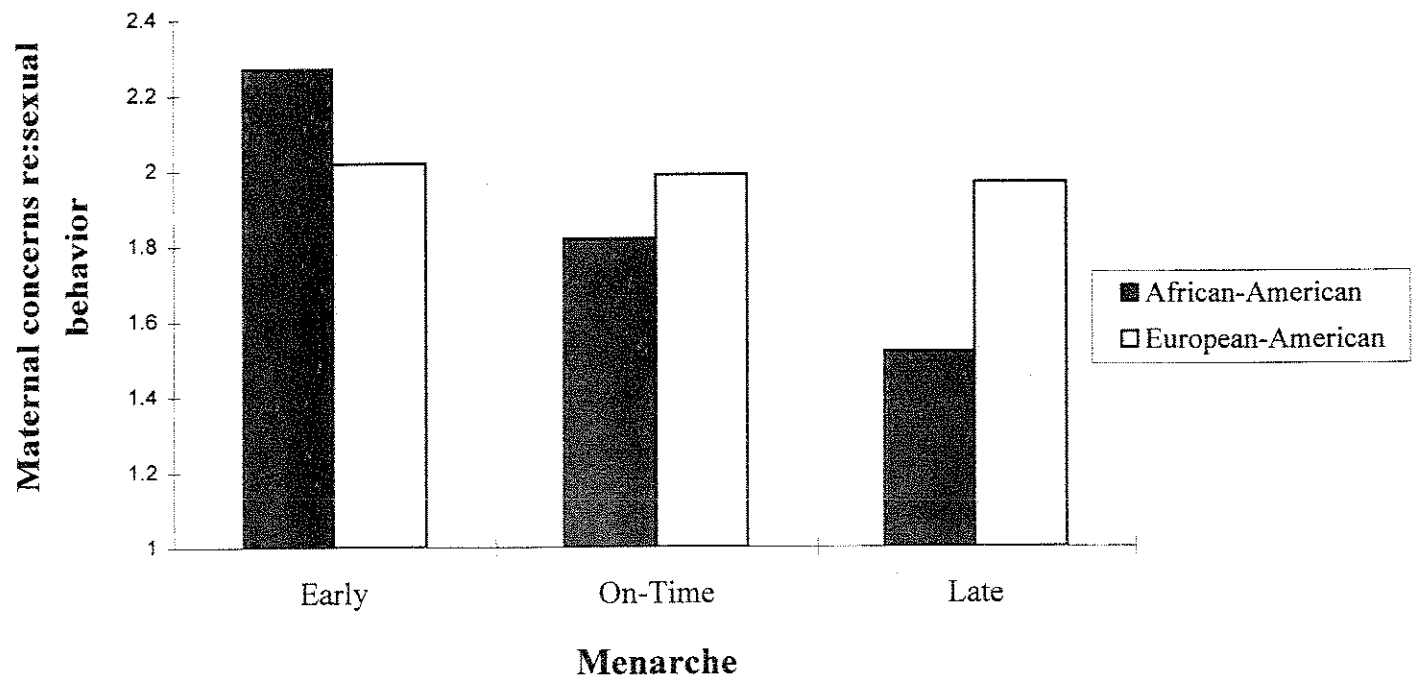
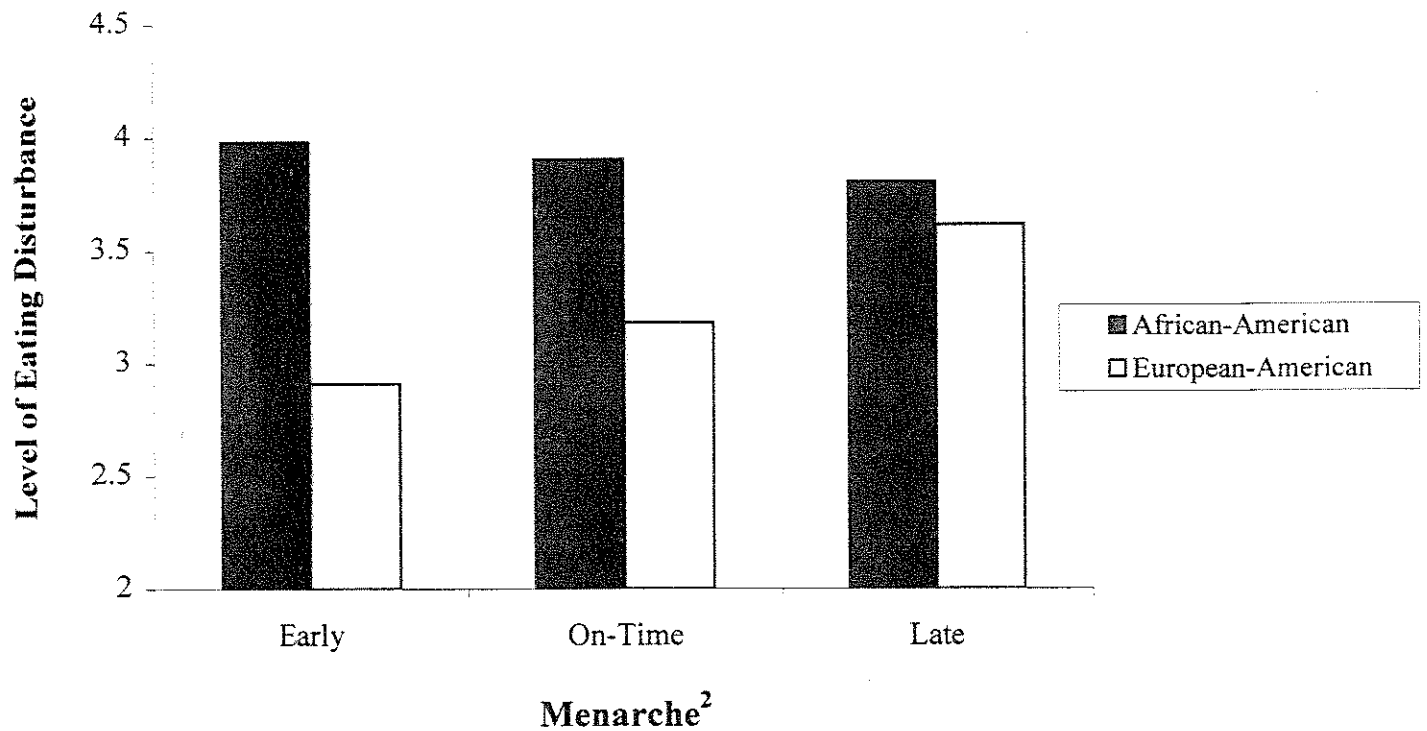


FIGURE 6

Ethnic group moderation of relation between Timing of Menarche and Eating Disturbance



Ethnic group moderation of relation between Timing of Menarche and Eating Disturbance

