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Risk factors and protective factors for depression in early maturing females

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RISK FACTORS AND PROTECTIVE FACTORS FOR DEPRESSION IN
EARLY MATURING FEMALES

by
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ABSTRACT

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The purpose of this study was to examine the effect of early onset of menstruation and biological father absence on depression in females. Participants (n=46) were asked to complete a demographic questionnaire and a series of psychometric assessments. It was hypothesized that females who reached puberty earlier than their peers as well as females growing up in a one-parent household, with the biological father absent, would experience more depressive symptoms than females who reached puberty later than their peers or were being raised in two-parent households. Statistical analyses revealed early maturing females reported higher levels of depressive symptoms than on-time and late maturing females. Early-maturing females who were raised in one-parent households demonstrated higher levels of depressive symptoms than early-maturing females who were raised in two-parent households. Early maturing females in one-parent households also reported lower levels of perceived cohesiveness between family members. Implications for developing early intervention techniques for females at risk for developing Major Depressive Disorder are discussed.

TABLE OF CONTENTS

LIST OF TABLES

CHAPTER I

INTRODUCTION

Depression is one of the most common clinical disorders seen by mental health

professionals today (Young, Rygh, Weinberger & Beck, 2008). The National

Comorbidity Survey Replication found a 6.6% annual prevalence of Major Depressive

Disorder in the United States (Kessler et al., 2003). According to the National Institute of

Mental Health (NIMH), Major Depressive Disorder (MDD) was the leading cause of

disability in the United States for individuals between the ages of 15-44 in 2006 (NIMH,

2006). Symptoms of MDD, according to the Diagnostic and Statistical Manual of Mental

Disorders, Fourth Edition (DSM-IV), include significant weight loss or weight gain due

to changes in appetite, insomnia or hypersomnia, loss of energy, feelings of

worthlessness, loss of pleasure in activities, psychomotor agitation or retardation,

difficulty concentrating, and suicidal ideation (American Psychiatric Association, 1994).

Individuals diagnosed with MDD may experience marital problems, occupational and

academic problems, and substance use (American Psychiatric Association, 1994). Of

particular significance is the increased risk for attempted and completed suicide

(American Psychiatric Association, 1994). Most MDD episodes occur as a result of

psychosocial stressors such as divorce, death of a loved one, or childbirth (American

Psychiatric Association, 1994). Life transitions, particularly puberty, can also precipitate

the onset of MDD.

1

Depression in Adolescence

The study of MDD in the adolescent population has only recently been attempted. The prevalence of major depression increases from under 2% in childhood (Costello, Pine, Hammen, Plotsky, Weissman, Biederman, Goldsmith, Kaufman, Lewinsohn, Hellander, Hoagwood, Koretz, Nelson & Leckman, 2002) to 12.4% in adolescence (Kessler & Walters, 1998). The emergence of depressive symptoms in adolescence can be attributed to biological and hormonal changes associated with puberty (Ge, Conger, & Elder, 2001a, 2001b), the capacity for abstract-thinking, self-reflection, and rumination (Nolen-Hoeksma, 1994), psychosocial stressors associated with transitions (Koenig & Gladstone, 1998), and changing relationships with parents and peers (Hankin, Mermelstein, & Roesch, 2007). Early onset of depressive symptoms, particularly during adolescence, predicts longer duration and severity of major depressive episodes (Kovacs, Feinberg, Crouse-Novak, Paulaskas, & Finkelstein, 1984). MDD is twice as common among adolescent and adult females as in adolescent and adult males (American Psychiatric Association, 1994). Early maturing females are at even more of a risk for developing depressive symptoms than their later developing peers (Patton et al., 1996).

Symptoms of Depression in Adolescence

Adolescence is typically considered to be one of the most stressful and tumultuous developmental periods. Adolescence is a time of change: biologically, physically, emotionally, and socially. In the past, adolescent depression would often go undiagnosed and untreated because of the belief that emotional problems were "just a phase." Society regarded behavioral and psychological problems during adolescence as "normal" and expected teenagers to eventually grow out of them.

2

Another reason for the under diagnosis of MDD in adolescence is poorly defined and inconsistent diagnostic criteria. Although many adults and adolescents share similar symptoms of depression, some adolescents exhibit different symptoms. Mezzich and Mezzich (1979) conducted a study to identify clinical manifestations of depression that were specific to the adolescent population. Symptoms that were unique to adolescents included anger and rage against parent and authority, sensitivity to criticism, running away from home, and feeling a lack of understanding from others (Mezzich & Mezzich, 1979).

Because many of these symptoms are often considered to be behaviors typically associated with puberty, parents and researchers alike find it difficult to distinguish what is "adolescence" and what is clinical depression. Often times, it requires more extreme and dangerous behaviors such as drug use, reckless sexual activity, self-injurious behavior (e.g., cutting), or attempted suicide for parents to take notice of a severe mood disorder and finally seek treatment. Depression in adolescence does not "look" like depression in adulthood; however, it is just as serious if left undiagnosed and untreated. It is therefore vital for researchers to establish a more comprehensive and definitive criteria for adolescent depression.

Treatments for Adolescent Depression

Because depression in adolescence differs from adult depression and because assessment of depression in adolescence can be much more difficult, effective treatments are still under evaluation. The common use of antidepressants such as selective serotonin reuptake inhibitors (SSRI) in adults is also becoming a popular treatment option for the adolescent population. The use of these medications in adolescence and childhood has

3

been controversial and results from studies investigating the relationship between antidepressants and suicide have been mixed. In 2004, the Federal Drug Administration (FDA) ordered that pharmaceutical companies issue a warning, informing the public of increased suicidal thoughts and behavior in teenagers and children who take antidepressants (American Medical Network, 2004). The FDA review reported no completed suicides among 2,200 children treated with SSRIs, but found that about 4% of these children experienced suicidal thinking and suicide attempts (American Medical Network, 2004). A study conducted by Dubicka, Hadley and Roberts (2006) found that antidepressants caused a small, short-term risk of suicidal behavior in children and adolescents with MDD. Another study analyzing suicide data from the National Vital Statistics and commercial prescription data from 1996-1998 found that suicide rates were lower in areas of the country where higher rates of SSRIs were prescribed among children ages five to fourteen (Gibbons, Hur, Bhaumik & Mann, 2006). Presently, the relationship between antidepressant medication and suicide is unclear and researchers are continuing to investigate how best to treat adolescents with depression.

Psychotherapy interventions that have been used in the treatment of adolescent depression include cognitive-behavioral therapy, psychodynamic therapy, family therapy, social skills training, and supportive group therapy (Petersen, et al., 1993). Studies comparing the efficacy of these psychotherapies have been inconclusive and there have been no studies comparing the effects of pharmacotherapy and psychotherapy for adolescent depression (Petersen et al., 1993).

There is no single factor that causes depression in adolescence, however, researchers have proposed several theories regarding adolescent onset of MDD: genetics, pubertal development, chronological timing of puberty, stress, health and nutrition.

Theories

Pubertal Development

Of considerable importance in the emergence of depressive symptoms are two distinct aspects of pubertal development: pubertal status and pubertal timing (Dick, Rose, Viken, & Kaprio, 2000). Pubertal status is defined by the physical markers of pubertal change (e.g., breast and/or pubic hair development) experienced by an individual while pubertal timing refers to the level of development relative to same-age, same-sex peers (e.g., early/late onset of menstruation). Both pubertal status and timing, particularly in adolescent females, can influence the development of depression in adulthood.

Numerous studies have shown that early maturating females demonstrate greater emotional and behavioral problems compared to their on-time and late-maturing counterparts. Problems associated with early maturation in females include substance use (Stattin & Magnusson, 1990), eating disorders (Attie & Brooks-Gunn, 1989), anxiety (Patton et al., 1996), breast cancer (Kampert, Whittemore, & Paffenbarger, 1988), obesity (Ness, 1991), sexual promiscuity (Caspi & Moffit, 1991), and teenage pregnancy (Udry & Cliquet, 1982). Early maturing females often exhibit maladaptive behaviors, problems with authority figures, social isolation, and absence of satisfaction in everyday life (Archer, 1987). Earlier onset of menarche has also been associated with smaller sibships (Tanner, 1968), father absence (Jones, Leeton, Mcleod, & Wood, 1972; Moffit, Caspi,

Belsky, & Silva,1992; Surbey, 1990; Wierson, Long, & Forehand, 1993), and family conflict (Graber et al., 1995; Moffitt et al., 1992; Steinberg, 1988; Wierson et al., 1993).

Genetics also plays an important role in pubertal timing. Early maturing mothers tend to have early maturing daughters. Early maturing daughters are also more likely to get married earlier and have children at a younger age (Ellis & Garber, 2000).

Behavioral and emotional problems that are typically associated with early maturation can be seen as both manifestations of depression and as amplifying factors in the progression of depressive symptoms. The following theories describe various factors that can influence the onset and emergence of depressive symptoms in early maturing females.

Chronological Timing of Puberty

A major factor in the emergence of depressive symptoms in adolescence involves the chronological timing of puberty. According to Peskin's *early timing hypothesis* (1973) girls who mature earlier than their peers are more vulnerable to psychological distress because of their lack of preparation for pubertal change. Early maturing females have had less time to learn and adapt necessary coping skills needed to undergo the stressful transition of puberty and are therefore more susceptible to emotional distress. In order to achieve proper adjustment and minimize distress, certain chronological tasks must first be completed during childhood. Thus, early maturing females who have had a brief childhood are ill-prepared to face the challenges associated with puberty. In adolescent females, the stage of pubertal development rather than chronological age poses as a risk factor for depression (Angold, Costello, & Worthman, 1998).

Stress

Another explanation based on the psychobiologic theory of stress (Goleman, 1991) suggests that the timing of puberty is not genetically fixed but is influenced by an individual's environment. Females who are exposed to extremely stressful environments experience earlier maturation in order to ensure proliferation and survival of the species. For example, early maturers disproportionately come from single-parent households where the biological father is absent, disrupting the structure of the household and potentially causing familial conflict (Dick et al., 2000). Studies have suggested that females raised in father-absent homes reach menarche earlier than females raised in father-present homes (Jones et al., 1972; Mekos, Hetherington, & Clingempeel, 1992; Moffitt et al., 1992; Surbey, 1990; Wierson et al., 1993). In addition, researchers have found that the more prolonged the father absence, the earlier the onset of menstruation (Mekos et al., 1992).

An interesting corollary proposed by Mekos et al. (1992) suggests that it is not just father absence (i.e., resulting from divorce) but the presence of the mother's romantic partners, boyfriends or stepfathers, that can trigger earlier pubertal timing. Human females exposed to pheromones of unrelated males in the household often reach sexual maturation earlier than females living in single-mother households (Mekos et al., 1992). Some studies have also argued that the absence of a positive father-child relationships and the quality of the father's investment in the family significantly influence pubertal timing in adolescent females (Ellis & Garber, 2000). Other socioemotional stressors that accelerate pubertal timing in females include parental alcohol abuse, prolonged illness of a parent, and maternal psychopathology. A history of mood disorders and substance

abuse in mothers can trigger early pubertal timing through its impact on familial conflict (Ellis & Garber, 2000).

Health & Nutrition

A more recent theory for early onset of puberty involves health and nutrition (Goleman, 1991). Body fat produces the hormone leptin which signals the brain to begin puberty (Jennings, 1997). Thus, an increase in body fat percentage during adolescence may trigger earlier pubertal timing. Biologists have also found that exposure to estrogen found in chemicals such as insecticides, hair products, plastics, and other endocrine disrupters may trigger the onset of puberty (Marshall, 1993; McKinney & Waller, 1994; Modica 1997; Sharpe & Skappeback, 1993). Finally, consumption of estrogen-like growth hormones found in meat and milk products can stimulate onset of puberty (Gilette, 1997). Conversely, malnutrition and disease delay pubertal timing in females in order to enhance survival and growth as opposed to reproduction.

Risk Factors and Protective Factors for Depression

Other factors associated with depression during adolescence include being Black or African American, Hispanic or Latino American, or Pacific Islander or Asian American; having lower socioeconomic status; using alcohol, tobacco, or other drugs on a weekly basis; and engaging in delinquent behavior (Costello, Swedsen, Rose, and Dierker, 2008). Protective factors for depression in adolescence include two-parent family structure, feeling connected to parents, peers, or school; and self-esteem (Costello et al., 2008). In terms of substance abuse, which again is related to the onset of depression in adolescence, protective factors include the family's religiosity, urban or rural residency, community and school traditions, and parental modeling (Dick et al.,

8

2000). These cultural moderators reduce the likelihood of the development of depression in adolescence. Adolescents who feel closer to their family and are more regularly monitored by their parents exhibit fewer conduct problems.

Comorbid Problems

In terms of pubertal timing and substance use, which is found to be highly comorbid with depression, emphasis on the influence of peer networks have been associated with early experimentation with alcohol and tobacco. Stattin and Magnusson (1990) proposed that early maturing females tended to associate with older females resulting in a more mature, advanced lifestyle (e.g., substance use, precocious sexual behavior) compared to their same-age peers. Later maturing females, on the other hand, were more likely to interact with chronologically younger peers, delaying more adult-like behaviors (Stattin & Magnusson, 1990). This interpretation is coupled with the observation that early maturers are often given more independence from parents, due to their more mature physical appearance, potentially leading to an increased opportunity to engage in risk-taking behavior (Stattin & Magnusson, 1990). In the case of single-parent households, irregular parental monitoring may also be a result of the absence of the biological father in child rearing.

There are several explanations for the gender discrepancies found in adolescent depressive symptoms. Adolescent females tend to exhibit both internalizing and externalizing behavior such as depression, anxiety, eating disorders and substance use. Adolescent males tend to exhibit more externalizing behavior such as bullying, truancy, and substance use. In females, both internalizing and externalizing behavior are more common the earlier the menarche (Kaltiala-Heino, Marttunnen, Rantanen, & Rimpela,

9

2003). Other explanations for gender discrepancies include gender-specific coping styles (Nolen-Hoeksema, 2001) and gender differences in puberty-related hormonal changes (Angold & Costello, 2006).

Summary

Currently, females are reaching sexual maturation earlier than previous generations. In 1900, the average age at onset of menstruation in the U.S. was 14.2 years (Tanner & Eveleth, 1975). By 1970, the mean age of menarche of U.S. girls was 12.8 years (Harlan, 1980). In 2006, the average age of sexual maturation was 12.6 years for Caucasian girls, 12.2 years for Hispanic-American girls, and 12.1 for African-American girls (Kaplowitz, 2006; Herman-Giddens, 2006). This trend can be explained by various theories including improvements in health and nutrition and also stressful environments. Increased body fat and the consumption of estrogen-like hormones found in certain foods can trigger early onset of puberty in females (Jennings, 1997, Marshall, 1993; McKinney & Waller, 1994; Modica 1997; Sharpe & Skappeback, 1993). Stressful social environments, particularly one-parent households, can also lead to early maturation in females. Growing up in a father-absent home can accelerate puberty which can lead to the early development of depressive symptoms.

The consequences of early maturation in females can also include early experimentation with drugs and alcohol, early sexual activity, teenage pregnancy, poor academic performance, low self-esteem, and various clinical disorders that persist into adulthood. These problems can be seen as both a result of depressive symptoms and also as exacerbating factors in its progression and severity. MDD continues to be more prevalent among adolescent and adult females than in adolescent and adult males

10

(American Psychiatric Association, 1994) and early maturing females are at even more of

a risk for developing depressive symptoms than their later developing peers (Patton et al.,

1996). Adolescent females who are reaching puberty at an early age and are being raised

in stressful environments, specifically father-absent homes, may be at even more of a risk

for developing MDD in adulthood.

This trend is an indication for earlier intervention and prevention. If early

maturation is a risk factor for depression in adulthood and females are reaching puberty

earlier, then depression will continue to become more prevalent in females, will emerge

earlier in life, and be more severe in terms of frequency and duration.

Current Study

Many studies have supported a correlation between early maturation and

depression in females (Angold et al., 1998; Graber, Brooks-Gunn, & Warren, 1995;

Patton et al., 1996). This study will investigate behaviors and problems within the early

maturing female population, with particular emphasis on females who were raised in

single-parent households. This study examines the relationship between antecedents of

pubertal timing, specifically father absence, and risk factors for depression in females.

Risk factors that contribute to depressive symptoms in adolescent females that were

assessed in this study include substance use and risky behavior. Protective factors consist

of a two-parent family structure, feeling connected to family and friends, and self-esteem.

It is hypothesized that females who matured earlier in adolescence (between the ages of

Under 10 years-11 yrs.) will show more symptoms of Major Depressive Disorder than

females who matured on time (12-13 yrs) or later (Over 14 yrs). Early maturing females

will also report more experiences involving risky behavior including substance abuse as compared with on time and late maturing females.

Father absence as an antecedent for early pubertal timing may dually serve as a risk factor for the development and maintenance of depression. Moffitt et al. (1992) have found that family discord, as a result of divorce for instance, and father absence were uncorrelated suggesting that the stress of family conflict and father absence are separate pathways for early pubertal maturation (Ellis & Garber, 2000). As previously described, many studies have suggested that females raised in father-absent homes reach menarche earlier than females raised in father-present homes (Jones et al., 1972; Mekos et al., 1992; Moffitt et al., 1992; Surbey, 1990; Wierson et al., 1993) and that the more prolonged the father absence, the earlier the onset of menstruation (Mekos et al., 1992). It is hypothesized that early maturing females who were raised in father-absent homes will demonstrate greater depressive symptoms than early maturing females who were raised in a two-parent household.

CHAPTER II

METHOD

Participants

The sample consisted of female college students enrolled in undergraduate

psychology courses. The SONA system was used to retrieve participants who volunteered

for psychology experiments for course credits. Only female participants who had

experienced menstruation for more than one year were included in the study. Male

participants and females who had not experienced menstruation were excluded in this

investigation. Participants' ages ranged from 18-24 years.

Instruments

Demographic Questionnaire

Participants are asked to complete a four-item demographic questionnaire. Item I

asks for present age at the time of test administration. Item II requires participants to

categorize age at onset of menstruation. Categories are as follows: under 10 years of age,

10-11 years of age, 12-13 years of age, and over 14 years of age. Item III is an optional

item regarding racial background. Ethnicities listed include Caucasian/European-

American, African-American, Hispanic/Latino, Asian/Pacific Islander, Native American,

and Other. Item IV asks participants to indicate the primary caregivers living within her

household during the ages 0-18 yrs. Caregivers listed include Biological Mother,

Biological Father, Adoptive Mother, Adoptive Father, Stepmother, Stepfather, and Other.

For example, if an 18-year old participant has been living with both biological parents

since birth she would list Biological Mother and Biological Father as primary caregivers (see Appendix A for Demographic Questionnaire Form).

Adult Self-Report

Participants completed the 126-item Adult Self Report (ASR; Achenbach & Rescorla, 2003). The ASR was used to provide standardized descriptions of thoughts, behaviors, and emotions of adults (18-59 years.). Problem behaviors were assessed in regards to eight syndrome scales that were categorized into three global scales. The Internalizing global scale consisted of Anxious/Depressed, Withdrawn, and Somatic Complaints syndrome scales. The Externalizing global scale was comprised of Intrusive, Aggressive Behavior, and Rule-Breaking Behavior syndrome scales. The total problems scale included Thought Problems, Attention Problems, and Other Problems. Each global scale had 7-17 items with responses ranging from 0 if the behavior is not true, 1 if the behavior is somewhat or sometimes true, or 2 if the behavior is very true or often true for the past 6 months. Non-referred and referred adults were used in reliability studies for the ASR.

The YASR and YABCL scores correlate highly with the current ASR and ABCL scales (ASR; Achenbach & Rescorla, 2003).Test-retest reliability studies for the ASR within a one week interval yielded a mean correlation of $r = 0.84$, Total Problems $r = 0.94$, and Mean Adaptive Scale $r = 0.79$. Long term stability studies showed a mean correlation of 0.58 for the ASR over an average of 39 months. Internal consistency analyses yielded alpha coefficients of 0.83 for the empirically based problem scales and .78 for the DSM-oriented scales. Reliability data suggest that the Total Problems scales provides the most reliable scores. Validity studies report differences in referred and non-

referred samples. Referred individuals scored significantly higher however most items had small effect sizes.

Beck Depression Inventory-II

Depression was assessed using the 21-item Beck Depression Inventory-II (BDI-II; Beck, Steer, Brown, 1996). The BDI-II was selected for the lack of gender-biased items that were included in the BDI. Items in the BDI-II involve body image change, weight loss, and somatic preoccupation, which may have been biased towards the female sample used in this investigation. The BDI-II assessed sadness, pessimism, past failure, loss of pleasure, guilty feelings, punishment feelings, self-dislike, self-criticalness, suicidal thoughts or wishes, crying, agitation, loss of interest, indecisiveness, worthlessness, loss of energy, changes in sleeping pattern (e.g., hypersomnia and insomnia), irritability, changes in appetite (increase or decrease), concentration difficulty, tiredness or fatigue, and loss of interest in sex. The BDI-II evaluated symptoms over a two-week period as opposed to one week as practiced in the BDI. Items were rated 0 (not present) to 3 (severe).

Coefficient alpha estimates of reliability for the BDI-II in an outpatient sample were 0.92 and 0.93 for a nonclinical college sample. The test-retest reliability coefficient after one week was 0.93. Concurrent validity evidence shows that the BDI-II has a moderately high correlation ($r = 0.71$) with the Hamilton Psychiatric Rating Scale for Depression-Revised in psychiatric outpatients and a moderate correlation ($r = 0.47$) with the Hamilton Rating Scale for Anxiety-Revised.

Family Environment Scale

Participants also completed the Family Environment Scale (FES; Moos & Moos, 1994). The FES is a 90-item, True-False format self-report that takes approximately 15-20 minutes to administer. The adult version can be completed by individuals' ages 11 years and older. The purpose of the FES is to assess family members' perceptions of their social environment. The FES scale comes in three forms: The Real Form (R), The Ideal Form (I), and The Expectations Form (E). The Real Form measures perceptions of the participant's current family environment. The Ideal Form measures participant's preferences about ideal family environments. The Expectations Form measures a participant's expectations about family environments. The FES consists of 10 subscales which contain 9 items: Cohesion, Expressiveness, Conflict, Independence, Achievement, Intellectual-Cultural, Active-Recreational, Moral-Religious, Organization, Control, and Incongruence.

Test-retest reliability for the FES at two months ranged from 0.68 to 0.86 and at four months ranged from 0.54 to 0.86 across the subscales. Sample sizes for test-retest data were small, n=47 for two months and n=35 for four months. Internal consistency analyses of the FES yielded alphas from 0.61 to 0.78. The internal consistency sample size was quite large, n=1,067. Several studies have addressed the validity of the FES and have reported sufficient evidence of acceptable validity. The Moral-Religious subscale is highly related to religious participation and the Conflict subscale is associated with how much family members report actual family disagreements. Test developers have also gathered data for a range of special groups including distressed adults and adolescents, families of different sizes, single-parent families, and minority adults and adolescents.

16

Procedure

Participants were asked to meet in a classroom on campus. Participants were given general information regarding the nature of the study and any anticipated risks. Participants were volunteers and were permitted to leave the project at any time without penalty. Participants were allowed to ask questions regarding the study. After giving their written informed consent, packets were handed out to each participant. Packets consisted of a Demographic Questionnaire Form and a battery of tests including the ASR, BDI-II, and FES. Participants worked on each item independently and at their own pace. Participants first filled out a short 4-item demographic questionnaire. Participants were asked for their current age, age at onset of menstruation, race, and family structure. Participants then completed the following assessments in this order: ASR, BDI-II, and FES. A debriefing form was handed out to each participant once the packet containing the battery of assessments was returned.

Data Analysis

Demographic data was collected for the sample of female college students. The sample was categorized into groups and scores on the ASR, BDI-II, and FES were then compared across groups. Participants reporting onset of menstruation prior to the age of 11 met criteria for early maturation. Females who reached puberty between the ages of 12-13 years were categorized as on-time maturers and females reaching puberty after the age of 14 were considered late-maturers. Early maturing females were divided into two subgroups: father-present group and father-absent group. Father absence was defined as residing in a single-parent (e.g., biological mother) for more than two years between the

ages of 0 (i.e., birth) to 18 years of age. A series of independent sample t-tests and 2X2

analysis of variance (ANOVA) was used to analyze scores on the ASR, BDI-II, and FES.

CHAPTER III

RESULTS

Demographics

The study included 46 female participants ranging in ages 18 to 24 years (M =

19.35, SD = 1.6). All of the participants were single with no children. Of the 46

participants, 32 (70 %) were Caucasian, 6 (13%) were African American, 4 (9 %) were

Hispanic, 2 (4%) were Asian, and 2 (4%) identified themselves as Other Race. Onset of

menstruation occurred between the ages of 12-13 years old for 63% of the participants;

between the ages of 10-11 years old for 21.7% of the participants; onset of menstruation

under the age of 10 years for 4.3% of participants, and onset over the age of 14 years for

8.7% of participants. In this study, 60.9% of the participants were raised in two-parent

households and 39.1% were raised in one-parent households.

Because few participants reported onset of menstruation under the age of 10 years

and over the age of 14 years, the participants were collapsed into two groups. Group 1 (*n*

= 12) consisted of participants who reported early onset of menstruation under 10 years

and between 10-11 years. Group 2 (*n* = 34) included participants who reported on-time

onset at 12-13 years old and late onset at over 14 years old.

Beck Depression Inventory II

A 2 (onset of menstruation) x 2 (father present/absent) between-subjects analysis

of variance was conducted to evaluate the relationship between onset of menstruation and

father absence on depression. The independent variable of absence included two levels:

Two-Parent Household and One-Parent Household. The independent variable of onset consisted of early onset and on-time/late onset. The dependent variable was BDI-II score. The ANOVA resulted in a statistically significant main effect for onset of menstruation, $F(1, 42) = 9.87, p = .003$. Participants who reported earlier onset of menstruation demonstrated higher levels of depressive symptoms ($M = 16.50, SD = 10.58$) than those participants who reported on-time and late onset of menstruation ($M = 8.71, SD = 5.51$). Early onset participants scored within the mild clinical range on the BDI-II and participants who started menstruation on-time or late scored within the minimal clinical range on the BDI-II.

Females who reported early menstruation and were raised in one-parent households tended to have higher BDI-II scores (M=17.40, SD= 10.14) than early-maturing females raised in two-parent households (M=15.86, SD=11.64) although this was not a statistically significant interaction ($F(1, 42) = .01, p = 0.91$). Participants who reported on-time and late menstruation and grew up in two parent households reported less depressive symptoms (M=8.33, SD=4.62) than those participants who grew up in one-parent households (M=9.31, SD=6.88).

The results of the 2 x 2 ANOVA supported the hypothesis that early onset of menstruation impact depression; however, father absence with or without onset of menstruation did not differentially effect depressive symptoms in young adult females. Table 1 contains the descriptive statistics for BDI-II scores as a function of onset of menstruation and father absence/presence as a child.

Table 1

BDI Scores of Early Onset and On-time/Late Onset Groups

Onset of Menstruation	Mean	Standard Deviation
Early Onset		
Present	15.86	11.64
Absent	17.40	10.14
On-time/Late Onset		
Present	8.33	4.62
Absent	9.31	6.88
Total Early	16.50	10.58
Total On-time/Late	8.71	5.51
Total Present	10.21	7.54
Total Absent	11.56	8.46

Adult Self-Report

The ASR Syndrome Scales for Women are comprised of eight subscales designated as: (I) Anxious/Depressed, (II) Withdrawn, (III) Somatic Complaints, (IV) Thought Problems, (V) Attention Problems, (VI) Aggressive Behavior, (VII) Rule-Breaking Behavior, and (VIII) Intrusive. The eight syndrome subscales are further

classified under three distinct problem categories: Internalizing, Externalizing, and Total Problems. The Internalizing problem category includes the Anxious/Depressed, Withdrawn, and Somatic Complaints subscales. Externalizing problems consist of Aggressive, Rule-Breaking, and Intrusive Behavior. The total problems category involves other problems such as Thought and Attention problems. Table 2 contains the means and standard deviations of ASR scales and subscales as a function onset of menstruation.

Table 2

ASR Scales and Subscales Scores for Early Onset and On-time/Late Onset Groups

	Mean		Standard Deviation	
Scales	Early	On-time/Late	Early	On-time/Late
Syndrome				
Anxious/Depressed	62.58	55.35	10.41	7.23
Withdrawn	60.17	54.38	10.27	6.00
Somatic Complaints	60.08	56.11	10.77	7.21
Thought Problems	61.50	55.03	10.17	6.14
Attention Problems	59.50	55.41	7.54	6.56
Aggressive Behavior	58.25	53.76	6.88	4.39
Rule-Breaking Behavior	56.75	56.06	6.66	7.45
Intrusive	54.67	53.97	6.87	5.74
Internalizing	61.08	51.79	14.58	10.96
Externalizing	57.08	51.62	7.43	8.74
Total Problems	59.17	51.00	11.04	9.04
Adaptive Functioning				
Friends	48.00	49.79	5.60	3.66
Family	47.38	47.69	4.04	4.24

Job	48.40	48.71	3.51	3.26
Education	46.62	48.92	5.82	4.00
Substance Use				
Tobacco	50.46	50.68	1.59	1.47
Alcohol	54.17	58.91	6.00	8.51
Drugs	52.04	52.72	4.80	6.62
Critical Items	62.17	56.97	6.91	6.45

All 46 participants scored within normal range on the eight ASR Syndrome Subscales for Women. A series of independent samples t-tests were used to evaluate risk factors that contribute to depressive symptoms in adolescent females including substance use and risky behavior. There was a statistically significant relationship between onset of menstruation and Internal Syndrome Scale, t (44) = 2.31, p=.03. Early-maturing females scored higher on Internal problems (M=61.08, SD=14.58) than On-time/Late-maturing females (M=51.79, 10.96). In addition, there were statistically significant differences between onset of menstruation on Anxious/Depressed subscales, t (44) = 2.65, p = .01 and Withdrawn subscales t (44) = 2.36, p=.02. Early maturing participants reported higher levels of anxiety and depression (M= 62.58, SD=10.41) and were more withdrawn (M=60.17. SD =10.27) than on-time and later maturing participants (M= 55, SD= 7.2; M= 54.38, SD= 6.00, respectively). There was no statistically significant difference in Somatic Complaints between groups.

24

Within the External Syndrome Scale, there was a statistically significant relationship between onset of menstruation and the Aggressive Behavior subscale, t (44) = 2.60, p=.012. Early-maturing females reported more aggressive behavior including arguing, screaming, and fighting (M=58.25, SD=6.88) than on-time and late maturing females (M=53.76, SD=4.39). There was no statistically significant difference found in Intrusive, Rule-Breaking Behavior, and the External Scale between the two groups.

The Total Problems Syndrome Scale is the sum of the Internal and External Syndrome Scales and the following subscales: Thought Problems, Attention Problems, and Other Problems. There was a statistically significant difference between onset of menstruation and Thought Problems, t (44) = 2.62, p = .01. Thought Problems included strange behavior, strange ideas, and inability to get mind off thoughts. Participants who reported early onset of menstruation experienced more thought problems (M = 61, SD = 10.18) than participants who reported on-time and later onset of menstruation (M = 55.03, SD = 6.14). The Other Problems category included items such as jealousy, fear, and shyness and was also statistically significant for early onset participants, t (44) = 2.83, p = .01. Early maturing females reported more problems in these areas (M=15.75, SD=5.59) than On-time/Late-Maturing females (M=10.62, 5.33). The test was also significant, t (44) = 2.54, p = .03 for the Total Problems Syndrome Scale. Early-maturing females experienced more overall syndrome problems (M=59.17, SD=11.04) than on-time and late maturing females (M=51.00, SD=9.04).

The Adaptive Functioning Scales include items regarding friends, family, job, and education. The spouse and partner item was omitted from this study because all of the participants were unmarried. There was no statistical significance, t (44) = -1.51, p =

25

.157, of onset of menstruation on friends, family, job, and education using the mean adaptive score. Both early-maturing and early/on-time maturing females scored within normal range for these items. Participants reported average to better than average relationships with their family and friends and reported educational and occupational satisfaction.

Substance Use Scales on the ASR asked how many times per day the participant used tobacco, got drunk, and used drugs within the last six months. All 46 participants scored within the normal range for substance use and there was no statistical significant relationship between mean substance use and onset of menstruation, t $(44) = -1.24$, $p = .22$.

Family Environment Scale

The Family Environment Scale (FES) Real Form was used in this study to measure perceptions of the participants' current family environment. The FES consists of 10 subscales: Cohesion, Expressiveness, Conflict, Independence, Achievement, Intellectual-Cultural, Active-Recreational, Moral-Religious, Organization, Control, and Incongruence. The current study focused primarily on the Cohesion subscale. Family cohesiveness is characterized by the perceived level of commitment and support experienced between family members (FES; Moos & Moos, 1994). This study examined the relationship between onset of menstruation and father absence/presence and its effect on perceived family cohesiveness. Table 3 includes means and standard deviations of all FES subscale scores for early onset and on-time/late onset groups.

Table 3

FES Scores for Early Onset and On-time/Late Onset Groups

Scales	Mean		Standard Deviation	
	Early	On-time/Late	Early	On-time/Late
Cohesion	43.25	53.44	13.82	8.84
Expressiveness	46.25	52.32	8.27	12.23
Conflict	53.92	50.53	9.81	10.47
Independence	48.33	48.05	11.55	11.32
Achievement Orientation	55.17	54.97	7.20	9.90
Intellectual-Cultural Orientation	43.58	47.00	10.23	11.08
Active-Recreational Orientation	45.25	53.71	10.60	9.84
Moral-Religious Emphasis	45.25	49.56	10.93	11.00
Organization	41.75	46.85	13.72	10.99
Control	52.58	52.26	12.18	13.93

A 2(onset) X 2 (absence) analysis of variance was conducted to evaluate the relationship between onset of menstruation and father absence on cohesion. The two levels of the independent variables were two-parent household and one-parent household.

The two levels of the independent variables of onset consisted of early onset and on-time/late onset. The dependent variable was Cohesion. The ANOVA resulted in a statistically significant main effect for onset of menstruation, $F(1,42) = 8.62$, $p = .00$. Early-maturing females scored lower on the cohesive scale (M=43.25, SD=13.82) than on-time/late-maturing females (M=53.44, SD=8.85).

Participants who reported early menstruation and were raised in one-parent households scored the lowest on the cohesion subscale (M=39.60, SD=11.17). Females who report on-time/late onset of menstruation and were raised in two-parent households scored the highest on the cohesion subscale (M=54.43, SD=8.68). Early-maturing females who were raised in two-parent households had lower scores on cohesion (M=45.86, SD=15.75) than on-time/late-maturing females raised in one-parent households (M=51.85, SD=9.24).

The results of the 2 X 2 ANOVA suggest that early onset of menstruation influenced participants perception of cohesion within their family structure. Females who reach puberty early and were raised in one-parent households, particularly with an absent father, reported lower levels of cohesiveness within their families compared to all the groups. Females who reached puberty on-time/late and were raised with both parents in the household reported the highest level of cohesiveness among the groups. These findings demonstrate the effect of early menstruation and family environment on the perception of familial cohesiveness.

CHAPTER IV

DISCUSSION

Summary of Results

This study investigated behaviors and problems within the early maturing female

population, with particular emphasis on females who were raised in single-parent

households. This study focused primarily on father absence as a risk factor for depression

as well as other problem behaviors such as substance use and risky behavior (i.e.,

aggression, bullying). Protective factors for depression consisted of a two-parent family

structure, feeling connected to family and friends, and self-esteem. It was hypothesized

that early-maturing females who were raised in a one-parent household would

demonstrate higher levels of depression, substance use, and risky behaviors. On-time late

maturing females who were raised in two-parent households would have lower levels of

depression and other problem behaviors. The preliminary protocol for this study called

for four separate maturation groups of females based on the age of onset of menstruation:

under 10 years of age, 10-11 years of age, 12-13 years of age, and over 14 years of age.

Because of uneven distribution of participants in each category, the participants were

collapsed into two groups: early (under 12 years of age for onset of menstruation) and

On-time/Late Maturation (13 and older). Of the total 46 participants, 12 reported early

maturation. The remaining 34 participants reported on-time/late maturation. The average

age of onset was between 12-13 years old.

Results from this study showed that early maturing females experienced more depressive symptoms in early adulthood than on-time/late maturing females. Participants who reported earlier onset of menstruation demonstrated higher levels of depressive symptoms than those participants who reported on-time/late onset of menstruation. Early maturing females scored within the mild range 14-19 for depression on the BDI-II and on-time/late maturing females scored within the minimal range 0-13. These finding are consistent with current literature that states that females who reach puberty earlier than their peers experience more symptoms of depression in early adulthood (Angold et al., 1998; Graber, Brooks-Gunn, & Warren, 1995; Patton et al., 1996).

The current study found that father absence did not differentially affect levels of depression in either participant group. Although early maturing females who were raised in one-parent households demonstrated higher levels of depressive symptoms than early maturing females who were raised in two-parent households there was not a significant interaction between father absence, onset of maturation, and BDI-II score.

The study did find a statistically significant interaction between father absence, onset of menstruation, and the Cohesion subscale score on the Family Environment Scale. Participants who reported early menstruation and were raised in one-parent households scored the lowest on the cohesion subscale. Females who reported on-time/late onset of menstruation and were raised in two-parent households scored the highest on the cohesion subscale. These finding support Moffitt et al.'s (1992) concept that family discord resulting from divorce for instance is uncorrelated with father absence. As a concept, family discord is an individual's perception and interpretation of their family environment. Father absence is merely the physical state, the actual presence

30

or absence of the father within the household. Cohesion, the participants' sense of support and togetherness within the family unit, seems to have more of an effect on the development of depressive symptoms than father absence.

Early maturation had no effect on risky behaviors, such as substance abuse, in this study. Both early and on-time/late onset participant groups scores fell within the normal range for substance use for that age category.

Implications

Females continue to be diagnosed with Major Depressive Disorder more frequently than males. Early maturing females are at even greater risk for developing depressive symptoms in adolescence and early adulthood. Early maturing females are in need of early interventions to cope with depressive symptoms that may emerge during puberty and that can persist into adulthood. A strong sense of family cohesion can play a role in the prevention of early depressive symptoms. Cognitive-behavioral family therapy for depression may prove to be beneficial for this population. Cognitive strategies could be helpful in exploring perceptions of family cohesiveness and the interpretation of family roles, values, and ideals. The inclusion of the family in therapy may serve to strengthen the bond between family members and provide a safe, supportive environment in session that can provide a model for interactions at home.

Early maturing females who may be exhibiting early signs of depression would also benefit from CBT family therapy when exploring and processing the loss of a father, whether it is through death or divorce. The presence of the remaining family members can bolster the protective factor of family cohesion. Early maturing females who are raised in single-mother homes may be at a greater risk for depression as a result of

31

perceived family discord rather than father absence. This would be an important factor to address in therapy, with the support of the current parent/caregiver.

As discussed earlier, observation has shown that early maturing females tend to associate themselves with older females and engage in more mature lifestyles involving substance use and sexual behavior (Stattin & Magnusson, 1990). Early maturing females tend to identify with older girls because they "match" in physical appearance. It was also reported that later maturing females were more likely to interact with same-age peers and younger females and showed a delay in behaviors such as substance use and sexual behaviors (Stattin & Magnusson, 1990). Although this particular study did not focus on substance use and sexual behavior, it's important to note the effects of family cohesion and peer pressure on these behaviors, especially in early-maturing females. Adolescent females who do not feel that they "fit in" with their family may be easily influenced by peers who seem to be similar and appear to be more accepting and welcoming. This study demonstrates the influence of cohesion on depression. It is likely that without a sense of "belonging" within the family, there may be a search for an alternative support group to compensate for the lack of unity within the home. It is important to strengthen the relationship between family members in order to model healthy interpersonal relationships and teach appropriate behaviors in order to prevent the development of other risky behaviors.

Another observation reported by Stattin and Magnusson (1990) noted the difference in parental monitoring in early maturing females. It was suggested that because of their mature physical appearance, early maturing females were given more independence by their parents, potentially increasing their opportunities to engage in risk

taking behavior. Again, this illustrates the effect of cohesion on adolescent behavior. Parental monitoring can be increasingly difficult in single-parent homes, warranting an increase in communication and the use consistent discipline in one-parent households. Parenting skills for the caregiver can be beneficial for both the adolescent and caregiver. It would be important for the guardian to continue to monitor their adolescent not only to protect them from potential risks such as substance use but also to be able to identify behavior significant enough to warrant clinical attention including depressive symptoms.

Limitations

The study had a small sample size (n=46). Participants were unevenly distributed between groups. The major limitation of this study was the measure of father absence. Father absence was categorical and operationally defined as an absence of 2 years from the household. The circumstances surrounding father absence were not addressed in this study. Participants reported divorce, death, and estrangement as reasons for absence. Some participants had never met their fathers. Other participants reported that their father's died early on in their childhood. Some father's left during the participants' childhood, others left during their adolescence.

This study also dealt only with biological father absence. Most participants lived primarily with their mothers after divorces, but later on lived with stepfathers. This study did not consider the presence of a stepfather as a father present household. The study attempted to examine the participants' view of father absence by assessing family cohesiveness. This rating allowed participants to describe how close they currently felt to their family members. Because the current nuclear family looks so different from the typical mother, father, and child stereotype, it is difficult to assess the impact of

biological father absence on family dynamics. Also, perceived father absence may involve a father who is cold, distant, and uninvolved. Therefore, a father may physically be present within the house but may not be engaged in the family and could be perceived as an absent father. From the results of this study, it appears that cohesiveness and the perception of a supportive family unit has more of an effect on depressive symptoms than the absence or presence of the biological father within the household.

Conclusion

This study supports the concept that early maturing females experience more depressive symptoms in adolescence and early adulthood than on-time and late maturing females. These findings are consistent with current literature. The study attempted to examine the role of father absence on depression specifically in early maturing females. The study suggests that family cohesion rather than father absence has a greater impact on the development of depressive symptoms in early maturing females. The use of CBT-based family therapy for the treatment of depression is recommended for the treatment of early-maturing females who are at risk for developing depressive symptoms in adolescence. Further research regarding the effect of perceived familial cohesion on depression and substance use is also recommended.

CHAPTER V

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APPENDIX A

Demographic Questionnaire

I. Age: _____

II. Age at onset of menstruation:

[ ] Under 10 yrs. of age

[ ] 10-11 years old

[ ] 12-13 years old

[ ] Over 14 yrs. of age

III. Race (optional):

[ ] Caucasian/European American

[ ] African-American

[ ] Hispanic/Latino

[ ] Asian/Pacific Islander

[ ] Native American

[ ] Other _____

IV. Family Structure:

Please list all of the primary caregivers living within your household during the ages of 0-18 yrs. If either parent was absent during your childhood, please indicate at what age the parent left and the duration of his/her absence.

Example 1: My mother and father took care of me until I was 8 years old. They got a divorce and my father moved out. He has been out of the house ever since.

Example 2: I was raised by my mother and my grandmother. My father left before I was born.

Example 3: I was raised by both my mother and my father who I currently live with today.