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ORIGINAL PAPER

Adolescent Development as a Determinant of Family Cohesion: A Longitudinal Analysis of Adolescents in the Mobile Youth Survey

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Abstract Previous research has demonstrated the effect of family cohesion on adolescent outcomes. However, little attention has been given to the effect of adolescence on the family environment. Family systems theory suggests that as adolescents develop, their development will impact the family environment. The current study examined the impact of adolescent development on family cohesion. Specifically, 4 years of data from the Mobile Youth Survey, a study of adolescents living in low-income neighborhoods in Mobile, Alabama, were analyzed. Survey participants were between the ages 13 and 16 and 97 % of them were Black American. Adolescent development was measured using three dimensions—identity style, self-worth, and hopelessness. Family cohesion was measured along two dimensions: maternal and paternal warmth. Adolescent gender was used as a covariate. The longitudinal models revealed that parents responded differently to identity styles and to levels of self-worth depending upon the adolescent's gender. Our study provides evidence that family cohesion, a key predictor of adolescent behaviors, changes in response to adolescent development.

Keywords Family systems theory · Adolescent development · Family cohesion · Identity style · Self-worth

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Introduction

Described as feelings of closeness among family members (Olson et al. 1983), family cohesion is an important predictor of adolescent development. Early research demonstrated that both little to no family cohesion and excessive family cohesion were linked to poor developmental outcomes in adolescence (Olson et al. 1979). More recent research has supported these early conclusions with level of family cohesion linked to a variety of positive and negative adolescent outcomes, such as academic achievement (Chawla 2012) and problem behaviors (Church et al. 2009). For families from poor communities, family cohesion has been linked to reduced exposure to violence during adolescence (Gorman-Smith et al. 2004; Sheidow et al. 2001), and reduced delinquent behaviors (Hoffman 2002). These studies support the role of family cohesion in adolescent development, but the impact of adolescent development on the family is virtually unknown.

According to family systems theory, family cohesion could change in response to adolescent development. This aspect of family systems theory, however, has not been tested. In the current study, longitudinal data from the Mobile Youth Survey (Bolland et al. 2013) were used to explore the effects of adolescent development on family cohesion in a sample of adolescent males and females living in extreme poverty. In addition to family cohesion, other factors have emerged that are important to understanding

how adolescence affects the family. For example, hopelessness is associated with chronic stress among adolescents (Landis et al. 2007). Similarly, low self-worth during adolescence has been found to increase the likelihood of negative outcomes, such as poverty, in adulthood (Trzeniewski et al. 2006). Identity style—defined as "social-cognitive approaches to personal decision making and problem solving" (Berzonsky 1989, p. 270)—is associated with specific behavioral patterns in adolescence and can vary by gender (Phillips and Pittman 2007).

Adolescent development is a complex process involving a number of factors, including the social, emotional, and cognitive aspects of the transition from childhood to adulthood. The importance of adolescent development and the parent–child relationship cannot be overstated (Steinberg and Morris 2001). Conclusions from research on parent–child conflict demonstrate that, beginning in early adolescence, parent–child conflict results in more bickering and squabbling among parents and teenagers, resulting in a decline in parent–child closeness (Arnett 1999; Laursen and Collins 2009). Although there are multiple theories explaining why this occurs (see Laursen 1995; Smetana et al. 1991), there is still no clear consensus in the literature as it relates to this phenomenon. It is apparent that adolescent development impacts the adolescent-parent relationship leading to conflict. However, the elements of adolescent development that are associated with family relationships, such as family conflict have not been delineated.

Identity development, described as the development of one's life story (McAdams 2001), is one of the major tasks of adolescence. During identity development, adolescents make sense of their past, present, and probable future by constructing meaning out of their experiences (McLean 2005). Erikson (1968) first introduced the "identity crisis" as a concept to describe adolescent self-exploration. Since Erickson's introduction, research on adolescent identity has flourished and has supported much of what he proposed (Steinberg and Morris 2001). Though the entirety of the identity is not formed during adolescence, adolescent experiences have a substantial influence on the development of the self (Marcia 1980). Thus adolescence is a critical phase for the development of identity, with potential lifelong impacts.

Berzonsky (1989, 1990) proposed that adolescents explore identity through one of three identity styles: the informational style, the normative style, and the diffuse-avoidant style. The informational style is associated with a greater desire to explore and "involves actively seeking out, processing, and evaluating self-relevant information" (Phillips and Pittman 2007, p. 1022). The normative style is characterized by concern with the standards and expectations of other important individuals, such as parents or peers. This may also entail resisting changes and those things which challenge currently held beliefs and values. Finally, the diffuse-avoidant style typically gives little attention to the future or to long-term consequences, rather these individuals make decisions based upon emotions.

Berzonsky's (1989, 1990) three identity styles are associated with adolescent psychological well-being. One of the most consistent findings is problem behaviors among those with diffuse-avoidant identities. For example, those with diffuse-avoidant identities engaged in problematic drinking behaviors (Jones et al. 1992; White et al. 1998), suffered from symptoms of depression (Nurmi et al. 1997), exhibited hyperactive (Adams et al. 2001) and delinquent behaviors (Phillips and Pittman 2007). Those with normative identity styles have been shown to have difficulties with psychological adjustment, preferring denial and distortion as psychological defense mechanisms (Berzonsky and Kinney 2008), and holding a prejudicial orientation towards psychological adjustment (Smits et al. 2010). Informational identities were found to be more open to change and had a greater focus on self-transcendence (Berzonsy et al. 2011). Although there has been substantial research about the behaviors associated with the three distinct identity styles identified by Bersonsky (1989, 1990), there is little empirical research examining the impact of identity style on family outcomes.

Gender may also play some role in the development and expression of identity, though the nature of the role is not clear. Berzonsky (1993) stated unequivocally that there were no gender differences among identity styles. However, in reviewing studies using Marcia's (1966) seminal work on identity, sexuality, and family roles were found to be of greater importance to females than males (Kroger 1997). Specific examination of Berzonsky's three identity styles reveals that males are more likely to exhibit a diffuse/avoidant identity than females (Phillips and Pittman 2007). Therefore, it appears that gender may have a role in the expression of identity style, but the nature and the importance of the role remains unclear.

Adolescents tend to view themselves in terms of personal beliefs and standards (Harter 1998, 2006) and the construction of identity is further influenced by psychosocial factors. Self-esteem, which is generally stable during adolescence (Trzeniewski et al. 2003) has been shown to contribute to identity development (Vignoles et al. 2006). Also, self-esteem during adolescence is generally lower than during childhood and adulthood, making lifespan trajectories of self-esteem appear u-shaped, with adolescence being the low-point (Robins and Trzeniewski 2005). In addition, self-esteem has importance beyond identity; low self-esteem during adolescence is associated with poor health, criminality during adulthood, and poor economic outcomes (Trzeniewski et al. 2006). This makes self-

esteem an important consideration since self-esteem reaches a life-time low during adolescence. Low self-esteem may exacerbate problems due to identity style and may also contribute to other social problems in adulthood.

A sense of hope is a characteristic of adolescent psychological wellbeing. Lack of self-esteem and hopelessness has been linked to suicidal ideation (McGee et al. 2001) and depression (Abela and Payne 2003). Among urban adolescents, chronic stressors, such as poverty, are associated with hopelessness (Landis et al. 2007). However, those with stronger family cohesion in early adolescence experience less hopelessness in later adolescence than those with weaker family connections (Stoddard et al. 2011). Despite the chronic stressors many adolescents experience, it may be possible to reduce hopelessness and the deleterious effects it has on adolescent psychosocial wellbeing.

As adolescence begins, parents are largely responsible for the health and well-being of their children. Slowly, adolescent youth become responsible for their own health and well-being as they transition to adulthood (Christie and Viner 2005). Physical, emotional, social, cognitive, and moral changes during adolescence are guided by family and society, and normative expectations that define "normal" outcomes are established (Hazen et al. 2008). Although most adolescents experience little tension during the transition to young adulthood, others must endure negative stimuli that adversely impact development (Gutgesell and Payne 2004) and family environment (Church et al. 2012).

Family cohesion has been described as a feeling of closeness among the members of a family (Olson et al. 1983). Cohesive families are less likely to have children with behavior problems (Lucia and Breslau 2006) and greater family conflict has been attributed to lower levels of family cohesion and higher levels of anxiety and stress in adolescents (Johnson et al. 2001). Excessive cohesion, known as enmeshment, and too little cohesion, known as disengagement, also lead to maladaptive outcomes for family members (Olson 2011; Olson et al. 1979). For example, children from enmeshed families have difficulty with emotional adjustment in early childhood, leading to more internalizing symptoms over time as compared to children from cohesive families (Sturge-Apple et al. 2010). Similarly, children from disengaged families exhibited greater signs of insecurity and displayed more externalizing symptoms than children from cohesive families (Davis et al. 2004). Cohesion among family members is important, but that cohesiveness need not be excessive or lacking. Children from families where there is too much or too little cohesion face lifelong difficulties from being over-involved with members of their family or from too little involvement.

Families that provide a supportive, encouraging environment reduce the likelihood that their children will become engaged in antisocial behaviors such as truancy and violence (Dekovic et al. 2003). During the adolescent's development, the family can be a protective factor, moderating risky adolescent behaviors (Kingon and O'Sullivan 2001; Stoltz et al. 2013). Protection provided by family cohesion may not be maintained throughout adolescence since family cohesion levels decrease as adolescents develop (Baer 2002), however, decreased parental support is associated with an increase in depressive symptoms in early adolescence (Newman et al. 2007) and a decrease in alcohol use among adolescent males (Bray et al. 2001) and young adults (Stevens-Watkins and Rostosky 2010). Further, family cohesion has been found to be associated with pro-social behaviors such as more positive attitudes toward school (Fosco et al. 2012; Gorman-Smith et al. 2000) and healthy psychological adjustment (Gabalda et al. 2010). The research on family cohesion notwithstanding, questions remain regarding how changes in development across adolescence affect family cohesion.

Research into the effects of adolescent developmental outcomes on family cohesion has been minimal, but findings have suggested it is a promising area for additional research. Adolescents have been shown to influence family purchasing decisions (Wang et al. 2007) and the possibility of a reciprocal relationship has been suggested (Bao et al. 2007). A similar reciprocal relationship may exist between family cohesion and adolescent development. However, exactly how adolescent development impacts family cohesion is not well understood. Family systems theory posits that families are composed of elements (family members) which are in interdependent relationships with other elements (Bowen 1986). Thus, family members rely upon one-another for social and emotional needs. However, individuals change as a result of natural development. Therefore, as youth transition through adolescence, other family members are apt to respond to those changes.

To fill a gap in the literature, the current study focuses on one research question: to what extent does adolescent development (hopelessness, self-worth, and identity style) affect family cohesion (maternal and paternal warmth) over time? Because gender differences have been demonstrated in several adolescent behaviors and outcomes, gender is included as a potential moderator.

Method

Participants

Adolescents in the current study were all participants in the Mobile Youth Survey (MYS; Bolland et al. 2013). The MYS

is a 14-year longitudinal study of adolescents living in low-income neighborhoods in Mobile, Alabama and neighboring communities. Data from adolescents were collected annually between the years of 1998 and 2011. The identity style measure used in the current study was added to the survey in 2006; hence, data collected prior to this year were not included in the analysis. Additionally, data for the year 2011 were not available for analysis at the time the current study was conducted. Therefore, the analytic sample for the current study consists of adolescents who participated in the MYS between the years of 2006 and 2010.

The age range of all adolescent participants in the MYS was between 9 and 19 years of age. Several criteria informed the selection of our final study sample. Due to the limited range of the sample (2006–2010), full panels of observations were not available across all ages, as that would require 11 years of data. Our sample was limited to 5 years of data. Full panels of observations are required for longitudinal data analysis. By including all data points for participants between the ages of 13 and 16 years, full panels of observations were created. Additionally, longitudinal models can be better estimated when adolescents have two or more data points (e.g., data collected at a minimum of two ages). Adolescents with data points at only one age were removed prior to analysis. The resulting sample consisted of 1,070 adolescents between the ages of 13 and 16 who had two or more data points between the years of 2006–2010.

The study participants self-identified their gender category with 46 % (n = 495) choosing "male" and 54 % (n = 575) choosing "female." The sample consists of primarily Black Americans, at 97 % (n = 1,034) and 3 % (n = 36) Latino/a. The median household income in the targeted neighborhoods (based on the 1990 census) was approximately $5,000, and 73 % of the residents in these neighborhoods lived below the poverty level. All adolescents qualified for free or reduced price school lunches at some point during their participation.

Procedures

The MYS data set was collected over 14 years, utilizing a multiple-cohort design. New cohorts were added each calendar year. The following is a brief description of the methodology of the MYS (see Bolland et al. 2013) for full details regarding the sampling procedure, survey instruments, and missing data). Low-income neighborhoods within Mobile, Alabama and its neighboring communities were targeted for the MYS. Through the use of flyers, handouts at local businesses, and door-to-door contact, as many adolescents as possible were contacted. Adolescents within 3 months of their 10th and 18th birthdays could participate in the MYS after receiving both parental consent and adolescent assent. The questionnaire was read aloud to groups of between 20 and 30 adolescents, with a small number receiving individual administrations when having difficulty completing the survey with the group. The survey was completed in approximately 1 h. Compensation of $15 was given to participants for each year of their participation. Through the use of school-system records, the sample was found to be representative of the entire population of adolescents living within these low-income neighborhoods (Bolland 2012).

Measures

Family Cohesion

The MYS does not include a published family cohesion scale, but it does have measures of measure maternal warmth and paternal warmth. These measures, which have been shown to be dimensions of family cohesion (Olson et al. 1983) have been used in combination as measures of family cohesion (Church et al. 2012). The current study used a measure of maternal warmth and paternal warmth to assess for family cohesion.

Maternal Warmth Maternal warmth was measured by a six item maternal warmth scale created by Lamborn et al. (1991). Rather than limiting the scale to a biological mother, the adolescents were asked to identify the person they perceived as the mother figure in their life. They were then asked to refer to that maternal figure as they responded to several items about that person. A sample item was, "She usually keeps pushing me to do my best in whatever I do." Responses were dichotomous (agree or disagree). Responses to the six items were summed, resulting in a range between 0 and 6 points, with a Cronbach's alpha of $\alpha = .80$.

Paternal Warmth Paternal warmth was measured by a six item paternal warmth scale created by Lamborn et al. (1991). This scale was also not limited to a biological father. Adolescents identified the individual they thought to be most like a father in their life and questions were asked pertaining to that individual. Items were almost identical to those of the maternal warmth scale, with a sample item, "He usually keeps pushing me to do my best in whatever I do." The dichotomous responses of agree and disagree were summed to create a scale ranging from 0 to 6 points. The Cronbach's alpha was found to be $\alpha = .82$.

Adolescent Development

Hopelessness

Hopelessness was measured with a six-item inventory developed from the *Hopelessness Scale for Children*

(Kazdin et al. 1986). A sample item from the scale is, "All I see ahead of me are bad things, not good things." Dichotomous responses were recorded for each item, with the final scale created by summing all of the responses for the six items. The scale ranged from 0 to 6 points, with a Cronbach's alpha of $\alpha = .84$ for the sample.

Self-worth

Self-worth was measured in the MYS using a 9-item inventory developed from Harter's (1982) *Perceived Competence Scale for Children*. A sample item is, "Select one of the following: I usually make good decisions or I usually don't make good decisions." Although typically Likert-type response alternatives are provided, the MYS uses dichotomous alternatives to reduce response burden. The final self-worth measure was created by summing the individual items, with a scale range between 0 and 9 points. The dichotomized scale had a slightly lower reliability than is typically found for the scale, with a Cronbach's alpha of $\alpha = .67$.

Identity Style

Identity style of the adolescents was measured by 15 items modeled from the revised Identity Style Inventory (Berzonsky 1992). Berzonsky's inventory posits three subscales of identity styles: informational, normative and diffuse-avoidant. Each subscale consists of five items, each with a dichotomous response of "agree" or "disagree". A sample item for the informational identity style is, "When I have a problem, I do a lot of thinking to understand it." Items were summed to create a scale range of 0–5: Cronbach's alpha was $\alpha = .64$. A sample item for the normative identity style is, "I was taught to know the kinds of goals I should set for myself." Items were summed to create a scale range of 0–5 points, with a Chornbach's alpha calculated to be $\alpha = .64$. A sample item for the diffuse-avoidant identity style is, "When I have to make a decision, I wait as long as I can to see what will happen." The summative scale ranged from 0 to 5 points, with a reliability of $\alpha = .61$ for the five items.

Age and Gender Age was measured in years as the actual age of the adolescent. Ages ranged from 13 to 16 years old, with the variable centered at 13 to aid in interpretation of parameter estimates. Gender was dichotomous, with males coded as 0 in the analysis.

Data Analysis

Mean differences of the independent variables (i.e. hopelessness, self-worth, and identity style) for the two genders were compared using a MANOVA, with follow-up ANOVAs for the individual variables. Four linear growth models were estimated. The dependent variable in the first two models is maternal warmth, while the dependent variable of the last two models is paternal warmth. The first and third models were analyzed using an unconditional growth model. This model measures the change across time of both maternal warmth and paternal warmth, analyzed separately, of the adolescent without conditioning on another variable. The unconditional growth model uses the following equations, using Singer and Willett (2003) notation, which looks at change across time:

$$Level\,1 : Y_{ij} = \pi_{0i} + \pi_{1i} * age + \varepsilon_{ij}$$

$$Level\,2 : \pi_{0i} = \gamma_{00} + \zeta_{0i}$$

$$\pi_{1i} = \gamma_{10} + \zeta_{1i}$$

The second and fourth growth models estimated add both time-varying and time-invariant covariates to the Level 1 and Level 2 portions of the two unconditional growth models. The variables of hopelessness, self-worth, and the three identity style subscales were added to the Level 1 model. These variables were added as both intercepts (i.e. main effects) and slopes (i.e. interactions with age). Gender was added to all the Level 2 equations. Analyses were conducted using Proc Mixed with Full Information Maximum Likelihood in SAS 9.3 software (SAS Institute Inc., Cary, NC).

Results

Preliminary Data Analysis

Prior to analyzing the longitudinal models, mean differences between the two genders were compared for the independent variables of hopelessness, self-worth, informational identity style, normative identity style, and diffuse-avoidant identity style. A significant MANOVA indicates there were gender differences for at least one of the variables, *Wilks' Lambda* = .96, $F(5, 2{,}502) = 18.16$, $p < .001$. Means for both genders on all five variables can be found in Table 1. Overall, males reported significantly greater levels of hopelessness, $F(1, 2{,}506) = 30.87$, $p < .001$. Females reported significantly higher scores on the informational identity style scale, $F(1, 2{,}506) = 48.29$, $p < .001$, as well as significantly higher scores on the normative identity style scale, $F(1, 2{,}506) = 15.00$, $p < .001$. Males and females did not differ on their levels of self-worth, $F(1, 2{,}506) = 0.02$, $p = .88$, nor did they differ on their scores on the diffuse-avoidant identity style scale, $F(1, 2{,}506) = 0.49$, $p = .48$.

Table 1 Mean adolescent development by gender

	Hopelessness M (SD)	Self-worth M (SD)	Informational identity style M (SD)	Normative identity style M (SD)	Diffuse-avoidant identity style M (SD)
Males	1.37 (1.86)	6.62 (1.88)	4.06 (1.31)	4.14 (1.26)	3.70 (1.38)
Females	0.98 (1.66)	6.61 (1.99)	4.38 (0.98)	4.31 (1.01)	3.66 (1.36)
Overall	1.16 (1.77)	6.62 (1.94)	4.23 (1.15)	4.23 (1.13)	3.68 (1.37)

Table 2 Linear growth model of maternal warmth (family cohesion) of the adolescent

Parameter	Unconditional growth model		Full model	
	Estimate	SE	Estimate	SE
Intercept	5.352**	0.041	3.953**	0.179
Self-worth			0.067**	0.012
Informational identity style			0.091**	0.024
Normative identity style			0.136**	0.041
Normative identity style*gender			0.086*	0.039
Gender			−0.370*	0.172
Age	0.026	0.020	0.197*	0.081
Age*normative identity style			−0.041*	0.018
BIC	7,599.6		7,486.8	

* $p < .05$; ** $p < .001$

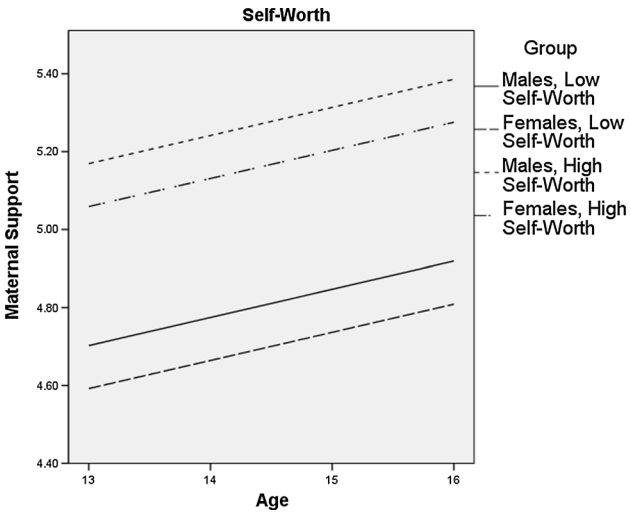

Fig. 1 Trajectories of maternal warmth (family cohesion) over time based on self-worth

Maternal Warmth (Family Cohesion)—Unconditional Growth Model

An unconditional growth model was estimated for the change in maternal warmth between the ages of 13 and 16. Model estimates are shown in Table 2. Overall, maternal warmth does not significantly change over time, $\gamma = 0.03$, $t(1,437) = 1.26$, $p = .21$.

Maternal Warmth (Family Cohesion)—Adolescent Development and Gender

Change in maternal warmth over time was modeled using hopelessness, self-worth, informational identity style, normative identity style and diffuse-avoidant identity style as independent time-varying predictors. Gender effects were also included. Non-significant parameters were removed from the model, with the final model estimates displayed in Table 2. The full model was a significant improvement over the unconditional growth model, $\chi^2(6) = 112.8$, $p < .001$. In the model, we find that females had significantly lower levels of maternal warmth at age 13 as compared to males, $\gamma = -0.37$, $t\ (1,431) = 1.26$, $p = .21$. This gender difference was consistent across time.

Adolescents of both genders with higher levels of self-worth had higher maternal warmth at age 13, $\gamma = 0.07$, $t\ (1,431) = 5.68$, $p < .001$. The effect of self-worth was also consistent across time. A plot of the trajectories of maternal warmth for both genders based on self-worth is shown in Fig. 1. Males had consistently higher maternal warmth than females and those adolescents with higher self-worth had greater maternal warmth. The trajectories had identical slopes between the ages of 13 and 16.

Both male and females adolescents with higher informational identity style had higher maternal warmth at age 13, $\gamma = 0.09$, $t\ (1,431) = 3.75$, $p < .001$. This effect was consistent between the ages of 13 and 16. A plot of the trajectories of the relationship of informational identity style on maternal warmth is shown in Fig. 2. Higher informational identity style for both genders had higher maternal warmth overall, with males having more maternal warmth overall. Identical slopes were observed for males and females.

For both genders, an increase in normative identity style resulted in higher maternal warmth at age 13. However, females had a significantly greater positive relationship

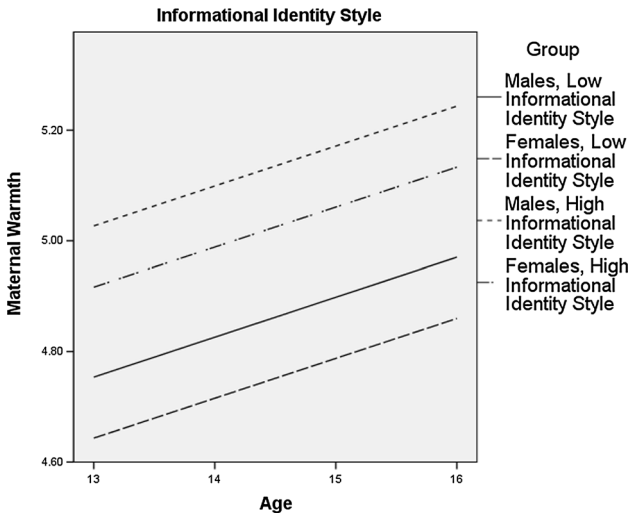

Fig. 2 Trajectories of maternal warmth (family cohesion) over time based informational identity style

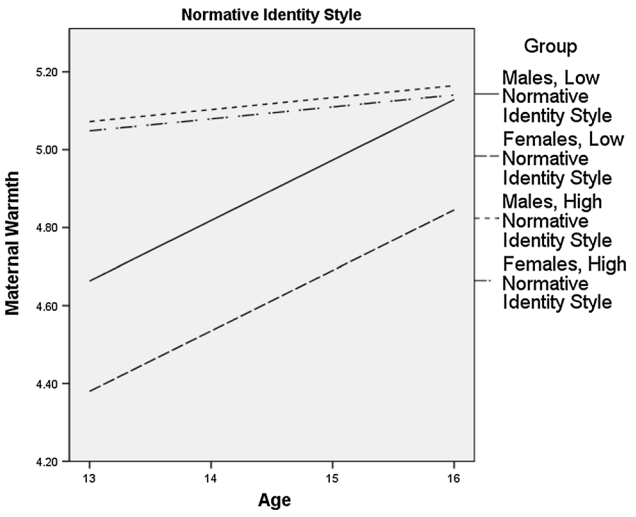

Fig. 3 Trajectories of maternal warmth (family cohesion) over time based normative identity style

between maternal warmth and normative identity style at age 13, $\gamma = 0.09, t\,(1{,}431) = 2.24, p = .03$, as compared to the males, $\gamma = 0.14, t\,(1{,}431) = 3.29, p = .001$. Increases in the normative identity style of females resulted in significant increases in maternal warmth at age 13 when compared to males. Normative identity style changes over time were identical for both genders. Over time, those with low normative identity style saw a significant increase in maternal warmth over time, $\gamma = 0.20$, $t\ (1{,}431) = 2.43$, $p = .02$. However, those with high normative identity style had relatively stable maternal warmth over time, $\gamma = -0.04$, $t\,(1{,}431) = 2.27, p = .02$. A plot of the model trajectories of maternal warmth based on normative identity style are shown in Fig. 3. Both genders with high normative identity style had high levels of maternal warmth, with only very slight increases over time. However, those with low normative identity style had significantly lower maternal warmth at age 13. This group did see a significant increase in maternal warmth between the ages of 13 and 16.

Paternal Warmth (Family Cohesion)—Unconditional Growth Model

The unconditional growth model for the change in paternal warmth between the ages of 13 and 16 was estimated. Model estimates are shown in Table 3. Paternal warmth does not significantly change over time, $\gamma = 0.05$, $t(1{,}437) = 1.82$, $p = .07$.

Paternal Warmth (Family Cohesion)—Adolescent Development and Gender

Change in paternal warmth over time was modeled using hopelessness, self-worth, informational identity style, normative identity style and diffuse-avoidant identity style as time-varying independent predictors, with gender effects included in the model. Full model estimates are shown in Table 3, with non-significant parameter estimates removed. The full model had a significant improvement in fit over the unconditional growth model, $\chi^2(8) = 58.1$, $p < .001$.

Table 3 Linear growth model of paternal warmth (family cohesion) of the adolescent

Parameter	Unconditional growth model		Full model	
	Estimate	SE	Estimate	SE
Intercept	5.034**	0.058	3.665**	0.161
Self-worth			0.081**	0.024
Informational identity style			0.118*	0.046
Informational identity style*gender			−0.079*	0.026
Diffuse-avoidant identity style			0.142**	0.032
Age	0.053	0.029		
Age*self-worth			0.036*	0.014
Age*self-worth*gender			−0.062**	0.015
Age*informational identity style			−0.070*	0.023
Age*informational identity style*gender			0.186**	0.031
Age*diffuse-avoidant identity style*gender			−0.059*	0.022
BIC	9,360.3		9,302.2	

* $p < .05$; ** $p < .001$

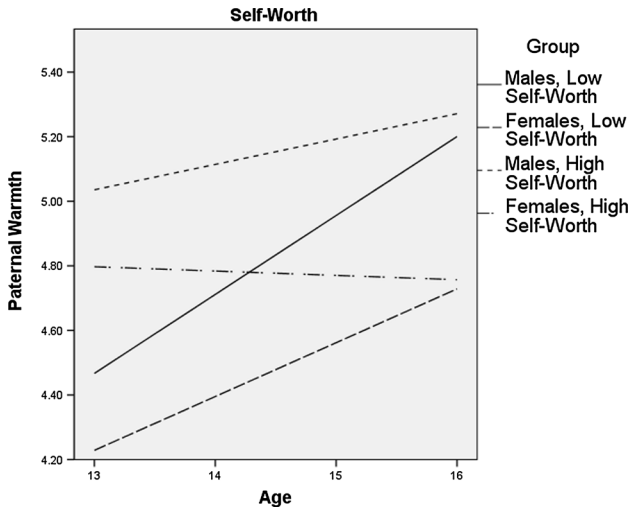

Fig. 4 Trajectories of paternal warmth (family cohesion) over time based on self-worth

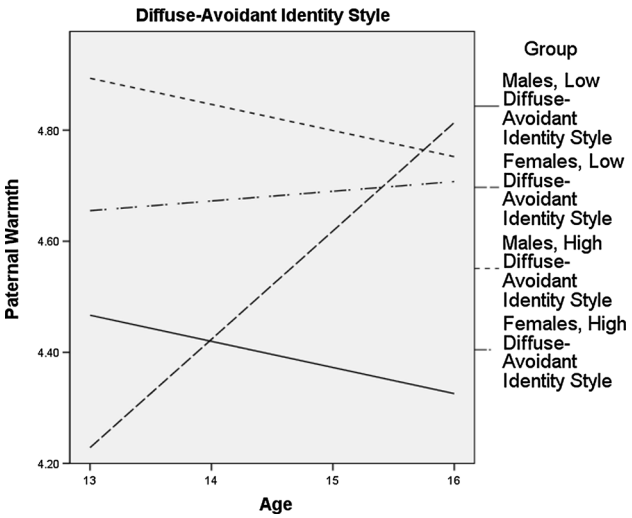

Fig. 5 Trajectories of paternal warmth (family cohesion) over time based on diffuse-avoidant identity style

Adolescents with higher self-worth had higher levels of paternal warmth at age 13, $\gamma = 0.08$, t (1,429) = 3.38, $p < .001$. This effect was identical for both genders. However, as the two genders aged, trajectories were significantly different. Males saw a positive benefit from self-worth over time, with a significant increase in paternal warmth as their self-worth increased, $\gamma = 0.04$, t (1,429) = 2.64, $p = .008$. Females, however, showed a decrease in paternal warmth over time in conjunction with higher self-worth, $\gamma = -0.06$, t (1,429) = −4.21, $p < .001$.

Trajectories of paternal warmth based on self-worth are shown in Fig. 4. Females with low self-worth had low paternal warmth at age 13, but this warmth increased over time. Females with high self-worth had higher paternal warmth at age 13, but this warmth decreased over time. Females end up with approximately identical paternal warmth at the age of 16 independent of their self-worth. Males with low self-worth had lower paternal warmth at age 13, but this warmth increased over time. Males with high self-worth had higher paternal warmth at age 13, but this warmth only slightly increased over time. Similar to the females, all males at age 16 had approximately the same level of paternal warmth, independent of their self-worth.

Adolescents of both genders with a higher diffuse-avoidant identity style had higher paternal warmth at age 13, $\gamma = 0.14$, t (1,429) = 4.41, $p < .001$. This effect was consistent over time for males, indicating stable trajectories over time of paternal warmth in relation to their diffuse-avoidant identity style. Females, however, exhibited significant differences in their paternal warmth trajectories over time. Females with higher diffuse-avoidant identity styles decreased in paternal warmth over time when they exhibited higher levels of diffuse-avoidant identity style, $\gamma = -0.06$, t (1,429) = −2.63, $p = .009$.

Plots of the trajectories of paternal warmth for both genders based on their level of diffuse-avoidant identity style are shown in Fig. 5. Males with low diffuse-avoidant identity style had higher paternal warmth at age 13, as compared to females with low diffuse-avoidant identity style. However, females showed a significant increase in paternal warmth over time, while the males decreased over time. Males with high diffuse-avoidant identity style had higher paternal warmth at age 13, as compared to females with high diffuse-avoidant identity style. Females had a slight increase, while males decreased over time. Both genders with high diffuse-avoidant identity style had approximately the same paternal warmth at age 16.

Females with low diffuse-avoidant identity style had higher paternal warmth at age 16 than females with high diffuse-avoidant identity style. Males with low diffuse-avoidant identity style had lower paternal warmth than males with high diffuse-avoidant identity style. Informational identity style has significantly different effects for both genders on its trajectories of paternal warmth. Males had a positive relationship between the informational identity style and paternal warmth at age 13, $\gamma = 0.12$, t (1,429) = 2.56, $p = .011$, with significant increases in paternal warmth as their informational identity style increased. As males aged, however, a higher informational identity style led to a decrease in paternal warmth, $\gamma = -0.07$, t (1,429) = −3.09, $p = .002$, with greater decreases for those with greater informational identity style. Females, however, saw only a slight increase in paternal warmth at age 13 when they had higher informational identity style scores, $\gamma = -0.08$, t (1,429) = −3.11, $p = .002$. As females aged, those with a higher informational identity style will saw a greater increase in their parental warmth over time as compared to those with

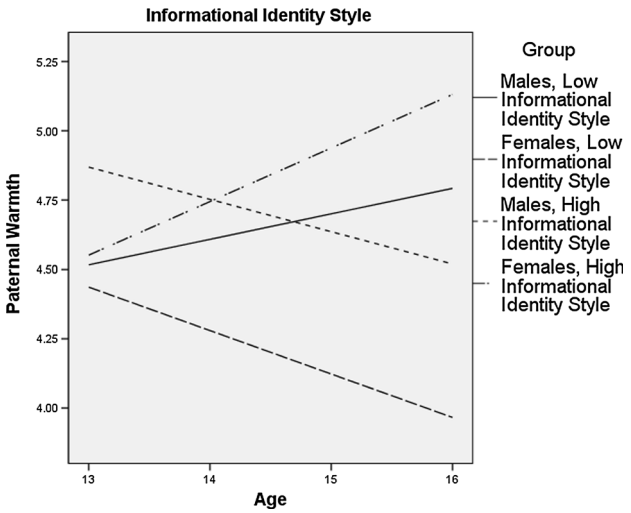

Fig. 6 Trajectories of paternal warmth (family cohesion) over time based on informational identity style

lower informational identity style, $\gamma = 0.19$, t (1,429) = 6.05, $p < .001$.

Figure 6 displays the trajectories for paternal warmth based on informational identity style. Males and females with low informational identity styles had approximately the same paternal warmth at age 13. However, these females had a decrease in paternal warmth over time, whereas the males increased in paternal warmth. Males with high informational identity styles had higher paternal warmth at age 13 as compared to females with high informational identity styles. However, these females increased in paternal warmth, whereas the males decreased in paternal warmth over time. At age 16, females with high informational identity styles had much higher paternal warmth at age 16 as compared to males.

Discussion

The current study examined the longitudinal effects of adolescent development on family cohesion in a sample of minority adolescents from highly impoverished communities in Mobile, Alabama. The purpose was to examine the extent to which adolescent development influenced family cohesion over time and the extent to which adolescent development trajectories associated with changes in family cohesion vary by gender. Four linear growth curve models were estimated: two with maternal warmth as the dependent variable and two with paternal warmth as the dependent variable.

Preliminary analyses using an unconditional growth curve revealed that paternal and maternal warmth did not significantly vary between ages 13 and 16. However, once gender, identity styles, and self-worth were introduced, significant changes were estimated at both age 13 and across time using linear growth models for maternal warmth and paternal warmth. Hopelessness was not a statistically significant parameter and so it was not included in the final model.

Among both males and females, high self-worth was associated with high levels of maternal warmth. However, high levels of self-worth among females led to lower levels of paternal warmth across time, whereas higher levels of self-worth in males led to greater levels of paternal warmth. This finding partially supports prior research that found mothers to be more supportive of adolescent self-esteem than fathers, yet the gendered parental responses found in the current study are not entirely consistent with prior study (Milevsky et al. 2007). Perhaps this is because there has been little research on how the family responds to adolescent development. Still, this finding sheds light on how the family responds to changes in self-worth among adolescents.

Family systems theory suggests that family members responding to changes in other members of the family may explain why family cohesion (maternal and paternal warmth) changes over time as adolescents' self-worth changes (Bowen 1986). However, this does not fully explain why paternal warmth decreases in response to higher levels of female self-worth and increases with higher levels of male self-worth. Symbolic interactionism has been offered as one explanation for the effects parents have on the development of self-esteem in adolescents (Burnett 1996; Openshaw et al. 1984) and it may also explain the effects developing self-worth has on family cohesion. The communication patterns and the interpretation of communications between adolescent females and their fathers are different from the communication between adolescent males and their fathers. It is possible that this difference has led to the effects seen in this study; further study is needed to explore this possibility.

Identity style is the difference in how individuals process information relevant to themselves as they negotiate identity issues (Berzonsky 1993). Individuals with an informational identity style are more apt to engage in information processing and tend to seek out and process new information. Normative identities focus on internalized conventions, norms, and expectations. Diffuse/avoidant identities use cues in the environment to dictate behaviors (Berzonsky 1989).

Among males and females, maternal warmth was high across time for those exhibiting informational identity styles. However, significant differences exist between males and females for paternal warmth. At age 13, greater informational identity was associated with higher paternal warmth for males. Among females at age 13, this increase is not as dramatic. As males with informational identities age, paternal warmth decreases, whereas paternal warmth

increases with age among females with higher informational identities. Paternal warmth is greater for younger males, and increases over time for females.

Among those with a strong informational identity, males perceive higher paternal warmth at an early age whereas females perceive paternal warmth at a later age. Since individuals with informational identities respond to identity issues in a deliberate manner (Berzonsky 2003), this may be a manifestation of parenting responses to those deliberate actions as youth develop. That is, males and females may be expressive about their identity issues at different points in their development, thus eliciting a paternal response at different points in time as well. However, this is not a complete explanation since maternal responses were consistent across time for both males and females. Further examination is necessary to illuminate the gendered response of paternal warmth to informational identity.

Increases in normative identity style were associated with significantly higher levels of maternal warmth among females. This suggests that mothers are reinforcing an identity style which is less open to new information that may challenge personal values and beliefs (Berzonsky 1993). This may also be a reflection of the transmission of family beliefs and cultural values passed from mother to daughter. The lack of a specific effect for adolescent males, and the exclusion of a paternal effect seem to confirm that this may be a family phenomenon, oriented toward expression of gender norms. However, further exploration of this result is needed to confirm this finding.

High diffuse/avoidant identity styles were associated with high paternal warmth at age 13 among males and females. However, as females aged, those with high diffuse/avoidant identities saw decreases in paternal warmth. The importance of this finding is underscored by previous research which found that those with diffuse/avoidant identities were more likely to have delinquent attitudes (Phillips and Pittman 2007). Although it is widely accepted that male adolescents are more likely to engage in delinquent behavior than females, our findings are somewhat contrary to this notion, since paternal warmth, one aspect of family cohesion, was greater among males. Previous research has shown that family cohesion reduces the likelihood of delinquent behavior (Church et al. 2012). It may be that fathers respond to potentially delinquent males in an attempt to divert their deviant intentions, while ignoring female behavior that may signal potential delinquency. This paradox cannot easily be explained or resolved and is deserving of further examination.

Strengths and Limitations

The current study has several strengths that are worth noting. First, this investigation is one of the first studies to explore the effects of adolescent development on family cohesion using a longitudinal methodology with five waves of data. This allowed for the examination of change over time, which has enhanced our understanding of the interaction between adolescent development and family cohesion. We are able to provide unique insight into the effects of adolescent behaviors on family cohesion as the cohort changes over time. Second, the population from which the sample is derived is unique in that the participants, predominantly Black American, live well below the poverty line in low-income housing areas. This gives greater insight into the experiences of youth living under these conditions, which affords researchers and clinicians alike an opportunity to develop interventions uniquely tailored to the circumstances of this population.

Some limitations of this study must be noted. The limited age range in our final sample (13–16) does not fully study adolescent development. Our results are limited to the longitudinal growth within the ages of the study and cannot predict in the ages outside of our study range. The reliability of the identity style subscale scores measure was lower than what is commonly accepted. The lower scores are most likely due to the dichotomized response of the items. This study comes from a demographically homogenous sample, so the findings may not be generalizable beyond its bounds. The sample was composed of primarily Black American youths (97 %). Although other ethnic groups were present in the sample, the small numbers did not allow for estimation of ethnic differences. Although this is a limitation with respect to generalizability, the homogeneity is also a strength in terms of the internal validity of the conclusions.

Implications

The results show that adolescent development has an impact upon family cohesion as predicted by family systems theory. Family systems theory posits that each member of the family responds to the other as changes in the individual occur (Bowen 1986). Therefore, as the adolescents develop, family cohesion must change in response. However, the gendered effects of these changes are complex. It is clear that mothers and fathers respond differently and inconsistently to the development of male and female adolescents. For example, fathers' response to females increasing feelings of self-worth could be described as indifference, though they are more responsive to males increasing feelings of self-worth. This can also be seen in how fathers respond to diffuse/avoidant identity styles—becoming more supportive of males over time and less supportive of females.

Low self-worth has been associated with depression (Abela and Payne 2003) and suicidal ideation (McGee

et al. 2001). Adolescents with high self-worth in the current study received more warmth than those with low self-worth. This parenting practice seems to ignore the support needed by those with lower self-worth, which is distressing because low self-worth can lead to problematic behaviors.

This study lends credibility to the view that identity style contributes to the psychological wellbeing of adolescents. Each identity type elicited a unique parental response that varied based upon the gender of the child and the parent. Identity style contributes to family cohesion and how the family responds to adolescent development. In cases where the style is informational, fathers respond to male and female children "as needed." Mothers respond favorably to daughters with normative identities, passing along family rules, and potentially traditional gender expectations. In cases where adolescents exhibit diffuse/avoidant identities, fathers seem to respond to males while ignoring the needs of female children exhibiting similar identities.

Parental warmth varied considerably by gender, identity style, and self-worth. Practitioners working with adolescents and families should be cognizant of these effects, especially since low self-worth and high diffuse/avoidant identity styles may lead to deleterious outcomes. Increasing parental warmth may be one mechanism practitioners can use to lessen problematic outcomes and strengthen family cohesion.

The effect of family cohesion on adolescence has been studied extensively. However, there is a paucity of research examining the effects of adolescence on the family. This study has only scratched the surface, and further research is certainly needed. Specifically, further research is needed to clarify the current study's findings with regard to the effect of adolescent identity style and self-worth on family cohesion. Additionally, research integrating adolescent developmental variables into the effects of family on adolescent behavioral outcomes is needed.

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