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Perceived competence and contraceptive use during adolescence

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Abstract

Background—Little is known about psychosocial correlates of different contraceptive methods in adolescence.

Study Design—Cross-sectional analyses of 209 post-menarcheal girls (mean=15.68 yrs $\pm$ 1.74), primarily Caucasian (62.8%) or African American (32.8%). Competence (activities and social) and rule-breaking behavior were assessed by the Youth Self Report (YSR; adolescent) and the Child Behavior Checklist (CBCL; parent). Three contraceptive use groups were created: no hormonal contraceptive (n=142), combined oral contraceptives or the transdermal patch (COCs/patch, n=41), and depot medroxyprogesterone acetate (DMPA, n=20).

Results—There was a significant effect of contraceptive use group on competence ($p=.003$). The DMPA group had lower competence (CBCL activities and social; YSR social) than the no hormonal contraceptive and COCs/patch groups. The COCs/patch group scored lower than the no hormonal contraceptive group on YSR activities competence, but was not different from the DMPA group. Lastly, there was an effect of contraceptive use group on CBCL (but not YSR) rule-breaking behavior ($p=.029$) with the DMPA group having higher rule-breaking behavior than the other groups.

Conclusions—Type of contraceptive method was associated with parent and adolescent's perceived competence. For rule-breaking behavior, parental perception may be more relevant to contraceptive use.

Keywords

hormonal contraception; adolescents; competence; behavior; methods

1. Introduction

Adolescence is a time of transition with new responsibilities and changing expectations. For adolescent females, there are many decisions and developmental tasks to address, including choice of relationships, participation in activities, socializing outside the family, involvement in religious organizations, engagement in sexual relationships, and possibly the need and choice of a contraceptive method. Parental involvement in these decisions ranges from very little to significant, depending on characteristics of the adolescent, the parent, and the adolescent-parent relationship. Numerous studies have demonstrated that American parents believe it is

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important for adolescents to have some areas of personal freedom, and that this generally increases with the age of the adolescent [1–4]. Despite this finding, parents and adolescents disagree about how much personal freedom teenagers should have [1,3,5].

During adolescence, parents or caregivers may be subconsciously or intentionally assessing the adolescents' capability and competence in various aspects of functioning. This assessment may impact how much or how little autonomy the adolescent is granted in decision-making processes. Competence in this sense does not encompass the traditional meaning associated with legal or mental competency or incompetency. Competence as a psychological construct refers to "a group of constructs related to the capacity or motivation for, process of, or outcomes of effective adaptation in the environment, often inferred from a track record of age-salient tasks and always embedded in developmental, cultural and historical context" [6]. There are different domains of competence (e.g., social, academic) and an adolescent may excel in one domain but struggle in another. Competence as assessed by a parent or caregiver is an important construct. Likewise, the adolescent's perception of their own competence is critical to understanding adolescent development. Both the parent's and adolescent's perceptions of competence may have independent effects on the adolescent's future competence, opportunities, self-esteem, reputation with others, and symptoms of psychopathology [6].

Reproductive health and sexuality is a critical area of development for an adolescent female. Previous research has focused on factors associated with use or non-use of contraceptives. Some of these factors include societal acceptance, availability and access, and psychological correlates. Among the psychological correlates previously studied are locus of control, self-esteem, and self-efficacy. Researchers have found that adolescents with an external locus of control (i.e., believe that life events are outside their control) have lower use of contraceptives than adolescents with an internal locus of control [7]. Additionally, high self-esteem and high self-efficacy have been shown to be associated with effective use of contraceptives [8–10].

While previous research has been helpful in identifying adolescents at risk for non-use of contraceptives, little is known about psychosocial correlates of use of different contraceptive methods. Therefore, our primary aim was to examine the associations between current contraceptive method and perceived competence as reported by the adolescent and parent. Three contraceptive methods were examined: no hormonal contraceptives, a routinely administered method combined of oral contraceptive pills (COCs), or the transdermal patch, and a long-acting method, depot medroxyprogesterone acetate (DMPA). As a secondary aim, we examined the association between current contraceptive use and rule-breaking behavior. We hypothesized that adolescents who were currently using a long-acting form of hormonal contraception (DMPA) would have lower competence scores by both parent and adolescent report and higher scores for rule-breaking behaviors compared to the other groups. We believe this is the first study to evaluate the association between current contraceptive use and a) perceived competence and b) maladaptive behaviors (rule-breaking) during adolescence.

2. Materials and Methods

2.1. Participants

Participants included girls enrolled in a longitudinal study on smoking, mood, and their potential effects on bone and reproductive health in adolescent girls (N = 262) [11]. Enrollment was by age cohorts of 11, 13, 15, and 17 years old as well as by an initial eligibility questionnaire. Participants were recruited from an urban teen clinic and the surrounding community. Exclusion criteria were: 1) pregnancy or breast feeding within 6 months, 2) primary (>16 years) or secondary amenorrhea (<6 cycles/year), 3) body mass index less than the 1st percentile or body weight above 300 pounds, 4) medication/medical disorder influencing bone health, and 5) psychological disabilities impairing comprehension or compliance. This

study did not recruit participants based on adolescent sexual activity, and no data regarding sexual activity was collected as sexual activity was not related to the primary aims of the parent study. Institutional Review Board approval was obtained from the associated institution. Parents provided consent and the adolescent provided assent. For these analyses, girls who had not reached menarche were excluded ($n=53$), as it would be highly unlikely for them to be using contraceptives.

2.2. Procedures

Study visits were conducted at an urban children's hospital. A physical examination was conducted by an adolescent medicine physician or nurse practitioner. During that time, an interview was conducted focusing on menstrual history and hormonal contraceptive use, followed by the administration of the Youth Self Report (YSR) [12]. Other procedures were included in the visit but were not the focus of this study. The parent completed questionnaires in a separate room which included demographic information and the Child Behavior Checklist (CBCL) [12]. For the majority of the girls, the "parent" was the biological mother (90.4%), with the remainder "parent" the father (4.6%) or other (i.e. grandmother, sister, legal guardian), (5.0%).

2.3. Measures

2.3.1. Contraceptive use—Three groups were created based on whether they had used hormonal contraceptives in the past 2 weeks. The no hormonal contraceptive group was not using any type of hormonal contraception ($n=142$), but may have been using barrier or alternative contraceptive methods. The COCs/patch group ($n=41$) was using either combined oral contraceptive pills or the transdermal patch (Ortho Evra®), and the third group was using depot medroxyprogesterone acetate (DMPA) ($n=20$). DMPA (Depo Provera®) is an intramuscular injection which is administered every 12–13 weeks. Girls using the patch ($n=8$) were grouped with those using COCs because both methods require regular, relatively frequent interval dosing. There were 6 girls who were using the intravaginal ring (Nuva Ring®), which is a method in which the adolescent inserts a plastic ring intravaginally every month. This method is not similar to either the COCs/patch group or the "DMPA group in terms of length between interval dosing, and because there were only 6 girls in this category, these girls were not included in the analyses. Furthermore, there were no significant differences in age, socioeconomic status (SES), competence, or rule-breaking behaviors between the girls using the intravaginal ring and the other three contraceptive use groups.

2.3.2. Competence—The competence scales (activities and social) were obtained from standard scoring as indicated from the manuals and programs of the CBCL and the YSR.[12] For the CBCL, the parent answered questions about their child's sport activities, organizations, jobs, number of friends, and school performance. To reflect different aspects of competence, three competence subscales (activities, social, and school competence) are derived from a scoring system based on the responses to these questions. Only activities and social competence scales were used in analyses because there is no counterpart to the CBCL school competence scale on the YSR. Higher scores indicate higher levels of competence. Scores were converted to T scores (adjusted for age and gender) which are based on a mean of 50 and standard deviation of 10. Although a total competence score can be obtained by summing the raw scores of the subscales, we chose to utilize the competence subscales as they represent different domains of adolescent adaptive functioning. The internal consistency reliability on the social and activities competence scales were similar to those previously reported by Achenbach and Rescorla and ranged from .58 to .88 [12].

2.3.3. Rule-breaking behavior—The rule-breaking subscale for the CBCL contains 17 items and the YSR subscale is comprised of 15 items (scored 0=never, 1=some, 2=a lot) with

higher scores indicating more rule-breaking behavior [12]. Examples of items are “I lie or cheat” and “I steal things from home”. The two items included on the CBCL but not on the YSR scale are “sex problems” and “vandalism”. Items are summed to obtain a total score and converted to T scores, which are adjusted for age and gender. Reliability in the present sample was .81 for the YSR and .83 for the CBCL.

2.3.4. Covariates—Socioeconomic status was computed from Hollingshead criteria, which ranged from 14–66 [13]. Additional covariates were included based on existing literature and included age, race, gynecologic age, single parent household, and mother ever being anxious/depressed. The latter was included because depression in a parent or caregiver is related to parents’ rating of depression in their children, and an increased risk of depression, behavioral disturbances, and social and achievement deficits [14–16].

2.4. Statistical analysis

In order to assess for group differences in the covariates (age, SES, gynecologic age) we used ANOVA. Logistic regression was used to examine whether girls in contraceptive use groups were more likely to be white or non-white. To control for experimentwise error, an omnibus multivariate analysis of variance (MANOVA) model was tested for the set of competence measures (CBCL: activities and social; YSR: activities and social). Contraceptive use group (no hormonal contraceptive, COCs/patch, DMPA) was entered as the independent variable with the two competence scales from the CBCL (activities, social) and the two from the YSR (activities, social) as the dependent variables. Post hoc tests were then conducted to examine significant main effects between the three contraceptive use groups. Analysis of covariance was used to examine mean differences in rule-breaking behavior by contraceptive use group. The Bonferroni adjustment was used to account for multiple comparisons. All analyses were conducted with SPSS version 15.0.

3. Results

The descriptive statistics for the sample can be seen in Table 1. Girls were primarily Caucasian (62.8%) or African American (32.8%). The remaining 5.3% of the girls represented mixed-race or other race/ethnicities, and these girls were combined with the African American girls to create the non-Caucasian race category. There were significant differences by contraceptive use group on age [$F(2, 200) = 15.28, p < .01$], gynecologic age [$F(2, 200) = 8.68, p < .01$], and SES [$F(2, 199) = 4.92, p < .01$]. Gynecologic age is defined as the number of years since menarche. Post hoc tests showed the no hormonal contraceptive group was significantly younger and had a significantly lower gynecologic age than the other two groups. Additionally, the DMPA group had significantly lower SES than the no hormonal contraceptive and COCs/patch groups. There was no association between race and contraceptive method.

Results from the MANOVA showed there was a significant main effect of contraceptive use group on the combined competence scales, $F(4, 340) = 2.94, p = .003$; Wilks’ $\lambda = .88$. Post hoc tests revealed that the DMPA group scored significantly lower on the CBCL activities and social competence scales than the no hormonal contraceptive and COCs/patch groups (see Table 2). Additionally, the DMPA group scored significantly lower than the no hormonal contraceptive and COCs/patch groups on the YSR social competence scale. For the YSR activities competence scale, the COCs/patch group scored significantly lower than the no hormonal contraceptive group but was not different from the DMPA group. Lastly, there was a main effect of contraceptive use group on CBCL rule-breaking behavior [$F(2, 177) = 3.61, p = .029$] but not on YSR rule-breaking behavior [$F(2, 179) = .45, p = .64$]. Post hoc tests for the CBCL indicated that the DMPA group scored significantly higher on rule-breaking behavior than the no hormonal contraceptive and COCs/patch groups.

4. Discussion

This is the first study to demonstrate an association between perceived competence and current contraceptive method in adolescent girls. Specifically, type of contraceptive use was associated with parental perception of both social and activities competence in their daughters. The DMPA group had lower parental report of activities and social competence scores compared to both the no hormonal contraceptive and the COCs/patch groups. From the adolescent's perspective, the girls in the DMPA group reported significantly lower social competence scores than either the no hormonal contraceptive or the COCs/patch groups. For YSR activities competence, the only significant difference was between the no hormonal contraceptive and COCs/patch users, with the latter group having a lower mean score. Regarding rule-breaking behavior, our results showed that the parent's report was significantly different between the contraceptive use groups. Parents reported more rule-breaking behavior for the girls in the DMPA group than for both the no hormonal contraceptive and COCs/patch groups. However, there was no difference in the adolescent's report of rule-breaking behavior between contraceptive use groups.

The differences in our findings between perceived competence of both parent and adolescent report are interesting. Parents seemed consistent across their assessment of the adolescent in terms of both areas of competence and rule-breaking behaviors. However, the adolescent seemed to discriminate between social competence, activities competence, and rule-breaking behaviors in terms of the associations with contraceptive use. The adolescent's perspective may be that social competence and activities competence have more to do with hormonal contraceptive use than rule breaking behaviors. Alternatively, the parent's perspective may be that all three aspects are associated with hormonal contraceptive use. Research from the social domain perspective has examined adolescents' development of concepts related to personal choice and personal jurisdiction. Areas related to control over one's body, privacy, and personal preferences and choice are considered by some parents and adolescents to be beyond justifiable social or parental regulation [17,18]. Autonomy develops with advancing age [3,5], but there is wide variation in the age at which parents and adolescents agree on autonomy regarding decisions of personal choice [1,3]. Thus, decisions about hormonal contraceptive methods and use may be either an individual choice, or a shared decision between parents and adolescents. Based on our findings, both parent and adolescent perceived competence are likely relevant to some extent.

Previous studies regarding self-efficacy and contraceptive use have highlighted decreased use of any hormonal method with lower self-efficacy [19,20]. Although self-efficacy and competence are different constructs, it could be inferred that adolescent females with lower social and activities competence might have less self-efficacy for contraception. Therefore, these girls might choose a longer acting, and less operator-dependent method for contraception compared to girls with a higher level of competence. Additionally, the parent's perception of the adolescent's low competence might exert an independent effect on the adolescent's perceived self-efficacy. Likewise, the parent may chose to make decisions regarding contraceptive options for the adolescent if they perceive their child to have low competence, and that choice is likely to be one that relies the least on the adolescent's ability to adhere to regularly prescribed dosing.

Self-esteem is another area that has been previously studied in terms of hormonal contraception during adolescence. High self-esteem has been shown to be related to effective use of contraceptives [9,21]. There are many aspects that contribute to global self-esteem, but it is generally thought that among teenagers, physical appearance competence and social acceptance/competence are among the most influential. Other less significant domains include scholastic competence, athletic competence, and conduct [22]. Thus, although we did not

measure global self-esteem, nor all the contributing domains, our findings are consistent with the previous studies evaluating self-esteem and competence. Adolescents with lower perceived social competence may have lower self-esteem. Thus, they may be less likely to use contraceptives effectively, and choose a method of contraception in which it is easier to comply, such as DMPA.

Use of hormonal contraceptives has been described as a complex matter, involving psychological, social and cultural factors. One prior study by Aker et al. [23], evaluated the effects of temperament and character on the choice of contraceptive method (implant, condoms, intrauterine device, or COCs) among female college students. They noted that subjects who chose COCs had higher mean scores for self-directedness than those choosing intrauterine devices; and higher mean self-transcendence scores were noted among females choosing intrauterine devices as compared to condoms [23]. Additionally, there are other concerns related to perceived side effects, efficacy, and benefits of each method of hormonal contraception. All of these factors impact choice of contraceptive method. Finally, an adolescent must consider their need for contraception.

Although we controlled for age, SES, race, and gynecologic age, our results should be interpreted with caution because we did not have data regarding sexual activity or sexual intercourse. Additionally, we had low numbers of girls using the patch so we included those adolescents with the girls using COCs, which may have resulted in some degree of bias. This study is cross-sectional, and because we did not randomize girls to categories of contraceptive method, we are not implying that the contraceptive method has a causal effect on competence or behavior problems.

Our findings may have important clinical implications. For example, there may be factors such as competence and rule-breaking behaviors, both parental and adolescent perception, that impact the choice of contraceptive method. Providers, adolescents, and their parents should be aware of the potential influence of these constructs when discussing options for hormonal contraception. We do not recommend measuring competence or behaviors in a clinical setting, but would recommend keeping this concept in mind when there may be a discrepancy between adolescent and parent, or provider and adolescent/parent regarding use or choice of hormonal contraception. For example, a parent may insist their adolescent receive DMPA for hormonal contraception, while the adolescent may either opt for no contraception or an alternative hormonal method. The parent may be incorporating their perception of the adolescent's competence and behavior in their decision to recommend DMPA. This information may help the provider understand the parent's perspective and aid in bringing the parent and adolescent towards consensus regarding the decision for hormonal contraception.

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References

1. Smetana JG. Adolescents' and parents' conceptions of parental authority. *Child Dev* 1988;59:321–35. [PubMed: 3359858]
2. Smetana JG. Adolescents' and parents' reasoning about actual family conflict. *Child Dev* 1989;60:1052–67. [PubMed: 2805883]

3. Smetana JG. Middle-class African American adolescents' and parents' conceptions of parental authority and parenting practices: a longitudinal investigation. *Child Dev* 2000;71:1672–86. [PubMed: 11194265]
4. Smetana JG, Asquith P. Adolescents' and parents' conceptions of parental authority and personal autonomy. *Child Dev* 1994;65:1147–1162. [PubMed: 7956471]
5. Smetana J, Crean HF, Campione-Barr N. Adolescents' and parents' changing conceptions of parental authority. *New Dir Child Adolesc Dev* 2005;108:31–46. [PubMed: 16121895]
6. Masten, AS.; Burt, KM.; Coatsworth, JD. Competence and psychopathology in development. New York: Wiley; 2006.
7. Hendricks LE, Fullilove RE. Locus of control and the use of contraception among unmarried black adolescent fathers and their controls: a preliminary report. *J Youth Adolesc* 1983;12:225–33. [PubMed: 12312162]
8. Freeman EW, Rickels K, Huggins GR, Garcia CR. Urban black adolescents who obtain contraceptive services before or after their first pregnancy: Psychosocial factors and contraceptive use. *J Adolesc Health Care* 1984;5:183–90. [PubMed: 6735834]
9. Herold ES, Goodwin MS, Lero DS. Self-esteem, locus of control, and adolescent contraception. *J Psychol* 1979;101:83–8. [PubMed: 759623]
10. Hornick JP, Doran L, Crawford SH. Premarital contraceptives among male and female adolescents. *Fam Coordin* 1979;28:181–90.
11. Dorn LD, Susman EJ, Pabst SR, Huang B, Kalkwarf HJ, Grimes S. The association of depressive symptoms and anxiety with bone mass and density in ever smoking and never smoking adolescent girls. *Arch Pediatr Adolesc Med* 2008;162:1181–1188.
12. Achenbach, TM.; Rescorla, LA. Manual for the ASEBA School-Age Forms & Profiles. Burlington, VT: University of Vermont, Research Center for Children, Youth, and Families; 2001.
13. Hollingshead, AF. Four Factor Index of Social Status: Manual. New Haven, CT: Department of Sociology, Yale University; 1976.
14. Billings AG, Moos RH. Comparisons of children of depressed and nondepressed parents: a social-environmental perspective. *J Abnorm Child Psychol* 1983;11:463–85. [PubMed: 6655148]
15. Friedlander S, Weiss DS, Traylor J. Assessing the influence of maternal depression on the validity of the Child Behavior Checklist. *J Abnorm Child Psychol* 1986;14:123–33. [PubMed: 3950213]
16. Lovejoy MC, Graczyk PA, O'Hare E, Neuman G. Maternal depression and parenting behavior: a meta-analytic review. *Clin Psychol Rev* 2000;20:561–92. [PubMed: 10860167]
17. Nucci L. The development of personal concepts: A domain distinct from moral or societal concepts. *Child Dev* 1981;52:118–21.
18. Nucci L, Smetana JG. Mothers' concepts of young children's areas of personal freedom. *Child Dev* 1996;67:1870–86. [PubMed: 8890513]
19. Levinson RA. Contraceptive self-efficacy: A perspective on teenage girls contraceptive behavior. *J Sex Res* 1986;22:347–69.
20. Longmore MA, Manning WD, Giordano PC, Rudolph JL. Contraceptive self-efficacy: does it influence adolescents' contraceptive use? *J Health Soc Behav* 2003;44:45–60. [PubMed: 12751310]
21. Herold ES, Goodwin MS. Self-esteem and sexual permissiveness. *J Clin Psychol* 1979;35:908–12. [PubMed: 512024]
22. Feldman, SS.; Elliot, GR. At the Threshold: The Developing Adolescent. Cambridge, MA: Harvard University Press; 1990.
23. Aker S, Boke O, Dundar C, Peksen Y. The effects of temperament and character on the choice of contraceptive methods. *Eur J Contracept Reprod Health Care* 2007;12:378–84. [PubMed: 17853165]

Table 1

Descriptive statistics for 209 postmenarcheal girls

	Contraceptive use group		
	No hormonal contraceptive	COCs/patch ¹	DMPA ²
N	142	41	20
Age (yrs) $\pm$ SD	15.23 (1.77)	16.70 (1.19)	16.41 (1.33)
Gynecologic age (yrs)	3.01 (1.87)	4.15 (1.85)	4.26 (1.67)
Socioeconomic status	37.11 (13.09)	36.60 (13.32)	27.35 (13.07)
Percent Caucasian	58.5	61	45

¹ COCs/patch group includes girls using either combined oral contraceptives or the transdermal patch.

² The DMPA group includes girls using depot medroxyprogesterone acetate.

Table 2

Results from MANOVA and ANCOVA examining mean differences in T scores of perceived competence and rule-breaking behavior by contraceptive use group

	No hormonal contraceptive			COCs/patch ¹			DMPA ²		
	Mean	SE		Mean	SE		Mean	SE	
CBCL activities competence	42.53 ^a	.88		43.65 ^b	1.71		35.65 ^{a,b}	2.59	
CBCL social competence	45.27 ^a	.73		44.72 ^b	1.43		39.08 ^{a,b}	2.16	
CBCL rule-breaking behavior	58.18 ^a	.62		57.77 ^b	1.21		63.23 ^{a,b}	1.86	
YSR activities competence	43.31 ^a	.84		38.22 ^a	1.63		40.77	2.46	
YSR social competence	47.47 ^a	.75		45.65 ^b	1.47		39.58 ^{a,b}	2.22	
YSR rule-breaking behavior	58.79	.58		59.46	1.11		60.33	1.62	

Note: CBCL = Child Behavior Checklist (parent report); YSR = Youth Self-Report (adolescent report).

Analyses adjusted for age, race, socioeconomic status, single parent household, mother ever anxious/depressed.

Groups with same superscripts (a & b) are significantly different at $p < .05$.

¹ COCs/patch group includes girls using either combined oral contraceptives or the transdermal patch.

² The DMPA group includes girls using depot medroxyprogesterone acetate.