

# Drug abuse and responsible fathering: a comparative study of men enrolled in methadone maintenance treatment

Thomas J. McMahon, Justin D. Winkel & Bruce J. Rounsaville

Yale University School of Medicine, Department of Psychiatry, New Haven, Connecticut, USA

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## ABSTRACT

**Aim** Because very little is known about the parenting of drug-abusing men, this study was designed to document ways that drug abuse contributes to compromise of responsible fathering. **Design, setting, participants** Generalized linear models and data representing different dimensions of responsible fathering were used to clarify ways that the fathering of 106 men receiving methadone maintenance treatment differed from that of 118 men living in the same community with no history of alcohol or drug abuse. **Measurement** Men who enrolled in the study completed two structured interviews and a battery of five self-report measures selected to document current and historical dimensions of responsible fathering. **Findings** When the opioid-dependent fathers were compared to the other fathers, there were significant differences in: (i) economic resources to support family formation; (ii) patterns of pair-bonding; (iii) patterns of procreation; and (iv) parenting behavior. When fathering of the youngest biological child was examined, the opioid-dependent fathers confirmed few differences in historical dimensions of fathering, but they reported significant differences in current dimensions reflecting: (i) constricted personal definitions of the fathering role; (ii) poorer relationships with biological mothers; (iii) less frequent residence with the child; (iv) less frequent provision of financial support; (v) less involvement in positive parenting; (vi) poorer appraisal of self as a father; and (vii) less satisfaction as a father. **Conclusions** The findings highlight ways that drug abuse contributes to compromise of responsible fathering, and they raise questions about ways that the drug abuse treatment system might better address parenting as a treatment issue for men.

**Keywords** Drug abuse, father-child relations, fathers, methadone maintenance treatment, parental role, parenting.

*Correspondence to:* Thomas J. McMahon, Yale University School of Medicine, West Haven Mental Health Clinic, 270 Center Street, West Haven, CT 06516, USA. E-mail: thomas.mcmahon@yale.edu

Submitted 29 January 2007; initial review completed 13 June 2007; final version accepted 24 September 2007

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## INTRODUCTION

As social and economic changes have reshaped the nature of family life in industrialized nations, policy analysts have become interested in fathers as a social resource in the lives of children, and they have consistently highlighted the need for more information about patterns of pair-bonding, reproduction and parenting being pursued by men [1]. Believing that fathering is a social construct defined by cultural forces that influence the nature of family life, scholars interested in family process have begun to outline contemporary definitions of responsible fathering in the context of rapidly changing ideas about men in family systems [2–5]. Moving

beyond deficit perspectives that focus on documenting shortcomings in the parenting of men, these scholars have emphasized the need for new paradigms that acknowledge the interest men have in being a father, the capacity they have for effective parenting and the ethical responsibility they have to care for the next generation [6].

Although there has been debate about the nature of the construct [2,7,8], there is growing consensus about the nature of responsible fathering in North American culture. At this time, there appears to be agreement that responsible fathering involves: (i) planning for the conception of children; (ii) preparing for their birth; (iii) acknowledging paternity; (iv) building positive

relationships with other caretakers; (v) being accessible to children; (vi) contributing directly to their care; and (vii) somehow contributing to their financial support [2–5]. Moreover, there is growing awareness that, in addition to affecting the psychosocial adjustment of mothers and children, fathering has a profound impact on the psychosocial development of men [9]. Consequently, scholars interested in fatherhood have begun to argue that any conceptualization of responsible fathering must also include representation of the thoughts and feelings men have about themselves as a parent [5].

### Substance abuse and responsible fathering

As interest in fathers and fathering has expanded, researchers have begun to examine parenting as a developmental issue in the lives of men struggling with social, economic and psychological problems [10–12]. Ironically, in the context of ongoing concern about men at risk for socially irresponsible production and parenting of children, compromise of fathering is rarely acknowledged as an adverse consequence of substance abuse [13]. Historically, paternal substance abuse, particularly paternal alcoholism, has repeatedly been examined as a global risk factor for poor developmental outcomes in children [14–16], but the parenting of alcohol- and drug-abusing men has not been the focus of much empirical investigation [13]. Although this dimension of adult development is undoubtedly undermined by the chronic, recurring nature of alcohol and drug abuse, it is not currently clear how the fathering of men with substance abuse problems differs from that of men with no history of alcohol or drug abuse problems. As policymakers call for creative programs to increase the presence of men in the lives of their children, there are only limited data to guide the development of clinical intervention designed to promote more effective parenting by substance-abusing men [13].

Acknowledging that compromise of fathering may contribute directly to poor developmental outcomes in children, researchers have begun to characterize the parenting of alcohol- and drug-abusing men. Focusing on the potential influence of alcoholism, Eiden and colleagues [17–20] found that, although a substantial number of alcoholic men were able to establish a positive emotional connection with their pre-school child, paternal alcoholism was associated with: (i) more negative attitudes toward children; (ii) more negative emotion during father–child interaction; (iii) less positive emotion during father–child interaction; and (iv) more tenuous father–child attachment. El-Sheikh and colleagues [21,22] noted that paternal alcoholism was also associated with less cohesion, less adaptability, more conflict and poorer father–child attachment in family systems with school-aged children. Similarly, Zhou *et al.* [23] found that pater-

nal alcoholism was associated with less family harmony during adolescence, and Jacob *et al.* [24] showed that, when compared with fathers with no history of alcoholism, fathers with a history of alcoholism demonstrated less positive affect and less problem-solving skills during interactions with their teenage children.

Although there is evidence that children with a drug-abusing father may be at even greater risk for poor developmental outcomes than children with an alcoholic father [16,25], the parenting of drug-abusing men has received minimal attention in the substance abuse literature. In a comprehensive, descriptive study of fathers receiving methadone maintenance treatment, McMahon *et al.* [26] recently noted that data on patterns of pair-bonding, reproduction and parenting suggested that efforts to father children in a socially responsible manner had, over time, been compromised by the chronic, recurring nature of the opioid dependence. Consistent with this, Blackson *et al.* [27] found that, when compared with fathers who reported no history of substance abuse, fathers with a history of alcohol and drug abuse reported: (i) relatively poorer father–child communication; (ii) elevated risk for physical abuse; (iii) poorer parent–child relationships; and (iv) more parenting stress. There was, however, no significant difference in children’s report of their father’s parenting behavior.

Similarly, Moss *et al.* [28] found that paternal drug abuse was associated with compromise of family functioning characterized by: (i) more difficulty establishing family norms and rules; (ii) poorer communication; (iii) more problems with emotional expression; (iv) less organization in day-to-day family life; and (v) poorer response to instrumental and emotional demands on the family. Comparing drug-abusing fathers with both alcoholic fathers and fathers with no history of alcohol or drug abuse, Fals Stewart and colleagues [25] found that the drug-abusing fathers reported more problematic disciplinary practices and less monitoring of their children. Finally, Stanger *et al.* [29] noted that drug-abusing fathers reported less negative and less positive parenting behavior than drug-abusing mothers.

Building upon research indicating that quality of family environments consistently emerges as a robust environmental influence in the lives of children at risk for poor developmental outcomes, researchers have begun to also show that, although compromise of family environments may account directly for some of the risk, efforts at responsible fathering occurring in the context of chronic alcohol and drug abuse may mitigate some of the risk associated with a family history of substance abuse. For example, El-Sheikh and Buckhalt [22] found that better family functioning in the context of paternal alcoholism mitigated much of the risk for internalizing pathology and social problems in school-aged children. Similarly, Brook

**Table 1** Demographic characteristics of the sample.

Individual characteristic	Methadone-maintained group		Comparison group	
	M	(SD)	M	(SD)
Father				
Age	41.68	(7.10)	39.39	(5.61)
Hispanic heritage	0.15	(0.36)	0.14	(0.35)
African American heritage	0.29	(0.46)	0.33	(0.47)
European heritage	0.56	(0.50)	0.53	(0.50)
Youngest child				
Age	10.80	(6.81)	8.39	(6.17)
Male gender	0.52	(0.50)	0.55	(0.50)

Values represent the mean (M) and standard deviation (SD) of the characteristic for each group. For dichotomous variables, the mean represents the proportion of participants confirming that characteristic.

*et al.* [30,31] and Fals-Stewart *et al.* [32] showed that, within family systems affected by paternal drug abuse: (i) less drug use; (ii) more financial support; (iii) less marital conflict; and (iv) positive father–child relationships may contribute directly to better developmental outcomes in children. Contrary to this, Andrews *et al.* [33] found that positive father–child relationships unfolding in the context of paternal substance use may actually increase the risk for substance use by children during adolescence.

### Focus of this study

Given the relative absence of data, this comparative study was designed to examine markers of responsible fathering within a sample of men enrolled in methadone maintenance treatment and a sample of men living in the same community with no history of alcohol or drug abuse. When compared with the other fathers, the fathers receiving methadone maintenance treatment were expected to demonstrate relative compromise of responsible fathering. More specifically, they were expected to have: (i) more limited economic resources to support family formation; (ii) more tenuous sexual partnerships; (iii) more biological children; and (iv) less of a presence in the lives of their children. They were also expected to report: (i) more traditional attitudes toward fathering; (ii) less negotiation in their relationships with the mothers of their children; (iii) more aggression in their relationships with the mothers of their children; (iv) less positive parenting behavior; (v) more negative parenting behavior; (vi) more negative appraisal of themselves as a father; and (vii) less satisfaction with fathering.

## METHOD

### Participants

The sample for this study was comprised of 106 fathers enrolled in methadone maintenance treatment and 118

fathers with no history of alcohol or drug abuse. All participants were living in New Haven, Connecticut. Characteristics of the final sample are outlined in Table 1. As indicated, this was an ethnically diverse sample of men who were 23–55 years of age. When the demographic characteristics of the two groups were compared, there were no statistically significant differences in the representation of African American or Hispanic fathers,  $\chi^2_{(1,n=224)} = 0.38$ ,  $P > 0.10$  and  $\chi^2_{(1,n=224)} = 0.02$ ,  $P > 0.10$ , but there was a statistically significant difference in the age of the fathers,  $\chi^2_{(1,n=224)} = 6.80$ ,  $P = 0.009$ . As noted, the opioid-dependent fathers were, on average, approximately 2 years older than the other fathers. When they completed the study, the opioid-dependent men had also been enrolled in methadone maintenance treatment for an average of approximately 20 months.

Because there was particular interest in fathering of the youngest biological child, the characteristics of that subset of children are also listed in Table 1. As noted, there was approximately equal representation of boys (54%) and girls (46%) within the full sample,  $\chi^2_{(1,n=224)} = 1.14$ ,  $P > 0.10$ , and there was no significant difference in representation of gender within the two groups,  $\chi^2_{(1,n=224)} = 0.23$ ,  $P > 0.10$ . There was, however, a significant difference in the age of the youngest child that mirrored the difference in the age of the fathers,  $\chi^2_{(1,n=224)} = 5.39$ ,  $P = 0.02$ . As indicated, the youngest child of the opioid-dependent fathers was approximately 1.5 years older than the youngest child of the other fathers.

### Procedure

Potentially eligible men were recruited into the study via a written announcement seeking men for a study of father–child relationships who were the biological father of at least one child. To facilitate recruitment of

opioid-dependent fathers, this announcement was distributed within the four methadone treatment programs that served the community. To facilitate recruitment of fathers living in the same community with no history of alcohol or drug abuse, the same announcement was distributed within social service agencies, community centers, primary care clinics, employment centers, places of worship and selected work-places. This community-based approach to recruitment of the comparison group was utilized as an alternative to a population-based approach involving telephone dialing because there is evidence that community-based approaches may be more effective when researchers are interested in recruiting representative samples of less educated, lower-income, ethnic minority participants [34].

To match the demographic characteristics of the local population of fathers seeking ambulatory treatment for opioids dependence [35], men who enrolled in the study had to be 21–55 years of age, of African American, Hispanic or European heritage and the biological father of at least one child. In addition, men enrolled to represent the opioid-dependent group had to be receiving methadone maintenance treatment, and men enrolled to represent the comparison group had to confirm that they had no history of an alcohol or drug use disorder since the birth of their first child. The research protocol was approved by the Human Investigations Committee for the Yale University School of Medicine and the Research Committee for the APT Foundation in New Haven, Connecticut.

Over the course of approximately 2.5 years, 309 of the 354 men (87%) who expressed interest in the study were eligible to participate. Within the pool of men who were eligible to participate, 108 of the 146 fathers (75%) recruited from methadone maintenance treatment and 120 of the 164 men (73%) recruited from the community actually enrolled. Failure to keep up to three appointments to complete the study was the only reason that eligible men were not enrolled. The men who did enroll completed a consent procedure and research assessment on the same day during a single session conducted by a research assistant with a bachelor's degree in psychology. All participants received \$30.00 compensation for their time. After enrollment, data provided by one subject enrolled in the community comparison group were not used because he met diagnostic criteria for a substance use disorder, and data provided by three others were not used because they did not complete the research assessment.

## Measures

Fathers who enrolled in the study completed two structured interviews and a battery of five self-report measures selected to generate data representing current and

historical dimensions of responsible fathering. Because men are often ignored in research exploring the nature of fathering [36], the constructs and measures were selected to document the perspective of fathers. Although some data were collected to characterize involvement with all children, one of the structured interviews and all the self-report measures were used to characterize fathering of the youngest biological child in some detail, because research suggests that men are likely to be most involved with this child, particularly when they have children with more than one woman [37].

### *Structured Clinical Interview for DSM-IV*

The Substance Use Disorders module within the Structured Clinical Interview for DSM-IV [38] was used to document the substance use history of each father. This structured diagnostic interview documents life-time occurrence of a substance use disorder involving the use of: (i) alcohol; (ii) cannabis; (iii) cocaine; (iv) opioids; (v) sedatives; (vi) amphetamines; (vii) hallucinogens; and (viii) other drugs of abuse. Simple modifications were made to this structured interview to allow for accurate differentiation of substance use occurring before and after the birth of a first child.

### *Fatherhood and Substance Abuse Structured Research Interview*

The Fatherhood and Substance Abuse Structured Research Interview [26] was used to generate data concerning current and historical dimensions of responsible fathering. This structured interview was developed specifically for this line of research after review of the literatures on gender differences in the nature of substance abuse and parenting, and it was previously used in a pilot study of 50 fathers enrolled in drug abuse treatment [26]. For this study, the interview was used to generate information concerning: (i) demographic characteristics of the fathers; (ii) demographic characteristics of the children; (iii) the vocational, educational and financial status of the fathers; (iv) patterns of pair-bonding; (v) patterns of reproduction; and (vi) specific dimensions of paternal involvement.

### *Inventory of Father Involvement*

The Inventory of Father Involvement [39] is a self-report instrument designed to characterize the affective, cognitive, behavioral and ethical dimensions of responsible fathering. The instrument allows for documentation of both direct and indirect involvement in the lives of children, and items are worded so that they can be answered by residential and non-residential fathers with children of all ages. Factor analysis conducted by Hawkins *et al.* [39]

suggested that the 35 items represent nine dimensions of fathering: (i) providing discipline and teaching responsibility; (ii) spending time with children; (iii) providing praise and affection; (iv) encouraging success in school; (v) helping with homework; (vi) encouraging the development of talents; (vii) paying attention to day-to-day activity; (viii) providing emotional support to mothers; and (ix) providing financial support.

When completing the instrument, respondents first rate the importance of the 35 functions to them along a seven-point scale that ranges from 'not at all important' (0) to 'very important' (6). They then indicate whether they have been involved in the 35 functions at any time during the previous year, and they rate the perceived quality of their involvement along a seven-point scale that ranges from 'very poor' (0) to 'excellent' (6). Respondents also grade their performance as a father using a traditional A (4) to F (0) grading scheme.

In this study, fathers were asked to complete the instrument using their relationship with their youngest child as a frame of reference, and data derived from these ratings were used to generate scores reflecting three dimensions of responsible fathering. First, a total score representing the mean of the 35 ratings reflecting the importance of each function was used to characterize the breadth of each participant's personal definition of responsible fathering such that higher scores represented broader, more progressive personal definitions of the fathering role. In this sample, coefficient alpha for the measure were 0.98 for the opioid-dependent group and 0.91 for the comparison group. Secondly, a simple count representing the number of different positive parenting behaviors that each father reported performing during the previous year was used to document scope of positive parenting behavior. Finally, a single grade indicating how well the fathers thought they had done raising their child was used to document global appraisal of self as a father.

#### *Parental Acceptance-Rejection Questionnaire*

The Parental Acceptance-Rejection Questionnaire [40] is a 60-item, self-report measure that documents frequency of: (i) warm-affectionate; (ii) hostile-aggressive; (iii) rejectful; and (iv) neglectful parenting behavior. Respondents rate the occurrence of different parenting behaviors along a four-point scale that ranges from 'almost never true' (1) to 'almost always true' (4). In this study, fathers were asked to rate the frequency of specific parenting behaviors with their youngest biological child, and these ratings were used to compute scores representing: (i) positive (warm-affectionate) parenting behavior; and (ii) negative (hostile-aggressive, rejectful and neglectful) parenting behavior. In this sample, coefficient alphas for measures reflecting the frequency of positive

and negative parenting behavior were 0.91 and 0.90 for the opioid-dependent group and 0.82 and 0.85 for the comparison group.

#### *Revised Conflict Tactics Scale*

The Revised Conflict Tactics Scale [41] is a 78-item, self-report measure that documents recent and life-time use of reasoning and negotiation versus psychological, physical and sexual aggression to resolve conflict within sexual partnerships. Respondents rate how frequently specific behaviors have occurred during the past year along a seven-point scale that ranges from 'never' (0) to 'more than 20 times' (6). In this study, fathers were asked to rate the nature of their behavior with the mother of their youngest child. Data from this instrument were then used to generate two scores reflecting: (i) the frequency of collaborative behavior initiated by the father; and (ii) the frequency of aggressive behavior initiated by the father. A score reflecting frequency of collaborative behavior was represented by the sum of the six items comprising the Negotiation scale of the measure. A score reflecting frequency of aggressive behavior was represented by the sum of the 27 items that comprise the Psychological Aggression, Physical Assault, and Sexual Coercion scales. Within this sample, coefficient alphas for scores representing the frequency of collaborative and aggressive behavior were 0.88 and 0.74 for the opioid-dependent group and 0.89 and 0.64 for the comparison group.

#### *Personal Fathering Profile*

Finally, the Fathering Satisfaction section of the Personal Fathering Profile [42] was used to document personal satisfaction with fathering. The Personal Fathering Profile is a 138-item, self-report instrument that was used to measure the different dimensions of fathering in a large survey of the general population [42]. The measure includes 13 items designed to document current satisfaction with fathering in terms of: (i) satisfaction with self; (ii) satisfaction with children; and (iii) satisfaction with others. Respondents rate how satisfied they are with each dimension along a seven-point scale that ranges from 'extremely dissatisfied' (1) to 'extremely satisfied' (7). For this study, a total score representing the sum of these 13 items was computed such that higher scores represented more satisfaction. Within this sample, coefficient alphas for this measure were 0.94 for the opioid-dependent group and 0.88 for the comparison group.

#### **Data analysis**

Data generated by the structured interviews and self-report measures were sorted on a rational basis into four

**Table 2** Descriptive statistics for the different dimensions of responsible fathering.

Cluster variable	Methadone-maintained group		Comparison group		Range
	M	(SD)	M	(SD)	
Economic resources to support family formation					
Years of education completed	11.92	(1.71)	13.37	(1.87)	5–20
Years at longest full-time job	9.52	(6.95)	9.84	(5.48)	0–31
Vocational status: highest ever	4.49	(1.16)	4.99	(1.49)	0–9
Monthly income: all sources	761.86	(798.71)	2030.92	(1560.45)	1–12 000
Receiving income from competitive employment	0.18	(0.39)	0.88	(0.32)	0 or 1
Receiving income from underground employment	0.14	(0.35)	0.04	(0.20)	0 or 1
Receiving income from disability benefits	0.34	(0.55)	0.03	(0.16)	0 or 1
Receiving income from public welfare benefits	0.75	(0.67)	0.09	(0.32)	0 or 1
Patterns of family formation					
Number of live-in relationships	2.75	(2.16)	1.12	(1.14)	0–12
Ever legally married	0.58	(0.50)	0.81	(0.40)	0 or 1
Age became a father	25.56	(5.61)	28.09	(5.95)	16–43
Number of biological children	2.32	(1.44)	1.75	(0.89)	1–6
Number of co-parenting relationships	1.58	(0.88)	1.29	(0.60)	1–6
Number of children born within a legal marriage	0.40	(0.49)	0.71	(0.45)	0–5
Number of sexual partners with other children	0.64	(0.83)	0.31	(0.77)	0–5
Currently living with a sexual partner	0.37	(0.48)	0.74	(0.44)	0 or 1
Historical dimensions of responsible fathering with the youngest biological child					
Child born within a legal marriage	0.42	(0.50)	0.70	(0.46)	0 or 1
Pregnancy was planned	0.47	(0.50)	0.42	(0.50)	0 or 1
Father present at birth	0.77	(0.42)	0.82	(0.38)	0 or 1
Father's name on birth certificate	0.91	(0.29)	0.96	(0.20)	0 or 1
Child given father's surname	0.77	(0.42)	0.91	(0.29)	0 or 1
Father ever lived with child	0.90	(0.31)	0.92	(0.27)	0 or 1
Frequency of contact: most ever	7.65	(1.13)	7.72	(1.22)	0–8
Current dimensions of responsible fathering with the youngest biological child					
Personal definition of fathering role	5.39	(0.41)	5.68	(0.41)	0–6
Currently child's legal guardian	0.76	(0.43)	0.95	(0.22)	0 or 1
Currently living with child	0.22	(0.41)	0.56	(0.50)	0 or 1
Currently providing financial support	0.62	(0.49)	0.92	(0.28)	0 or 1
Frequency of negotiation with the mother	33.34	(35.89)	78.96	(49.74)	0–150
Frequency of aggression with the mother	21.31	(28.94)	26.20	(27.36)	0–126
Scope of positive parenting	30.81	(7.56)	32.75	(5.07)	0–35
Frequency of positive parenting	69.28	(9.73)	70.36	(7.18)	20–80
Frequency of negative parenting	62.40	(14.60)	65.20	(12.66)	40–160
Self-appraisal of fathering	2.30	(1.24)	3.11	(0.93)	0–4
Satisfaction as a father	60.45	(17.71)	70.82	(13.38)	13–91

Values represent the mean (M) and standard deviation (SD) of the variable for each group. For dichotomous variables, the mean represents the proportion of participants confirming the condition or event.

clusters of dependent variables representing: (i) economic resources to support family formation; (ii) patterns of family formation; (iii) historical dimensions of responsible fathering with the youngest biological child; and (iv) current dimensions of responsible fathering with the youngest biological child. The correlation of variables both within and across clusters was then used to exclude variables that were redundant. Table 2 contains a listing of variables retained to represent the four clusters. Descriptive statistics for each of the variables are also

included. Within the entire sample, the average bivariate correlation ( $|r|$ ) of these 34 variables was 0.15 (standard deviation = 0.12), suggesting that they represented conceptually and empirically distinct dimensions of responsible fathering.

Because the dependent measures involved a mix of continuous, count, ordinal and dichotomous variables, generalized linear modeling techniques [43] were used to test for between-group differences associated with drug abuse status. The response distribution and link function

**Table 3** Scale, response distribution and link function for the different dimensions of responsible fathering.

<i>Construct variable</i>	<i>Scale</i>	<i>Response distribution</i>	<i>Link function</i>
<b>Economic resources to support family formation</b>			
Years of education completed	Continuous	Inverse Gaussian	Inverse <sup>2</sup>
Years at longest full-time job	Count	Negative binomial	Log
Vocational status: highest ever	Ordinal	Negative binomial	Log
Monthly income: all sources	Continuous	Gamma	Inverse
Receiving income from competitive employment	Dichotomous	Binomial	Logit
Receiving income from underground employment	Dichotomous	Binomial	Logit
Receiving income from disability benefits	Dichotomous	Binomial	Logit
Receiving income from public welfare benefits	Dichotomous	Binomial	Logit
<b>Patterns of family formation</b>			
Number of live-in relationships	Count	Negative binomial	Log
Ever legally married	Dichotomous	Binomial	Logit
Age became a father	Continuous	Gamma	Inverse
Number of biological children	Count	Negative binomial	Log
Number of co-parenting relationships	Count	Negative binomial	Log
Number of children born within a legal marriage	Count	Negative binomial	Log
Number of sexual partners with other children	Count	Negative binomial	Log
Currently living with a sexual partner	Dichotomous	Binomial	Logit
<b>Historical dimensions of responsible fathering with the youngest biological child</b>			
Child born within a legal marriage	Dichotomous	Binomial	Logit
Pregnancy was planned	Dichotomous	Binomial	Logit
Father present at birth	Dichotomous	Binomial	Logit
Father's name on birth certificate	Dichotomous	Binomial	Logit
Child given father's surname	Dichotomous	Binomial	Logit
Father ever lived with child	Dichotomous	Binomial	Logit
Frequency of contact: most ever	Ordinal	Negative binomial	Log
<b>Current dimensions of responsible fathering with the youngest biological child</b>			
Personal definition of fathering role	Continuous	Gamma	Inverse
Currently child's legal guardian	Dichotomous	Binomial	Logit
Currently living with child	Dichotomous	Binomial	Logit
Currently providing financial support	Dichotomous	Binomial	Logit
Frequency of negotiation with the mother	Count	Negative binomial	Log
Frequency of aggression with the mother	Count	Negative binomial	Log
Scope of positive parenting	Count	Negative binomial	Log
Frequency of positive parenting	Continuous	Gamma	Inverse
Frequency of negative parenting	Continuous	Gamma	Inverse
Self-appraisal of fathering	Ordinal	Negative binomial	Log
Satisfaction as a father	Continuous	Gamma	Inverse

used in the final analysis of each dependent variable are noted in Table 3. When it was not fixed at 1.0, the deviance/df statistic was used to determine the dispersion parameter. When necessary, a constant was added or the scaling was reversed so that the distribution of scores for a variable met the underlying assumptions for the most appropriate response distribution.

In each of the generalized linear analyses, dichotomous coding of drug abuse status was entered into the statistical model to test for between-group differences in different dimensions of responsible fathering. Because vocational-educational status, patterns of family formation and parenting behavior can vary with demographic characteristics [44,45], covariates representing age and

ethnic heritage of the father were included in the statistical model used to test for between-group differences in economic resources to support family formation. Similarly, covariates representing age, education and ethnic heritage of the father were included in the statistical model used to test for between-group differences in patterns of family formation and historical dimensions of responsible fathering with the youngest biological child. Because the parenting behavior of men can also vary with the demographic characteristics of the child [36], covariates representing age, education and ethnicity of the father along with age and gender of the target child were included in the statistical model used to test for between-group differences in current dimensions of

**Table 4** Results of generalized linear analyses: economic resources to support family formation.

Variable	Methadone-maintained group		Comparison group		Cohen's <i>d</i>	$\chi^2$
	<i>M</i>	( <i>SE</i> )	<i>M</i>	( <i>SE</i> )		
Years of education completed	0.007	(0.002)	0.006	(0.002)	0.71	33.64†
Years at longest full-time job	2.162	(0.616)	2.291	(0.591)	-0.21	2.52
Vocational status: highest ever	1.496	(0.322)	1.609	(0.281)	-0.37	7.59†
Monthly income: all sources	0.001	(0.001)	0.000	(0.001)	0.76	29.22†
Receiving income from competitive employment	-1.583	(2.732)	2.070	(3.169)	-1.24	81.19†
Receiving income from underground employment	-1.827	(2.984)	-3.143	(4.979)	0.32	5.87†
Receiving income from disability benefits	-1.132	(2.642)	-3.788	(6.496)	0.53	17.36†
Receiving income from public welfare benefits	0.588	(2.179)	-2.504	(3.695)	1.01	56.45†

Values represent an adjusted mean (*M*) and standard error (*SE*) of the mean derived from a generalized linear analysis after allowance for age and ethnic heritage of the father. The direction of the between-group difference is reversed for: (i) years of education completed; and (ii) monthly income because an inverse link function was used in the generalized linear analysis. The  $\chi^2$  statistics represent tests for a significant between-group difference. The daggers (†) denote statistically significant between-group differences after application of the modified Bonferroni procedure developed by Holm to hold the Type I error rate at no more than 0.05 for this cluster of dependent variables.

responsible fathering with the youngest biological child. Relationships involving covariates and the different dimensions of responsible fathering are not reported here.

Finally, parameter estimates derived from the generalized linear analyses were used to compute the standardized estimate of effect size (*d*) described by Cohen [46], and considerations outlined by Jaccard and Guilamo-Ramos [47] were used to balance the Type I versus Type II error rate across the four clusters of statistical analyses. For each cluster of variables, the family-wise error rate was held constant at no more than 0.05 using the modified Bonferroni procedure developed by Holm [47]. This meant that the experiment-wise error rate across the four clusters of statistical analyses was held constant at no more than 0.20.

## RESULTS

### Economic resources to support family formation

Descriptive statistics for markers of economic resources available to support family formation are summarized in Table 2, and results of the generalized linear analyses performed to test for between-group differences associated with drug abuse status are outlined in Table 4. After allowance for the potential influence of age and ethnic heritage of the father, the opioid-dependent group reported significantly less formal education and relatively poorer vocational status for their longest period of competitive employment. On average, the highest vocational status of the opioid-dependent fathers fell within the skilled manual labor classification, while the vocational status of the other fathers fell within the skilled manual labor to clerical-technical classification. Contrary to

expectations, there was no significant difference in duration of longest period of competitive employment.

Although the differences in education, work history and vocational status were relatively modest, significant differences in monthly income and current sources of income were much more dramatic. As indicated in Table 2, annual income from all sources averaged approximately \$9000 per year for the opioid-dependent fathers versus approximately \$24 000 per year for the other fathers. As noted in Table 4, the opioid-dependent fathers were less likely to report income from competitive employment, and they were more likely to report income from: (i) public welfare benefits; (ii) disability benefits; and (iii) employment in the underground economy.

### Patterns of family formation

Descriptive statistics for variables selected to document patterns of family formation can be found in Table 2, and results of the generalized linear analyses performed to test for between-group differences associated with drug abuse status can be found in Table 5. After allowance for differences associated with age, education and ethnic heritage of the father, the opioid-dependent fathers confirmed statistically significant differences in patterns of family formation characterized by: (i) more live-in relationships; (ii) earlier paternity; and (iii) production of more biological children with more women. They were also less likely to marry, and they had lived with more women who had children not conceived by them. It was noteworthy that, despite a general pattern of more sexual partnerships, the opioid-dependent fathers were less likely to be living with a sexual partner at the time of the interview.

**Table 5** Results of generalized linear analyses: patterns of family formation.

Variable	Methadone-maintained group		Comparison group		Cohen's <i>d</i>	$\chi^2$
	<i>M</i>	( <i>SE</i> )	<i>M</i>	( <i>SE</i> )		
Number of live-in relationships	0.971	(0.823)	0.094	(1.091)	0.91	43.05†
Ever legally married	0.341	(2.447)	1.857	(3.164)	-0.54	15.45†
Age became a father	0.039	(0.008)	0.036	(0.007)	0.41	8.05†
Number of biological children	0.800	(0.547)	0.573	(0.612)	0.39	8.88†
Number of co-parenting relationships	0.971	(0.496)	0.253	(0.533)	0.32	5.40†
Number of children born within a legal marriage	-0.208	(1.203)	0.166	(0.992)	-0.34	6.44†
Number of sexual partners with other children	-0.533	(1.469)	-1.364	(1.948)	0.48	12.72†
Currently living with a sexual partner	-0.668	(2.337)	1.177	(2.531)	-0.76	28.45†

Values represent an adjusted mean (*M*) and standard error (*SE*) of the mean derived from a generalized linear analysis after allowance for age, education and ethnic heritage of the father. The direction of the between-group difference is reversed for age became a father because an inverse link function was used in the generalized linear analysis. The  $\chi^2$  statistics represent tests for a significant between-group difference. The daggers (†) denote statistically significant between-group differences after application of the modified Bonferroni procedure developed by Holm to hold the Type I error rate at no more than 0.05 for this cluster of dependent variables.

**Table 6** Results of generalized linear analyses: historical dimensions of responsible fathering with the youngest biological child.

Variable	Methadone-maintained group		Comparison group		Cohen's <i>d</i>	$\chi^2$
	<i>M</i>	( <i>SE</i> )	<i>M</i>	( <i>SE</i> )		
Child born within a legal marriage	-0.452	(2.537)	1.114	(2.768)	-0.59	17.30†
Pregnancy was planned	-0.090	(2.182)	-0.346	(2.160)	0.19	0.71
Father present at birth	1.266	(2.588)	1.514	(2.693)	-0.09	0.46
Father's name on birth certificate	2.361	(3.916)	3.135	(5.149)	-0.17	1.56
Child given father's surname	1.230	(2.698)	2.398	(3.710)	-0.36	7.21†
Father ever lived with child	2.096	(3.470)	2.637	(4.124)	-0.14	1.15
Frequency of contact: most ever	-1.249	(2.814)	-1.518	(2.750)	0.10	0.42

Values represent an adjusted mean (*M*) and standard error (*SE*) of the mean derived from a generalized linear analysis after allowance for age, education and ethnic heritage of the father. The direction of the between-group difference is reversed for frequency of contact because scaling of the variable was reversed to correct for positive skewing. The  $\chi^2$  statistics represent tests for a significant between-group difference. The daggers (†) denote statistically significant between-group differences after application of the modified Bonferroni procedure developed by Holm to hold the Type I error rate at no more than 0.05 for this cluster of dependent variables.

### Historical dimensions of responsible fathering with the youngest biological child

Descriptive statistics for variables chosen to represent historical dimensions of responsible fathering with the youngest biological child are listed in Table 2, and results of the generalized linear analyses performed to test for between-group differences associated with drug abuse status are listed in Table 6. After allowance for age, education and ethnic heritage of the father, there were surprisingly few differences in historical dimensions of responsible fathering. When the opioid-dependent fathers were compared with the other fathers, there were no statistically significant differences in the likelihood that: (i) the pregnancy producing the target child had

been planned by the couple; (ii) the father had been present at the hospital when the child was born; or (iii) paternity had been acknowledged on a birth certificate. At the time the child was born, the opioid-dependent fathers were, however, less likely to be legally married to the mother of the child, and despite the high rate of acknowledged paternity, the child was less likely to have been given the father's surname. It is also noteworthy that there was no significant difference in the proportion of fathers who had lived in the same household as the child, and there was no statistically significant difference in frequency of contact during the period of greatest involvement. As noted in Table 2, all of the fathers had, on average, seen this child several times weekly to daily or almost daily during the period of greatest involvement.

**Table 7** Results of generalized linear analyses: current dimensions of responsible fathering with youngest biological child.

Variable	Methadone-maintained group		Comparison group		Cohen's <i>d</i>	$\chi^2$
	<i>M</i>	( <i>SE</i> )	<i>M</i>	( <i>SE</i> )		
Personal definition of fathering role	0.626	(0.217)	0.767	(0.255)	-0.59	18.42†
Currently child's legal guardian	1.192	(2.624)	2.998	(4.708)	-0.47	12.16†
Currently living with child	-1.563	(2.964)	0.118	(2.490)	-0.49	20.53†
Currently providing financial support	0.851	(2.649)	2.567	(4.103)	-0.62	14.12†
Frequency of negotiation with the mother	3.461	(1.390)	4.338	(1.352)	-0.64	21.50†
Frequency of aggression with the mother	2.961	(1.749)	3.294	(1.687)	-0.19	1.97
Scope of positive parenting	1.792	(2.701)	0.265	(2.690)	0.57	13.25†
Frequency of positive parenting	0.033	(0.009)	0.033	(0.009)	-0.03	0.08
Frequency of negative parenting	0.016	(0.003)	0.015	(0.003)	0.32	4.42
Self-appraisal of fathering	0.493	(0.863)	-0.129	(1.157)	0.61	19.61†
Satisfaction as a father	0.023	(0.009)	0.030	(0.012)	-0.64	20.10†

Values represent an adjusted mean (*M*) and standard error (*SE*) of the mean derived from a generalized linear analysis after allowance for age, education, and ethnic heritage of the father along with age and gender of the target child. The direction of the between-group difference is reversed for (a) scope of positive parenting behavior and (b) self-appraisal of fathering because scaling of the variables was reversed to correct for positive skewing. The direction of the between-group difference is also reversed for frequency of negative parenting because an inverse link function was used in the generalized linear analysis. The direction of the between-group difference is correct for: (i) attitudes toward responsible fathering; (ii) frequency of positive parenting; and (iii) satisfaction as a father because scaling of the variables was reversed to correct for positive skewing and an inverse link function was used in the generalized linear analysis. The  $\chi^2$  statistics represent tests for a significant between-group difference. The daggers (†) denote statistically significant between-group differences after application of the modified Bonferroni procedure developed by Holm to hold the Type I error rate at no more than 0.05 for this cluster of dependent variables.

### Current dimensions of responsible fathering with the youngest biological child

Again, descriptive statistics for variables chosen to represent current dimensions of responsible fathering with the youngest biological child are summarized in Table 2, and results of the generalized linear analyses performed to test for between-group differences associated with drug abuse status are noted in Table 7. After allowance for age, education and ethnic heritage of the father along with age and gender of the target child, there was a statistically significant difference in personal definitions of the fathering role. As indicated in Table 2, the average rating of the opioid-dependent fathers indicated that, although all aspects of fathering were important to them, they were less important to them than they were to the other fathers. As noted in Table 7, the opioid-dependent fathers were also less likely to be the legal guardian of the child, they were less likely to be living in the same household as the child and they were less likely to be providing any financial support.

In addition, when compared with the other fathers, the opioid-dependent fathers reported markedly less use of persuasion and negotiation during recent contact with the mother of their child. Although all men reported being involved in a broad range of positive parenting behavior during the previous year, the opioid-dependent fathers had been involved in a narrower range of positive behavior. Contrary to expectations, there was no statistically significant difference in the

frequency of positive or negative parenting behavior. Finally, when compared with the other fathers, the opioid-dependent fathers offered a more negative appraisal of their performance as the father of this child, and they reported being less satisfied with their parenting of this child. When asked to grade their performance as a father, the opioid-dependent fathers awarded themselves an average grade equivalent to a C, while the other fathers awarded themselves an average grade equivalent to a B. Similarly, the opioid-dependent fathers indicated that as a group they were, at best, somewhat satisfied with their current situation, while the other fathers indicated that they were somewhat to very satisfied with their current situation.

### Supplementary generalized linear analyses

Because there were dramatic between-group differences in pattern of current residence with the youngest biological child that may have accounted for differences in some of the other current dimensions of fathering, that cluster of generalized linear analyses was repeated with residential status added to the statistical model as a covariate. After allowance for age, education, ethnic heritage and current residence of the father along with age and gender of the target child, there were still statistically significant between-group differences in: (i) personal definitions of the fathering role; (ii) legal guardianship; (iii) provision of financial support; (iv) frequency of negotiation with the mother of the child; (v) scope of positive parenting; (vi)

self-appraisal of fathering; and (vii) satisfaction as a father. Although the effect sizes proved somewhat smaller, the pattern of results was the same as that outlined in Table 7. Consistent with the results of the primary statistical analyses, there were again no significant differences in: (i) frequency of aggression with the mother of the child; (ii) frequency of positive parenting behavior; and (iii) frequency of negative parenting behavior.

## DISCUSSION

When considered with the existing literature on fathering, the results of this comparative study highlight a number of trends in the relationship between chronic drug abuse and responsible fathering that are consistent with the findings of work conducted with other populations of disenfranchised men. As expected, the fathers enrolled in methadone maintenance treatment confirmed relative compromise of responsible fathering. Contrary to expectations, they did not confirm relative difficulty across all dimensions of responsible fathering. Broadly, the pattern of findings suggests that, when compared with men living in the same community with no history of alcohol or drug abuse, the opioid-dependent men had become a father sooner and they had conceived more children with more women within more tenuous sexual partnerships that had not endured. Moreover, although there were few differences in historical dimensions of fathering with the youngest biological child, there were significant differences in current dimensions of fathering that reflected a pattern of less involvement in socially desirable aspects of parenting even after allowance for a dramatic difference in pattern of residence with the child.

### Drug abuse and evolutionary perspectives on responsible fathering

When examined from the perspective of modern evolutionary theory, the pattern of pair-bonding, reproduction and parenting reported by the opioid-dependent men could represent pursuit of a short-term reproductive strategy. Within the evolutionary literature, reproductive strategy refers to individual differences involving: (i) the onset of puberty; (ii) selection of sexual partners; (iii) stability of sexual relationships; (iv) conception of children; and (v) investment in parenting. Acknowledging that human reproduction involves elements of conscious decision-making, researchers believe that reproductive strategy evolves over time largely outside conscious awareness [48,49], and they consistently distinguish between a short-term reproductive strategy characterized by production of multiple children with different partners with minimal effort devoted to parenting and a long-term

reproductive strategy characterized by production of fewer children with a single partner with maximal effort devoted to parenting [48,49].

Outlining an evolutionary theory of socialization, Belsky and colleagues [48,49] have argued that, when exposed to unstable family environments characterized by insensitive or inconsistent caretaking, children develop internal working models of close relationships organized around a negative view of themselves and distrust of others. In this social ecology, the interaction of genetic and environmental influences contributes to aggressive, impulsive, oppositional behavior that fosters early, indiscriminate, opportunistic sexual activity that increases the likelihood men will produce more children in the context of unstable sexual partnerships with limited investment in parenting [48,49]. From this perspective, genetic liability and disturbance in caretaking environments during early to middle childhood increase the probability that boys enter adolescence with personality traits that increase risk for both chronic drug use and socially irresponsible production of children during early adulthood. Consistent with this position, longitudinal investigations of children living in high-risk family systems suggest that genetic liability and compromise of family environments do, in fact, contribute to personality disturbance during adolescence that exacerbates risk for drug use and poor social adjustment during early adulthood [23,50–52].

### Beyond deficit perspectives on drug abuse and responsible fathering

Alternately, although the results of this study document compromise of responsible fathering associated with chronic drug abuse, they also highlight socially responsible efforts to function as a father that are at odds with popular stereotypes. Within the data, there were consistent indications that the opioid-dependent men had made some effort to produce and parent children in a socially responsible manner but they had not been able to sustain that effort over time. When considered from this perspective, the results of this study are very consistent with the results of other research showing that fathers thought to be absent are often more involved in the lives of their children than might be assumed. Within overlapping, disenfranchised populations of men, researchers have repeatedly documented personal commitment to children and socially desirable efforts to parent children that seem, over time, to be undermined by social, interpersonal and psychological problems.

For example, Carlson and McLanahan [10,53] described surprisingly high expectations of marriage, strong commitment to financial support and clear expectations of sustained contact among less educated, lower-

income men who conceived a child outside a legal marriage. Waller and Swisher [54] then found that high expectations present early in the life of the child often waned relatively quickly as chronic substance use, physical aggression and incarceration frequently contributed to deterioration of the relationship between the parents. As the sexual partnership ended, paternal involvement often deteriorated. However, paternal involvement also frequently continued in the context of ongoing substance use because some couples did not see the alcohol or drug use as a problem, others developed ways to address the problem so that the family could remain together, and some found ways for the father to remain involved despite deterioration of the sexual partnership.

When considered from a generative rather than a deficit perspective [6], the results of this study could be taken as evidence that drug abuse undermines the interest most men have in being an effective parent. Although there is evidence of poor fathering, there is also evidence that the opioid-dependent fathers made an effort to father children in a socially desirable manner despite the presence of their drug abuse. Within the data, there are indications that they understood the importance of their parenting responsibilities, they had made an effort to reproduce in a socially responsible manner and they had made an effort to be present in the lives of their children. It is also noteworthy that the results reflected a pattern of less positive involvement rather than a clear pattern of more negative involvement. Even after allowance for differences in patterns of residence, the opioid-dependent men did not confirm more aggressive behavior in their relationships with the mothers of their children, and they did not confirm more hostile, rejectful or neglectful parenting behavior. They also seemed to be aware of their shortcomings as a parent, and they were not satisfied with their current family situation. Rather than pursuing a socially irresponsible, short-term reproductive strategy, the opioid-dependent men may have been pursuing socially responsible fathering that was undermined by the chronic, recurring nature of their drug abuse.

### Limitations

Although this comparative study offers valuable information about the psychosocial adjustment of drug-abusing fathers, there are a number of limitations that deserve mention. First, the data summarized here were obtained from relatively small groups of men who responded to a simple announcement seeking fathers for a study of father-child relations. Because they were self-selected groups, they may not accurately represent the local population of fathers receiving methadone maintenance treatment and the local population of fathers living in the

same community with no history of alcohol or drug abuse. Similarly, because only men enrolled in methadone maintenance treatment were included, the clinical group may not accurately represent fathers actively using opioids without ongoing treatment, and they may not accurately represent men with other drug abuse problems. They may also not represent accurately drug-abusing men living in other cultures.

Furthermore, the data for this study were collected exclusively from fathers with a focus on the parenting of their youngest biological child. Consequently, it is important to note that other informants and other approaches to measurement may have produced different results. Although there is a degree of consistency across informants, the perspective fathers, mothers and children take on the parenting of men can differ in potentially meaningful ways [55]. However, there is also evidence that the report of disenfranchised fathers may, contrary to expectations, be the most reliable, most valid source of information about their parenting [56,57]. Similarly, other measures of the co-parenting relationship may have provided a different perspective on that dimension of responsible fathering, and data collected via direct observation of fathers with their children may have provided a somewhat different perspective on the parenting behavior of drug-abusing men. Comparative data on the psychosocial adjustment of the sexual partners chosen by the opioid-dependent men and more information about their parenting of children born earlier in their drug abuse career might have also been helpful.

### Clinical intervention for drug-abusing fathers

Despite the limitations of the data, the results of this study highlight the need for family-oriented intervention designed to minimize the harm associated with paternal drug abuse [13]. Clearly, the emerging literature on the nature of substance abuse and fathering suggests that it may be helpful to engage men in a dialogue about parenting issues as they enter drug abuse treatment, because they will all be at risk to become fathers under difficult circumstances, many of them will already be fathers and many of the fathers will have ongoing contact with their children [26,35]. The data presented here also suggest that drug-abusing men will demonstrate some capacity for positive parenting that should be supported from within the drug abuse treatment system while others will present with negative parenting behavior and loss of parenting roles that should also be addressed.

Moreover, men enrolled in drug abuse treatment should be engaged in a dialogue about parenting issues because other research suggests that they are interested in parent intervention and they can be engaged in family-oriented intervention [26,58,59]. Finally, drug-abusing

men should be engaged in a dialogue about parenting issues as they enroll in drug abuse treatment because research has shown that, when added to treatment-as-usual, family-oriented intervention can have positive effects on family functioning and additive effects on substance use outcomes [58]. It can also have a positive effect on the psychosocial adjustment of other family members, even if they do not participate in the treatment [60–62].

### Acknowledgements

This research was supported by the National Institute on Drug Abuse, National Institutes on Health, US Department of Health and Human Services (R03 DA11988, R01 DA020619, P50 DA09241 and K05 DA000089). The authors would like to thank the clients and staff at the APT Foundation for their support of this project. They would also like to thank Lance Barnes, Andrew Dahir and Francis Giannini for their assistance with the collection and management of the data presented here, and they would like to thank Lisa Maccarelli, Daniel Csuka and Marc Rosen for their comments on the content of the manuscript.

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