

## Parenting Styles and Gender-Linked Drinking Behaviors in Dominica

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**Abstract** We explored links among adult alcohol consumption, personality, and retrospective childhood relationships with parents using psychometric instruments adapted for use among Dominicans ( $n = 58$ ; 25 men and 33 women). Compared to women, men consumed more alcohol and cigarettes, reported lower behavioral inhibition, and lower maternal "caringness" (all  $p < .05$ ). Results suggest that, with respect to drinking, parenting styles predispose opposite developmental trends for men and women. Women who recalled their mothers as more caring tended to have higher behavioral activation seeking (BAS) scores and also to drink more. For men BAS was negatively correlated with maternal caring, but did not significantly correlate with alcohol consumption. Women who recalled their fathers as more controlling tended to drink less ( $p = .026$ ), but men who recalled their fathers as more controlling tended to drink more ( $p = .0002$ ). Maternal controllingness was also positively associated with alcohol consumption in men ( $p = .002$ ), but showed no association with drinking in women. [child development, mother-child, health, family, personality, alcohol]

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Relations between parenting and individual identity are core issues in psychological anthropology (Bock 1988; Ingham 1996; Whiting and Whiting 1978). Debates about the influence of cultural context on parental behavior, the consequent socialization of adult intercultural differences, and the relative importance of universalism versus relativism have been major recurring themes (Hinton 1999; Quinn 2005; Wallace 1970). Some theorists have identified a prevailing assumption that cultural knowledge is somehow facsimiled into individual minds (Strauss 1992), and reliably copied back into practices in communities and relationships (Weisner 2009). Nonetheless, some anthropologists have shown interest in questioning the extent to which intracultural or idiosyncratic variation in parenting style or rearing influences lifetime health, well-being, adjustment, or maladjustment. For example, based on longitudinal evidence comparing distinctive parental styles (e.g., countercultural vs. conventional parents in California) Weisner (2009) showed that cultural scripts for parenting can be inconsistent, resulting in unintended consequences such as dependency conflicts and ambivalence among both parents and children.

In one recent interview based study with adult participants reflecting on childhood relationships with parents, Andersson and Eisemann (2003) compared retrospective parental dysfunction among 81 healthy adult participants and 81 age-matched heroin addicts from a methadone program in Stockholm, Sweden. They found there were significant differences in the effects for men and women, but on the whole drug addiction was associated with

recollections of less parental warmth, more parental rejection and controllingness (also called “intrusiveness” or “overprotectiveness” in the literature). They summarized the study as confirming “a link between dysfunctional parenting and the development of maladaptive psychosocial behavior like drug addiction.”

A similar recent study explored the validity of the EMBU (Egna Minnen Beträffande Uppfostran). The EMBU is a Swedish psychometric instrument translated as “My memories of upbringing” which was used by Marquez-Caraveo and colleagues (2007) in a study of substance abuse among Mexican adolescents. On the basis of their research, Marquez-Caraveo and colleagues write “there is no doubt about the impact of child-rearing environments on a wide variety of outcomes, ranging from normal variations of adaptive functioning and school success to an array of psychopathological results such as drug abuse, aggressive behavior, and anxiety in children and adolescents” (2007:58).

These studies reflect a growing empirical generalization that certain potentially universal dimensions of parental rearing, such as caringness and intrusiveness or controllingness, have important influences on lifetime risk of substance abuse and other problems. In a review of parental attachment theory Rohner and colleagues report “nearly 2,000 studies in the United States and cross-culturally confirm the widely held belief that children everywhere need acceptance (love) from parents and other attachment figures. Evidence has shown that when this need is not met, children worldwide—regardless of variations in culture, gender, age, or ethnicity—tend to self-report a specific form of psychological maladjustment” (2005:299). Although a “climate of ethnographic particularism and anti-psychologism” (Quinn 2005:477) may predominate in the literature, there is continued interest in a hypothetical “set of basic psychological needs common to all humans as part of healthy personality evolution” (Raybeck 2005) that are in part satisfied through parental or alloparental rearing.

It is perhaps unsurprising that maltreatment predisposes a child to greater risks of negative outcomes over the course of life, and that is precisely what available evidence suggests. A recent analysis of data from the U.S. National Longitudinal Study of Adolescent Health that used a nationally representative sample of adolescents ( $n = 14,078$ ) concluded that children who experience maltreatment (sexual abuse, physical abuse, or neglect) are substantially more likely to engage in binge drinking as adolescents (Shin et al. 2009). One important question that such a study raises for psychological anthropology is whether controlling, uncaring, or otherwise less than “ideal” parenting that did not constitute maltreatment within any given cultural context would also predispose alcohol use or other risky adolescent behavior. In short, if what might be deemed bordering on neglectful or abusive, in one worldview is deemed to be appropriate, necessary, or even beneficial for child well-being in another, will similar lifetime linkages show up at the population level between parental rearing and adult outcomes?

In corroboration with some past work on daughter-biased parental investment in Dominica (Quinlan 2006), the pilot data presented here suggests that parents may rear some boys with less caring and more controlling parental styles. At present, we lack the in depth

ethnographic and ethological data to account for actual differences in either cultural models of parenting style or rearing behaviors. However, data suggest that worldviews of parenting that contribute to gender-specific parental styles may characterize rural Dominican, if not rural Caribbean communities. Despite such hypothetical cultural norms in parental rearing, the less caring and more controlling parenting styles afforded boys nonetheless appear to associate with predictable lifetime linkages to maladaptive outcomes, operationalized in this study as more drinking and smoking.

Outside of psychological anthropology, a large and diverse cluster of subdisciplines are interested in parental bonding or “attachment theory” and the ways in which parenting style influences child development. Two commonly distinguished dimensions of parental style are (1) parental controllingness—also called “intrusiveness” or “overprotectiveness”—comprising the extent to which a parent allows a child autonomy and (2) parental “caringness” comprising warmth or affection (Myhr et al. 2004). The focus of much research on parental bonding and child-caregiver “attachment” has been to investigate how specific dimensions of parental rearing shape or impact the developing child, and consequently may predispose maladjusted or less-than-optimal behavior later in life. A wide variety of negative outcomes have been studied, including: various psychopathologies (Berry et al. 2007; Juffer et al. 2005; Meyer and Gillings 2004); substance abuse (MacCall et al. 2001); stalker behavior (MacKenzie et al. 2008); earlier sexual activity and earlier onset of menarche and fertility (Belsky et al. 1991; Chisholm 1993); and among men, more terminated short-term relationships and a greater number of lifetime sex partners (Koehler and Chisholm 2009).

In a study of North American men using the Parental Bonding Index (PBI) Rutherford and colleagues (1997) found that parental caringness was negatively correlated with adult alcohol consumption and that fathers in the group of families with a family history of alcoholism were also rated by sons as being significantly less caring than fathers in the low familial risk group. These findings raise the question of causal direction; do fathers from lineages with a tendency toward alcoholism tend to be less caring, or do lineages with less caring fathers tend to promote alcoholism? Longitudinal work suggests that parental alcohol use is one major mediator of adolescent alcohol use (Brook et al. 2010) which may covary or confound measures such as parental bonding. This study and others suggest the hypothesis that less affectionate parental rearing by a primary caregiver predisposes a higher lifetime risk of substance abuse.

The results of the study we describe here offer an interesting cross-cultural comparison to past studies by showing a significant gender or sex difference in the relationship between retrospective reports of parental controllingness and adult personality and alcohol consumption among men and women. This study also presents an interesting contrast with past findings by showing a sex difference in the association of behavioral activation seeking (novelty or reward seeking) personality and alcohol consumption that has to our knowledge not been reported previously, and a lack of direct association between parental warmth and alcohol consumption.

Universal human sensitivities may account for widely observed links between parental rearing and adult outcomes (Lende and Smith 2002). However, facultative individual adaptation to specific developmental contexts or context-specific ecological factors—including cultural factors like household structures and gender identity—may also contribute to important interactive effects in the developmental linkage between parental rearing and adult outcomes. Anthropology may have much to contribute through careful field-based work that accounts for both microenvironmental and population-level factors such as household dynamics, culture, and individual identity.

Social norms of alcohol consumption, and in particular gender-specific norms of alcohol consumption, may play an important role in shaping the influence of parental style on vulnerability in offspring to develop substance abuse problems. Alcohol is a major risk factor in many world regions but “the Americas are unique in that alcohol surpasses smoking as the most important risk factor for burden of disease” (Rehm and Monteiro 2005). Available epidemiological evidence on contemporary Central American and Caribbean societies indicates that alcohol abuse and alcohol related health and social problems show a higher prevalence than in North America, Europe, or Japan.

Throughout the Americas, but especially in Central America and the Caribbean, men are disproportionately underrepresented among “abstainers,” and also suffer from significantly higher rates of alcohol-related accidents and health problems. Alcohol abuse has been linked in past studies in the region with domestic abuse and violence, and is thus linked to a variety of forms of social suffering and reduced well-being. Understanding the social, cultural, and developmental factors that influence individual- and population-level patterns of alcohol consumption in the region is thus quite important from the standpoint of both public health and societal well-being.

## **Parental Behavior and Child-Rearing Environments**

Anthropologists have long noted that mother and father are only two salient social relations in the “cast of characters who occupy the set” of child socializers (Whiting and Whiting 1978) and that parental behavior comprises one component of child-rearing environments. A full portrait of child rearing necessitates the contextualization of individual experience within cultural context (Flinn 2006). The Whitings wrote that child rearing settings “are in turn related to the culturally determined activities that occupy males and females of various ages in the normal course of daily living, activities that are determined by economic pursuits, the division of labor, and the organization of people in space” (Whiting and Whiting 1978:6). In sum, a complete assessment of child rearing would consider the broader cultural context, as well as the probability of unique and nonuniversal patterns of parent-child dynamics in specific cultures, and the interaction between individual differences and specific cultural contexts. For example, universal sensitivities to parenting may manifest differently among females and males in societies with rigid patriarchy and suppression of female autonomy than in societies with more androgynous and egalitarian gender models.

Such a detailed ethnographic analysis of gender, parenting, and child development is beyond the scope of this exploratory study. However, with this framework in mind, in this study, we focus on one dimension of child rearing: recollections of childhood parental bonding. The objective of the study was to examine the generalizability of findings from past research in patrifocal North American populations to links among parental bonding, personality, and substance abuse in a matrifocal rural Caribbean community. The two primary findings we sought to replicate were: (1) the finding by Rutherford and colleagues (1997) that parental caring is negatively associated with alcohol consumption; and (2) a finding observed in a number of past studies that BAS, and in particular the “Fun Seeking” (BAS-FS) subdimension of reward-seeking personality is positively associated with substance use (Franken and Muris 2006). By looking at both men and women, we also sought to explore possible sex or gender differences.

We used a mixture of structured psychometric instruments, adapted to the local Dominican English vernacular, semistructured interviews, unstructured interviews, and participant-observation. This was a pilot study intended to examine the feasibility of employing instruments like the PBI and BIS-BAS in the community and to explore the general validity of such instruments in the field site, a site that has been the subject of ongoing longitudinal research for over 20 years. We used quantitative inferential analyses to test the research hypotheses and findings are discussed in terms of qualitative features of the cultural context.

## Study Site

Bwa Mawego is a village of some 600 inhabitants on the eastern coast of the island Republic of Dominica. Bwa Mawego has been the focus of ongoing longitudinal ethnographic research on child development and health by Flinn and colleagues for over 20 years (Flinn 2006; Flinn and England 1995, 1997; Flinn et al. 1996). The village is one of the most remote on the island and remains one of the more underdeveloped communities in Dominica. Economic development has progressed slowly because Bwa Mawego is far from the capital city and other commercial and transit centers on the island and has been among the last communities to have paved roadways linking to the rest of the island. Most residents of Bwa Mawego are poor and continue to rely in large part on subsistence horticulture, deriving cash incomes from pursuits such as bay leaf cultivation, commerce, and transport.

Many of the approximately 180 households in the village are matrifocally organized. Quinlan and colleagues (2005) have argued that this household structure is linked with a higher prevalence of daughter-biased parental care and part of a pattern in which boys who are socially marginalized are placed at elevated risk for lifetime problems, including men being “more likely to be poor and develop alcoholism and less likely to migrate or attend high school” (Quinlan 2006; Macfarlan and Quinlan 2008). Ethnically, most residents have a mixture of European, African, and Carib ancestry. As of the late 1990s modern infrastructure and associated social reorganization were incipient. In 1995, “about 60% of homes have

electricity, 23% have telephones, 11% have refrigerators, and 7% have televisions” (Flinn and England 1995:856). In 2009, a slightly higher proportion of homes have electricity, refrigerators, and TVs. Cell phones have become commonplace, and piped water supply is now found in almost half of village residences.

During the last decade, involvement in cash economy has increased, initially through an increase in bay leaf cultivation that has recently diminished but also through shop-keeping, taxi driving, and migrant labor, both to other parts of the island and off-island. Related to these incipient economic and social changes, there has been a slight increase in outmigration and the population growth rate for Dominica as a whole has remained negative.

## Research Design

Residents of the village comprise a traditional social group in which direct generalized-reciprocal relations remain important to social identity and well-being. The focus of this study was to assess possible links between recollected childhood socialization experiences and adult behaviors using a retrospective questionnaire method among a small convenience sample of adult men and women in the village ( $N = 25$  males;  $N = 33$  females). Many of the adult participants in this study have been participants in ongoing longitudinal research in the village for over 20 years. Consequently, an additional goal of our study here was to establish an empirical basis to compare the retrospective PBI measure with longitudinal indicators of family process from past work.

Past work has shown that socially marginalized men in the village are less likely to complete their education, and more prone to substance abuse than women (Quinlan 2006), a pattern likely to generalize to much of the Caribbean. Because of the significance of alcoholism in the Caribbean, particularly among men, we focused on adult alcohol consumption as the primary outcome variable, but also assessed tobacco consumption through self-reports during ethnographic interviews, and “punishment-avoiding/reward-seeking” personality dimensions (BIS–BAS). A number of other drugs are regularly consumed by villagers, most notably cannabis, but to keep this study manageable we focused on alcohol as one of the most commonly, and openly used and abused drugs in this village and in the region.

Matrifocality is common among families in the community, and in the rural Lesser Antilles more broadly. Thus, in contrast to past findings in patrifocal societies linking lower parental caring with adult alcohol consumption, we initially hypothesized that maternal control-lingness would be most strongly associated with increased sensation-seeking behaviors (BAS scores, drinking, and smoking), and that father–son relationships would have negligible influence on adult behavior. Results did not entirely reflect these initial hypotheses, but also did not exactly correspond to the patterns reported in past research on parental bonding and adult alcohol consumption.

## Methods

On the basis of long-term relationships with the research community, we worked with a research assistant who was a permanent and lifetime resident of the village to recruit a convenience sample of adult men ( $n = 25$ ) and women ( $n = 33$ ) ranging in age from 18 to 67 years for men and from 18 to 57 years for women. Mean age and standard deviation in age for men was 33.84 ( $\pm 12.42$ ) years with a median age of 35 years. Mean age and standard deviation in age for women was 31.18 ( $\pm 11.11$ ) years with a median age of 32 years. This sample consisted of adults who were currently residing in two adjacent sections of the village, who had participated in past studies, and who would be, in the opinion of the research assistant, amenable to participation. Two men and one woman who were recruited through this process either declined or were unable to participate (95.08 percent response rate). Although this sample was not chosen randomly, based on our long-term experience in this community we have no basis to believe that this sample is not representative of the community more generally. Participants were informed that the primary focus of the study was on how personality related to reward-seeking behavior, and participants were allowed to read the questionnaire instruments before giving consent to participate. Participants were allowed to withdraw from the study at any time, or to skip any question they did not wish to answer.

We assessed parental bonding using Parker and Tupling's Parental Bonding Index (PBI), a retrospective instrument that measures parental "Caring-ness" and "Controlling-ness" up to age 16 (Parker with Tupling and Brown 1979). In Parker's and Tupling's original work, the concept of parental "controllingness" was used interchangeably with that of "overprotectiveness," and subsequently this dimension of parental rearing, that is, the degree to which a parent affords a child autonomy, has also been referred to as intrusiveness.

Table 1 presents examples of items in the original PBI instrument for both the parental caringness and parental controllingness dimensions. Participants were asked to report how well the question described the behavior of each parent prior to the subject reaching age 16 years using a four-point Likert scale (Very Like; Somewhat Like; Somewhat Unlike; Very Unlike). A small piece of paper with this Likert scale written on it was used to help participants quickly decide the appropriate response for each verbally addressed statement or

**TABLE 1.** Examples of Question Items from Parker and Tupling's "Parental Bonding Instrument" (PBI) for Both the "Caringness" Dimension of Parental Style and the "Controllingness" Dimension

Parental Caring (example items)	Parental Controlling (example items)
1. How much did your mother speak to you with a nice or friendly voice?	3. Did your mother let you do the things that you liked to do?
6. Was your mother loving to you?	7. Did your mother like for you to make your own choices or decisions?
12. Did your mother smile at you a lot?	10. Did your mother give you your privacy?
18. Did your mother not talk to you very much?	20. Did your mother feel that you could not take care of yourself without her there?

question in the study. The published coding scheme for items loading onto parental caring and controlling for each parent, as well as reverse-phrased items were used in tabulating summary scores.

Based on preliminary interviews with key informants, wording of some questions in the PBI were altered for use in this population. Potentially confusing phrases were rephrased into Eastern Caribbean English vernacular, preserving the structure and meaning of each item in the instrument. The PBI and all other questions were administered orally to participants in privacy (by S.A.D.).

Father's roles in Caribbean households are complex and change frequently through time. In the first place, even in households where fathers are regular members of a household, they are often absent from households for various periods of time. Secondly, in some cases fathers are effectively never present as a caregiver in the household and consequently a sizeable fraction of village residents barely know their fathers, although in some cases a matrilineal male relative may serve in some respects as a father role. With respect to the former social dynamic, the small sample size and limited measures used in this study are not sufficient to characterize the complex histories of comings and goings of fathers during a person's childhood. With respect to the second case, we categorized all respondents as either Father-Present ( $n = 55$ ) or Father-Absent ( $n = 3$ ) based on our knowledge of all individuals life histories from the preceding years of fieldwork in the community. Perhaps because of the small sample size this dummy variable showed no meaningful patterning with any of the variables discussed here, and as such we have omitted it from analyses.

Smoking and drinking behavior were assessed with simple structured questionnaire items administered during a one-hour ethnographic interview. We opted for a simple method to assess drinking behavior in the interest of minimal burden on participants, and a concern about employing too many complex psychometric instruments, which have not been validated in this particular population. In future work we hope to explore adaptations of more standardized measures of problem drinking such as the T-ACE or AUDIT instruments, popular measures that have been used with thousands of participants and have been used in recent studies (Burns et al. 2010). We speculate that the simple count of drinks measure used here would show strong correspondence with scores on the AUDIT and that those participants with the highest counts of weekly drinks also would be detected as problem drinkers by the T-ACE. Participants were asked to estimate the number of alcoholic beverages they consumed during each day, starting with the present day and working backward to cover the previous week, as well as the number of cigarettes or other smoking products they had consumed during the previous day only. Because alcohol consumption is generally done publically and in social gatherings in and around shops, participant-observation suggested to us that this method of estimating drinking would be prone to relative accuracy. However, future work should strive to establish that this method is not prone to over- or under-estimating of drinking.

Personality was assessed using the Behavioral Inhibition-Behavioral Activation (BIS-BAS) psychometric scale (Carver and White 1994). Past work has shown the BIS-BAS to have good internal consistency, test-retest reliability, and construct validity (Brenner et al. 2005; Knyazev et al. 2004). We examined the local understanding of each of the 20 items in the instrument through interviews with three different key informants who assisted in the modification of some language in the BIS-BAS to better reflect local vernacular. The reliability and validity of this instrument remain to be shown through systematic methods. However, our impression based on participant responses is that the underlying meanings of all BIS-BAS items were well understood and immediately obvious with minimal need for explanation or clarification. The version of the instrument we used comprises 20 statements about “attitudes and behaviors about punishments and rewards;” a more recently published version includes additional sham-question items intended to obscure respondent ability to anticipate how to respond. For the BIS-BAS, participants are directed to think of themselves and indicate the most appropriate response to each question, using a four-point Likert scale. Hypothetically, a summated score from the BIS items reflects general sensitivity to aversive or punishing experiences, and a tendency to withdraw from such experiences, whereas BAS items reflect a general sensitivity to and tendency to approach rewarding experiences. We refer to the two psychometric constructs that these instruments are thought to reflect as withdrawal and approach scores. Past work with the BIS-BAS instrument has also divided BAS scores into three components: BAS-RR behavioral activation reward responsiveness; BAS-DR behavioral activation drive; and BAS-FS behavioral activation fun seeking.

## Analyses

We used unpaired and paired two-tailed T-tests to perform inferential analyses of differences between men and women as well as differences in recollected parental styles for mothers and fathers. We also used pairwise Pearson’s product-moment correlation coefficient to examine correlations among variables representing parental style and adult behavior and personality. Pearson’s  $r$  is widely used in the sciences as a measure of the strength of linear dependence between two variables (Kleinbaum et al. 2008). The statistic ranges between  $-1$  and  $1$  inclusive. A value of  $1$  results where all data points lie on a line for which  $Y$  increases as  $X$  increases implying that a linear equation describes the relationship between  $X$  and  $Y$  perfectly. In contrast a value of  $-1$  implies that all data points lie on a line for which  $Y$  decreases as  $X$  increases. A value of  $0$  implies that there is no linear correlation between the variables. Analyses were performed with a licensed version of Systat 10.9.

We followed the conventional 5 percent alpha as the cutoff for reporting results as statistically significant, although in instances where a lack of correlation is suggestive of a sex or gender difference we also mention some trends that achieved insignificant alpha  $>0.05 <0.1$ . We present only the values from the unpooled (separate variances) version of Student’s T-test. However, results from both the pooled and unpooled algorithms were

examined, and in all cases T-statistics and P-values from the two types of test were quite similar.

## Hypotheses

We tested the hypothesis that controlling or uncaring parental style predisposes adult sensation-seeking behavior by examining associations between reported total alcohol-consumption during the preceding week and scores for maternal and paternal caringness and controllingness. The primary outcome (dependent) variables were sum of alcoholic drinks (SAD) and the natural logarithm-transformed sum of drinks (LOGSAD). We examined four candidate predictor (independent) variables: maternal caringness (MCARE), maternal controllingness (MCONT), paternal caringness (PCARE) and paternal controllingness (PCONT).

We also compared drinking and personality for participants grouped by smoker–nonsmoker categorization, and for smokers, the correlation with number of reported cigarettes smoked in a day. Supplementary analyses also examined the influence of parental style on each of the BIS–BAS scores, including: behavioral inhibition BIS; behavioral activation BAS; reward responsiveness BAS–RR; drive BAS–DR; and fun seeking BAS–FS. We examined the influence of the various BIS–BAS dimensions of adult personality on the sensation-seeking behavior variables (smoking and drinking).

## Results

### Gender or Sex Differences in Recollected Maternal and Paternal Parenting Style

This section compares retrospective ratings of parental style for both mothers and fathers in adult women and men. Descriptive statistics and unpooled T-tests comparing distributions for males and female participants for all these variables are presented in Table 2.

There was only one significant gender or sex difference in retrospectively estimated parental style: adult men in Bwa Mawego tended to recall their mothers as having been significantly ( $P[T_{53.6} \geq 2.19] = .03$ ) less caring (Mean =  $26.92 \pm 4.69$ ) than did adult women (Mean =  $29.73 \pm 5.04$ ). Given findings of different directions of correlation between parenting style and adult behavior and personality for men and women, this lack of gender or sex difference in the distribution of recollected parental style supports the interpretation that, with respect to drinking, parenting styles predispose opposite developmental trends for men than for women.

### Gender or Sex Differences in Reward-Seeking Behaviors

As shown in Table 2, estimated total alcohol consumption during the previous week varied significantly among men, as a consequence of some men who reported no alcohol consumption and some who reported drinking large numbers of alcoholic drinks during the

TABLE 2. Descriptive Statistics by Sex

	Adult Women					Adult Men					T-Stat	P-Value	df
	N	Min	Mean	Max	S	N	Min	Mean	Max	S			
MCARE	33	18	29.73	36	5.04	25	18	26.92	34	4.69	2.19	0.03	53.6
MCONT	33	8	17.67	34	5.82	25	7	19.36	29	5.74	1.11	0.27	52.2
PCARE	33	11	23.46	36	6.32	25	8	23.16	33	5.79	0.18	0.85	53.9
PCONT	33	5	16.03	29	5.62	25	6	15.92	22	4.65	0.08	0.94	55.5
SAD	33	0	1.06	15	3.18	25	0	18.94	111	30.42	2.93	0.007	24.4
CIG	33	0	0.06	2	0.035	25	0	3.92	30	7.16	2.69	0.013	24.1
BIS	33	15	22.39	28	3.03	25	14	19.52	26	2.96	3.63	0.001	52.4
BAS	33	24	39.3	48	5.03	25	29	39.68	50	5.63	0.26	0.79	48.5
BAS-RR	33	12	17.39	20	2.24	25	12	16.64	20	2.67	1.14	0.26	46.6
BAS-DR	33	4	10.64	15	2.67	25	-1	11.32	16	2.66	0.97	0.34	51.9
BAS-FS	33	7	11.27	16	2.23	25	8	11.72	15	2.11	0.78	0.44	53.2

*Note.* Descriptive statistics by sex for study variables: maternal caringness and controllingness (MCARE and MCONT), paternal caringness and controllingness (PCARE and PCONT), sum of reported alcoholic drinks during the previous week (SAD), sum of reported cigarettes consumed during the previous day (CIG), behavioral inhibition score (BIS), behavioral activation score (BAS), BAS-reward responsiveness score (BAS-RR), BAS-drive score (BAS-DR) and BAS-fun seeking score (BAS-FS). (N = number of individuals in sample; Min = minimum for sample; Max = maximum for sample; S = sample standard deviation ( $[n - 1]$  denominator formula).

previous week. Among men, the maximum number of alcoholic drinks consumed during the previous week was 111. This works out to a mean of 18.94 drinks per day, versus a maximum of only 15 drinks reportedly consumed during the previous week among the sample of women in the study. Although this number (111) is large and far in excess of what most diagnostic criteria tend to deem as a “healthy” volume of alcohol consumption (e.g., a maximum of one drink per day and ideally no more than five per week), ethnographic observations indicated that a nontrivial proportion of men in this village consume as many as 18 drinks of alcohol per day (usu. “shots” of bush rum) on a regular basis. The distribution of estimated total number of alcoholic drinks consumed during the previous week for men (Mean =  $18.94 \pm 30.42$ ) is significantly higher than for women (Mean =  $1.06 \pm 3.18$ ), both in the statistical sense ( $P[T_{24.4} \geq 2.93] = .007$ ), and likely in terms of cumulative impact on health and well-being. Because the sample of men is  $N < 30$  and the distribution for sum of alcoholic drinks was highly right-skewed, we repeated the T-test analyses using the logarithm-transformed sum of drinks (LOGSAD) for both groups, yielding significant results ( $P[T_{30.6} \geq 4.70] = .0001$ ),

Numbers of cigarettes consumed by men (Mean =  $3.92 \pm 7.16$ ) is significantly greater ( $P[T_{24.1} \geq 2.69] = .013$ ) than for adult women (Mean =  $0.06 \pm 0.035$ ). Men have significantly ( $P[T_{52.4} \geq 3.63] = .001$ ) lower behavioral inhibition scores (BIS; Mean =  $19.52 \pm 2.96$ ) than adult women (Mean =  $22.39 \pm 3.03$ ). Taken as a whole, the pattern in these analyses suggests that higher values for smoking and drinking among men could be in part a result of (1) distinctive patterns of maternal care during childhood, and/or (2) gendered differences in behavioral inhibition, that is, less sensitivity to aversive experiences

or punishment among men. Subsequent analyses, described in detail below, did not reveal any direct correlation between male drinking and maternal caringness. With the small sample size in the study it is possible that such a relationship is obscured by sampling error.

### Within-Subject Differences in Recollected Maternal–Paternal Parenting Style

In contrast to the opening section, which addressed whether there were between-gender or sex differences in how mother and father were recollected, this section compares retrospective ratings of parental style for both mothers and fathers within men and within women. Results here address the question of whether either adult men or women tend to recollect maternal rearing as having been distinctive from paternal rearing. Tables 3a and 3b show the results of paired T-tests for maternal compared to paternal PBI scores for each gender or sex. Men reported their mothers as having been significantly more caring than their fathers (MCARE =  $26.92 \pm 4.69$ ; PCARE =  $23.16 \pm 5.79$ ), as did women (MCARE =  $29.73 \pm 5.05$ ; PCARE =  $23.46 \pm 6.32$ ). However, the difference in caringness between mothers and fathers was substantially more robust among women ( $P[T_{32} \geq 5.55] < .001$ ) than among men ( $P[T_{24} \geq 2.79] = .01$ ). Whereas women in the study did not report their mothers as being substantially more controlling than their fathers ( $P[T_{32} \geq 1.26] = .22$ ), the men in the study did report significantly ( $P[T_{24} \geq 3.27] = .003$ ) higher maternal controllingness (Mean =  $19.36 \pm 5.74$ ) than paternal controllingness (Mean =  $15.92 \pm 4.65$ ).

### Correlations among Parental Style, Personality, and Drinking

Table 4a presents Pearson correlation coefficients for recollected parental style prior to age 16 (PBI variables) and adult personality (BIS–BAS) and reward-seeking behaviors (alcohol drinking and smoking) for women; Table 4b presents the same statistics for men; and Table 4c presents Pearson coefficients for the two primary BIS–BAS variables and alcohol and cigarette consumption. Because sum of alcoholic drinks (SAD) is highly right skewed among

**TABLE 3a.** Style of Parents Remembered by Adult Female Participants

	Adult Women			
	Father	Mother	Paired T	P-Value
Controlling	16.03 (5.62)	17.67 (5.82)	1.259	0.22
Caring	23.46 (6.32)	29.73 (5.05)	5.55	< 0.001

*Note.* Paired T-tests comparing maternal and paternal caringness and controllingness reported by female participants in the study. Standard deviation values for each distribution are shown in parentheses below the mean values. Women reported their mothers as having been more caring than their fathers, but did not report a difference in controllingness for mothers and fathers.

**TABLE 3b.** Style of Parents Remembered by Adult Male Participants

	Adult Men			
	Father	Mother	Paired T	P-Value
Controlling	15.92 (4.65)	19.36 (5.74)	3.27	0.003
Caring	23.16 (5.79)	26.92 (4.69)	2.79	0.01

*Note.* Paired T-tests comparing maternal and paternal caringness and controllingness reported by male participants in the study. Standard deviation values for each distribution are shown in parentheses below the mean values. Similar to women, men also reported their mothers as having been more caring than their fathers, but the magnitude of this difference was smaller than for women. Whereas women did not report a difference in controllingness for mothers and fathers, men reported their mothers as having been significantly more controlling than their fathers.

men we also examined the natural log-transformation of the sum of alcoholic drinks listed as “LOGSAD” in Tables 4a–4c. Analyses with LOGSAD confirmed associations observed for SAD and suggest that two trends were in fact statistically significant when the distribution of alcohol consumed was normalized by log-transformation. Given the small sample size, these findings must be regarded as tentative, but suggest the merit of additional studies using larger samples to reexamine the same variables.

**TABLE 4a.** Correlations of Recollected Parental Style with Adult Female Personality and Behavior

	Adult Women			
	Mother		Father	
	Caring	Controlling	Caring	Controlling
BAS	0.336 (.026)	– 0.308 ns	0.263 ns	– 0.12 ns
BIS	0.214 ns	– 0.287 ns	0.304 ns	0.111 ns
SAD	0.176 ns	– 0.085 ns	– 0.291 ns	– 0.388 (.056)
CIG	0.116 ns	0.01 ns	0.214 ns	0.031 ns
LOGSAD	0.199 ns	– 0.118 ns	– 0.317 ns	– 0.387 (.026)

*Note.* Pearson pairwise correlation coefficients (female participants only) for correlations of recollected parental-style with: adult personality (reward-seeking [BAS] and punishment-avoiding [BIS] predispositions) and reward-seeking behaviors (sum of alcoholic drinks during the previous week [SAD] and number of cigarettes smoked during the previous day [CIG]). All  $p$  values that approached significance ( $p \leq .056$ ) are listed in parentheses.

**TABLE 4b.** Correlations of Recollected Parental Style with Adult Male Personality and Behavior

	Adult Men			
	Mother		Father	
	Caring	Controlling	Caring	Controlling
BAS	−0.414 (.04)	−0.263 ns	−0.371 ns	0.11 ns
BIS	−0.243 ns	−0.259 ns	−0.212 ns	0.139 ns
SAD	−0.163 ns	0.496 (.012)	−0.017 ns	0.388 (.055)
CIG	0.134 ns	0.129 ns	0.024 ns	0.001 ns
LOGSAD	−0.313 ns	0.597 (.002)	−0.255 ns	0.679 (.0002)

*Note.* Pearson pairwise correlation coefficients (male participants only) for correlations of recollected parental-style with: adult personality (reward-seeking [BAS] and punishment-avoiding [BIS] predispositions) and reward-seeking behavior (sum of alcoholic drinks during the previous week [SAD] and number of cigarettes smoked during the previous day [CIG]). All P-values that approached significance ( $P \leq .056$ ) are listed in parentheses.

Focusing first on Table 4a, adult female behavioral activation seeking (BAS) score is positively correlated with each woman's recollected maternal caring score ( $P[R \geq 0.336] = .026$ ). Women whose mothers were more caring tend to have higher behavioral activation seeking scores, that is, higher sensitivity to reward. A negative association between paternal controllingness and untransformed alcohol consumption among women that approached but did not achieve statistical significance ( $P[R \leq 0.388] = .056$ ) was statistically significant using the LOGSAD variable ( $P[R \leq -0.387] = .026$ ). This finding indicates that women whose fathers were less intrusive or controlling tended to drink more, a pattern that is in contrast to that found among men.

As shown in Table 4b, among adult men, there is a positive trend between paternal controllingness and untransformed alcohol consumption ( $P[R \geq 0.388] = .055$ ). This trend of association is highly statistically significant using the LOGSAD variable ( $P[R \leq 0.679] = .0002$ ) a pattern among men that is opposite to the pattern among women. Whereas women whose fathers were less controlling tend to drink more, men whose fathers were more controlling tend to drink more. Among adult men, there is also a significant positive association between maternal controllingness and untransformed alcohol consumption ( $P[R \geq 0.496] = .012$ ), a pattern confirmed by the analyses using LOGSAD ( $P[R \geq 0.597] = .002$ ). In sum, men whose mothers or fathers were more controlling tend to drink more alcohol as measured by consumption during the previous week, whereas among women there is no evidence of any association between maternal controlling and drinking, and an opposite pattern of association for paternal style.

**TABLE 4c.** Correlations of Adult Personality and Behavior for Both Sexes

	Adult Women		Adult Men	
	BAS	BIS	BAS	BIS
SAD	0.405 (.019)	0.043 ns	-0.377 (.063)	-0.278 ns
CIG	-0.11 ns	0.095 ns	-0.466 (.019)	-0.32 ns
LOGSAD	0.393 (.024)	0.102 ns	-0.119 ns	-0.028 ns

*Note.* Table shows Pearson pairwise correlation coefficients (female and male participants listed separately) for correlations of adult personality (reward-seeking [BAS] and punishment-avoiding [BIS] predispositions) and reward-seeking behaviors (sum of alcoholic drinks during the previous week [SAD] and number of cigarettes smoked during one day [CIG]). All  $p$  values that approached significance ( $p \leq .063$ ) are listed in parentheses.

Among men there is a significant negative association between maternal caringness and behavioral activation seeking ( $P[R \leq -0.414] = .04$ ). Men whose mothers were more caring tend to have lower BAS scores, that is, lower sensitivity to reward. This is opposite the pattern among women for whom there is a positive correlation between maternal caringness and behavioral activation seeking ( $P[R \geq 0.336] = .026$ ).

Table 4c presents Pearson pairwise correlation coefficients for associations between adult personality (BIS-BAS) and reward-seeking behaviors (alcohol drinking and smoking). Among women, there is a significant positive correlation between behavioral activation seeking (BAS) and alcohol consumption ( $P[R \geq 0.405] = .019$ ). Although it does not achieve statistical significance, among men, there is an opposite trend in which BAS is negatively correlated ( $P[R \leq -0.377] = .063$ ) with alcohol consumption. Among men, there is also a strong negative correlation between behavioral activation seeking (BAS) and cigarette consumption ( $P[R \leq -0.466] = .019$ ).

## Discussion

Because of the small sample size and the use of modified psychometric instruments that have not undergone detailed study for their validity and reliability in Dominica, the results of this pilot study must be considered tentative. The findings of this study present a number of interesting comparisons and contrasts with empirical generalizations from past work on parental rearing and lifetime risk of alcohol abuse and substance abuse in general. Consequently, this study suggests the merit and importance of additional studies with larger samples, a more substantial mixture of ethnographic case-study evidence, and more detailed examination of validity and reliability of the instruments in this cultural context.

Overall, findings from this study corroborate the generalization that low parental caringness or affection and high parental intrusiveness or controllingness predisposes increased risk of negative outcomes such as substance abuse in adolescence and adulthood. However, the pattern of distinctive sex differences found in the linkage between parental rearing and the adult personality and substance use characteristics also suggests that cultural or ecological dimensions like matrifocality and gender identity may produce dramatic interactive effects in putatively universal links for humans between parental or caregiver style and adult outcomes.

Unsurprisingly given the existing evidence about the male bias in drinking in Central America and the Caribbean, we find that men consume more alcohol and cigarettes compared to women. Men also report lower behavioral inhibition, and lower maternal caringness. These findings of association between self-reported measures of adult behavior and personality and recollections of childhood relationships with mother do not prove that lower maternal caringness is causally antecedent to lower adult male behavioral inhibition in this population. However, these findings suggest this as a possibility that should be examined with future research using more extensive and long-term methods. Moreover, the same conclusion has been suggested by past work of the Quinlans and their colleagues performed in Dominica.

Quinlan and colleagues have been involved in the ongoing longitudinal work in Dominica for many years. Based on their rich set of ethnographic and observational data they have argued that matrifocality in this community is linked with a higher prevalence of daughter-biased parental care (Quinlan 2006; Macfarlan and Quinlan 2008). The results of the study reported here fit well with their argument that matrifocality and daughter-biased parental care contribute at the community level to boys suffering higher levels of social marginalization that places them at elevated risk for negative outcomes. The problems that Quinlan and colleagues note as being linked to the social complex of matrifocality and daughter-biased parental care included increased risk of male poverty, alcoholism, and reduced probability for boys to finish high school or to migrate for work. The findings we report here of lower behavioral inhibition, lower maternal caringness, and higher drinking and smoking among adult men, as well as the opposite patterns of association between BAS and alcohol consumption among men and women all fit well with the model described in past work by Quinlan and colleagues. As an adaptation to resource scarcity and heightened risk, matrifocality and daughter-biased parental care may predispose female kin groups toward less affectionate and more intrusive or controlling parental styles consequently contributing to a tendency for boys to be more prone to coping by reduced sensitivity to punishment, and prone to engage in “male-typical” risky sensation-seeking behaviors such as excessive alcohol consumption.

Modern scientific theories about why “early ontogenetic events have such an inordinate effect on everything that follows” (Schoore 1999:xi) originated with Freud’s late 19th century work. But it was arguably the work of John Bowlby starting in the late 1940s that had the greatest influence on modern thinking about the influence of development on social and

personality psychology and psychopathology such as vulnerability to substance abuse (Bowlby 1982). Bowlby's work departs from early psychoanalytic models in which an infant's internal life was primarily thought of as being influenced by fantasy instead of real life experiences, and also in arguing that an ongoing affectionate bond between a primary caregiver and an infant is necessary for normal development. Bowlby formulated the concept of "attachment" through a "convergence of his two most important intellectual influences, Charles Darwin and Sigmund Freud" (Schore 1999:xi). He argues that the "child's tie to his mother is a product of the activity of a number of behavioral systems that have proximity to mother as a predictable outcome" (Bowlby 1982:179). Bowlby's work focuses on the description of specific ontogenetic mechanisms "by which an immature organism is critically shaped by its primordial relationship with a mature adult member of its species—that is, . . . how an attachment bond forms between infant and mother" (Schore 1999:xii). Attachment theory posits that the formation of a stable and ongoing relationship with at least one primary caregiver is an evolved need among humans and that without such an early life bond normal development becomes impossible or difficult.

Attachment theory is however, more than simply applicable to infancy and is more broadly a theory of human social relationships. This is because the attachment experiences with early life caregivers between about six months and 30 months of age are considered to shape a child's internal working models or "implicit cognitive models" (Stacy and Wiers 2010), and thus to contribute to developmental trajectories that may be exacerbated or amplified by a variety of "carry-forward" effects throughout the lifecourse (Rutter 1994). Internal working models are a specific type of "schema" or "cultural models" that comprise systems of thoughts, memories, beliefs, associations, emotions, and behaviors about the self and others. These mental structures both opportune and constrain an individual's expectations and behaviors and thus may give momentum to certain developmental trajectories.

For example, Rutter argued that an insecure or disorganized infantile attachment with the primary caregiver may result from a lack of warmth (e.g., rejection) or an excess of parental intrusiveness or controllingness or a combination of both. Such patterns of parental rearing may shape various dimensions of a child's internal life, including: internal working models, habituated anxiety or frustration reactions, and psychoneuroendocrine reactivity. By predisposing later developmental events, for example increased conflict with primary caregivers, decreased sensitivity to punishment, increased sensitivity to reward, or increased interactions with peers or other nonprimary caregivers, early life experiences may "carry-forward" to influence juvenile, adolescent, and later life outcomes. Within any given cultural context, and depending on parental style, the evolved attachment mechanisms that Bowlby first proposed may thus predispose sensation-seeking behaviors and thus contribute to greater risk of developing substance dependence (Lende and Smith 2002).

One thing that is clear from this study is that some of the men in the study were consuming large quantities of alcohol, which some past work has found related more to the maintenance of habit, as well as to social expectations and context. The finding that early life maternal controllingness associates with increased drinking in men suggests that this

developmental experience may trigger increased vulnerability to these mediators and moderators of both the initiation and habit formation of alcohol use. Because of the largely unconscious, implicit, and involuntary nature of the underlying mechanisms (e.g., internal working models) the effects of early life parental bonding may continue to promote maintenance of approach to substance use, even after the reward is decreasingly potent and costs increase. The fundamental point, is that some parental styles may facilitate the development of adult capacity to more accurately weigh the relative long-term and short-term costs and benefits of reward-seeking behaviors, and thus promote more resilience to maladaptive outcomes such as addictions.

Life history theory, a major theoretical subdivision of evolutionary biology and reproductive ecology, has been highly influenced by attachment theory (Koehler and Chisholm 2009). A central hypothesis from life history theory is that there is a universal human facultative adaptation to mitigate risk and optimize reproductive strategy during the life course. As a consequence, risky or harsh early life developmental environments should generally predispose accelerated development to sexual maturation in females, and greater proclivity to risk-taking or sensation-seeking behaviors and promiscuity among both sexes (Hill and Chow 2002; Lende and Smith 2002). If more controlling and less caring parental style is predictive of more risky child-specific developmental environments, then it is conceivable that the results reported here represent confirmation of the general idea in life history theory that early life trauma influences lifetime developmental scheduling and vulnerability to risk.

During the first year of life a complex set of human species-typical parent-child processes unfold culminating as a behavioral system that is “readily activated, especially by mother’s departure or by anything frightening” (Bowlby 1982) by the time most children enter the second year of life and are mobile. Bowlby considered attachment behavior to be “a class of social behavior” equivalent in importance to other major classes of behavior, such as mating and parental behavior, and argued that attachment and its underlying neurobiologically mediated mechanisms comprise an evolved adaptation with a “biological function specific to itself” but with profound implications for various psychosocial processes and psychopathology throughout the life course.

Today a great deal more is known about the specific neurobiological mechanisms involved in the attachment process and the relationship of these mechanisms to other psychobiological and psychodynamic processes throughout the life course. Neuroimaging methods applied to the study of acute and chronic effects of alcohol suggest that vulnerability to alcoholism may be mediated through  $\gamma$ -aminobutyric acid (GABA)-benzodiazepine receptor (GABA-BZR) and dopamine D2 receptor dysfunction in “the pre-frontal cortex and anterior thalamus, brain regions associated with emotion regulation, attention, and appetitive behavior” (Fowler and Volkow 2004:744). Increased vulnerability to alcohol dependence may be experienced by individuals who experience lower baseline levels of BZR and D2 functioning for epigenetic reasons, including both environmental influences during development such as parental rearing and genotypic characteristics including a myriad of

potential “candidate” genetic polymorphs such as the Taq 1 A1 allele for the DRD2 gene (Comings and Blum 2000). Because dopaminergic functioning is influenced by other neurotransmitters (incl. serotonin, norepinephrine, GABA) highest vulnerability is likely to be experienced by those with multiple developmental risk factors, including environmental influences and individuals whose genotype includes more than one risk-promoting polymorph, if not risk-promoting permutations of alleles at several different loci. As Lende and Smith (2000) put it, dopamine operates as one component in an integrated system that mediates portions of reward approach behaviors. They further explained that “the dopamine system has direct effects on attention” (Lende and Smith 2000) and by lending salience to particular stimuli motivate individuals to seek those stimuli. So far, there has been limited research on epigenetic interaction of chronic environmental influences such as parental rearing with individual genotype, yet there is an abundance of recurrent findings that environmental developmental factors predispose alcoholism.

Links between parental rearing and lifetime adversity raise important questions about social policy and legal practice in multicultural contexts. Heinze and Grisso (1996) conducted a review of several psychological instruments widely used to assess parental competency in legal custody contexts among North American populations. They conclude that, the most theoretically sound, and methodologically reliable and valid instruments are those “developed for limited purposes (e.g., potential for child abuse or stressful reactions to parenting)” (Heinze and Grisso 1996:310). More complex and exhaustive instruments intended to assess parental desirability show the least evidence of reliability and validity, which Heinze and Grisso explain in terms of a child-specific model: “Questions of parental desirability cannot be answered without reference to the characteristics, needs, and demands of the specific child who is in need of parenting.” In a recent review of clinical and legal procedures for assessing parental competency and resolving questions of “children’s best interests” in custody disputes Emery et al. (2005) concluded that “Our bottom-line evaluation of these measures is a harsh one: These measures assess ill-defined constructs, and they do so poorly, leaving no scientific justification for their use in child custody evaluations.”

Around the world, this sort of system for assessing parental competency and the instruments described in these two studies are highly institutionalized. Anthropological perspectives on child development suggest that the characteristics, needs, and demands of any specific child in turn, cannot be understood without a broader understanding of the cultural and ecological context of child-rearing environments. There is need for more research that balances recognition that all developing children may require some minimum level of parental bonding, while also recognizing the cultural variation in what is “ideal parenting.” Anthropology has potentially much to offer to such debates by accounting for cultural contexts and issues of structural inequalities such as poverty or marginalized status (Scheper-Hughes 1985).

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