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To the Graduate Council:

The Dissertation Committee for Rebecca L. West certifies that this is the final approved version of the following electronic dissertation: "The Effect of Extended Family Gambling and Family Functioning on the Gambling Behavior of African-American Adolescents."

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THE EFFECT OF EXTENDED FAMILY GAMBLING BEHAVIOR AND FAMILY
FUNCTIONING ON AFRICAN AMERICAN ADOLESCENT GAMBLING

by

Rebecca L. West

A Dissertation

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Abstract

West, Rebecca. Ph.D. The University of Memphis. May, 2011. The Effect of Extended Family Gambling and Family Functioning on African American Adolescent Gambling. Major Professor: Andrew Meyers, Ph.D.

The present study investigated the possible mediational role of family functioning and extended family gambling on African American adolescent gambling behavior. A total of 634 African American students (average age=15.8 years, $SD = 1.4$) were recruited from three urban public high schools. Rates of both at-risk (17%) and problem gambling (12.1%) were elevated. The Barron and Kenny (1986) mediational model was used for all analyses. Results revealed high, total South Oaks Gambling Screen- Revised for Adolescent (SOGS-RA) scores and increased gambling frequency for youth reporting having a extended family member who gambles. The family's ability to show appropriate emotional responses (Affective Response) was positively related, while their inability to manage behavior (Behavior Control) was negatively related to extended family gambling behavior. An increased ability to solve problems in the home (Problem Solving) and a decrease in behavioral control were significant predictors of problematic gambling status, while high levels of problem solving and low levels of affective response were related to gambling frequency. Despite the direct effects found, the Sobel test (1982) determined no significant mediating effect of the relation between extended family gambling behavior and adolescent gambling behavior across the levels of family functioning. The present results indicate that familial relationships including those that extend to additional family members, are important when considering the gambling behavior of African American adolescents. This study represents an ongoing effort to understand the role of familial factors in the gambling behavior of African American adolescents.

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CHAPTER 1

INTRODUCTION

American adolescents have grown up in a culture where gambling is legal, available, and culturally accepted (Winters, Stinchfield, & Fulkerson, 1993). As a result, investigators have consistently reported high levels of adolescent gambling participation (National Research Council, 1999; Welte, Barnes, Tidwell, & Hoffman, 2008) and gambling-related problems (Blinn-Pike, Worthy, & Jonkman, 2010; Shaffer & Hall, 1996). Two prominent risk factors, African American ethnic status (Shead, Derevensky, & Gupta, 2010; Wickwire et al., 2010) and parental gambling (Volberg, 2002; Wallace et al., 1999; Wallisch, 1996; Winters, Stinchfield, Botzet, & Anderson, 2002; Wickwire, Whelan, & Meyers, 2010), have been closely associated with problem gambling among adolescents. Recent research has suggested that other family members also may have a significant influence on gambling participation (Shead et al., 2010). In addition, less functional familial relationships have been predictors of adolescent problem gambling (Clark, 2004; Denton & Kampfe, 1994; Flay, Petraitis, & Miller, 1995; Haroon, Gupta, & Derevensky, 2004; Nash, McQueen, & Bray, 2005; Shead et al., 2010; West, 2007; West, 2009). However, current literature has yet to clarify the role additional family members play in African American adolescent gambling. The present study aimed to examine the role of extended family caregivers and the influence of family functionality as a mediating variable in African American adolescent gambling.

Despite its illegality for individuals under the age of 18, adolescents are likely to engage in gambling-related activities. Several studies have estimated that the number of adolescents who have been involved in gambling at least once in their lives is in excess of

80% (e.g., Derevensky & Gupta, 2004, National Research Council, 1999), while approximately 68% of adolescents have gambled in the past year (Welte et al., 2008). Welte et al. (2008) reported that 60% of their adolescent sample admitted to gambling in the past year. Prevalence rates in this study increased with age. Between 4 and 7% of adolescents experience gambling-related problems, often meeting the diagnostic criteria of the American Psychiatric Association (2000) for pathological gambling. Furthermore, the estimated rate of problematic adolescent gambling is between 2 and 4 times greater than the comparable rate among adults (Jacobs, 2000; National Research Council, 1999; Shaffer & Hall, 1996). A recent study has challenged this claim with supporting evidence suggesting lower, but still significant, rates of problematic adolescent gambling (Welte et al., 2008). However, the prevalence is still sufficiently high to warrant the focus on continued attention to the gambling behavior of adolescents.

Several risk factors have been closely associated with problematic adolescent gambling: being male, being African American, and having parents who experience gambling problems, and are all consistent predictors of adolescent problem gambling. Males gamble more frequently than females, and experience more problems due to gambling (Blaszczynski & Steel, 1998; Gupta & Derevensky, 1998; 2000a, 2000b; Westphal et al., 2000). African Americans demonstrate high rates of both gambling and problem gambling. African American adolescents tend to have higher gambling frequencies than their Caucasian peers (Stinchfield, 2000) and there is growing evidence that being African American increases the risk of developing a gambling problem during adolescence (Wickwire et al., 2010; Wickwire et al., 2007). Adolescents with gambling difficulties also tend to report parental gambling problems at home (Wickwire, Whelan,

& Meyers, 2010). Current literature often cites these risk factors, but fails to include an ethnically diverse sample, or to further examine familial factors influencing adolescent gambling.

Family functioning is defined as the development and maintenance of physical, emotional, and psychological relationships with members of one's family. These relationships are interdependent and are ideally characterized by intimacy, growth, and resilience. Poor familial relationships are consistently associated with involvement in risk behavior, including adolescent gambling. Specifically, these relationships have been linked with activities such as substance abuse (Griesbach, Amos, & Currie, 2002; Wood, Mitchell, Read, & Brand, 2004); delinquency (Dornbusch et al., 1985); poor academic performance (Steinberg, Elmen, & Mounts, 1989); aggression and antisocial behavior (Dekovic, Janssens, & Van As, 2003; Zimmerman, Salem, & Maton, 1995), and problematic gambling behavior (Langhinrichsen-Rohling, Rohde, Seeley, & Rohling, 2004; McComb & Sabiston, 2010; Vachon, Vitaro, Wanner, & Tremblay, 2004; Wickwire et al., 2007). Family functioning literature has demonstrated that adolescents with few positive familial relationships are more likely to experience dysregulation of self-esteem and mood, and engage in gambling-related activities (Werner & Silbereisen, 2003). Most research in this area is primarily correlational, but it suggests that relationships within the home are noteworthy. For example, Wynne, Smith, and Jacobs' (1996) investigation revealed that adolescent gambling participation was related to the likelihood that they felt ignored and rejected by their families, and experienced difficulty confiding in their family members. Clarke and Rossen (2000), using an adolescent sample observed to gamble frequently on slot machines, found that these adolescents

reported poor relationships with family members. In a review of recent adolescent gambling studies, McComb and Sabiston (2010) found a consistent relationship between family functioning and problematic gambling behavior. Factors such as the inability of the family to adequately solve problems, and poor familial support and cohesion, were associated with adolescent problem gambling. Dickerson (1984) reported that a significant number of adolescents who gambled in an excessive manner on fruit machines reported strained family relationships in comparison to those that did not gamble excessively. Results indicated an increased difficulty with communication and cohesion of family members. This body of research suggests that family relationships are important when considering the gambling behavior of adolescents. However, little empirical work has focused on African American families.

Within the African American family, extended family members often play important roles in providing childcare, transmitting cultural and moral values, and functioning as additional resources and supports (Hirsch, Boerger, Engel, Levy, & Mickus, 1999). Just as parental gambling has been shown to be an important predictor of adolescent gambling, studies to date have found that having additional adult family members who gamble is related to increased rates of adolescent gambling (Ellenbogen, Derevensky, & Gupta, 2007). In addition, having a relative with a gambling problem correlated with at-risk and problematic levels of adolescent gambling (Dickson, Derevensky, & Gupta, 2008). Again, little work has focused on the influence of extended family members on African American adolescent gambling.

One recent study displays preliminary evidence that family functioning is strongly correlated with African American adolescent gambling behavior: West (2007) found

adolescents' perception of family functioning to be a significant predictor of gambling frequency. Self-report data revealed that adolescents' views of how problems were solved and emotions responded to at home, were significant predictors of gambling frequency. Specifically, the family's inability to provide adequate emotional responses related positively to higher levels of gambling involvement. Surprisingly, the family's ability to solve problems at home was also related to more gambling. Specifically, problematic gambling behavior was observed when problem-solving skills were present but behavior management abilities were lacking. This study provided a rare example of research into African American familial influences on adolescent gambling.

Family variables have been associated with both protective and risk factors for adolescent problem behavior (McComb & Sabiston, 2010). Generally, effective family relationships, including, family involvement, constructive family communication, proactive family management, and healthy attachment to family, mitigate against participation in problematic behaviors such as illicit drug use, alcohol use, and delinquent behavior (Carvalho, Pinsky, DeSouza y Silva, & Carlini-Cotrim, 1995; Stronski, Ireland, Pierre-Andre, Francoise, & Resnick, 2000). In African American families, Sullivan and Farrell (1999) concluded that perceived family support, which included positive adolescent-adult relationships, moderated the influence of observed risk factors on the reported frequency of drug and alcohol use. They also found that both opportunities and rewards for pro-social involvement and family attachment were protective factors for both alcohol and drug use. Families also have the capacity to increase adolescents' participation in these behaviors: Poor familial relationships, negative attitudes, and observed adult engagement in drug and alcohol use, are consistently positively related to

adolescent participation in problematic behaviors (McComb & Sabiston, 2010). The modeling of substance use for adolescents is a particular risk factor in the development of problem behavior. Denton and Kampfe (1994) reported that when other family members engage in substance use, adolescents also tend to engage in these behaviors. Specifically in relation to gambling, adult family members play a role in both initiating and increasing adolescent gambling involvement. Adolescents are frequently introduced to, and permitted to engage in, these activities by family members (Derevensky & Gupta, 2004). Adolescents have also reported that their first gambling experiences occurred with the family and in their own home (Gupta & Derevensky, 1997). African American families, however, have not been studied as closely. Families have the capacity to influence adolescents' gambling behavior and it is important that research focus on elucidating specific familial factors that facilitate or inhibit risk taking. No current empirical evidence exists either for general family protective factors, or for those occurring within the African American family. There is a need to understand the role of the family in relation to African American adolescents' gambling.

The current study examined how extended family gambling behavior relates to the gambling behavior of adolescents, using a mediational model described by Barron and Kenny (1986). The initial aim was to examine the relationship between extended family gambling and adolescent gambling. It was anticipated that extended family gambling was independently related to, or had a direct effect on, the adolescent's gambling behavior. Specifically, youth with extended family members who gambled were predicted to gamble more frequently and display an increased problem gambling score when compared to rates in recent literature (e.g., Wickwire et al., 2007). Next, the

relationship between extended family gambling and family functioning was examined. Finally, and in keeping with a study by West (2007), the link between family functioning and adolescent gambling behavior was evaluated. As such, if a relationship was found between extended family gambling and family functioning, and the link between family functioning and adolescent gambling behavior was replicated, it was expected that family functioning would mediate a direct effect on adolescent gambling behavior. According to Barron and Kenny (1986), the elimination of the direct effect by the mediator is the final step in complete mediation. In the final mediational model, it was anticipated that when extended family gambling was controlled for, adolescents with low levels of family functioning would be predicted to have increased gambling frequency and high problem gambling scores.

CHAPTER 2

METHOD

Participants

Archival data obtained in West (2007) was used to formulate hypotheses and conduct analyses. Adolescents were originally recruited from three high schools, representing different neighborhoods within an urban public school system. From these data, a total of 749 African American adolescent responses were used. Four hundred and one of these respondents were male (61.7%) and 249 were female (38.3%). Ninety-nine of these respondents (13%) were excluded because of missing data, leaving 650 adolescent participants. They were required to be no older than 18 years of age and have the ability to read and understand the English language. No foreign-speaking students were self-identified in this study. The average age was 15.8 years ($SD = 1.4$). The respondents were asked, “Who do you live with?” and given a range of responses that included traditional family members (i.e., mother, father, stepmother, stepfather) as well as extended relatives (i.e., grandmother, aunt, uncle). As this study focused on determining the relation of extended family members to adolescent gambling, those adolescents who reported living only with their parents were separated from those who lived within a multigenerational household (i.e., parents and extended family members, extended family members only) and ultimately excluded from the study. All 650 (87%) participants reported living within a multigenerational household. The 650 students were asked, “Do any of your other family members gamble?” In total, 634 (98%) adolescents responded positively. All 634 students lived within a multigenerational household. Participant demographic information was assessed

according to the extended family gambling endorsement and multigenerational living arrangement ($n = 634$) and is displayed in Table 1. Students were asked, “Since the school year began, how well do you think you have been doing in your classes?” The five available responses included “Mostly A’s,” “Mostly B’s,” “Mostly C’s,” “Mostly D’s,” and “Mostly F’s.” Personal income was also assessed by asking, “What is your average total income per week from your allowance, your job, and/or any other sources of income?” Five available responses included “\$0-10,” “\$11-25,” “\$26-50,” “\$51-100,” and “\$100 or more.”

Table 1

Participant Demographic Information (n = 634)

Demographic Variable	<i>N</i>	<i>(%) of total sample</i>
<i>Gender</i>		
Male	399	62.9%
Female	235	37.1%
<i>Class Grades</i>		
Mostly A's	103	16.2%
Mostly B's	258	40.6%
Mostly C's	252	39.7%
Mostly D's	11	1.7%
Mostly F's	10	1.6%
<i>Personal Income</i>		
\$0-10	101	15.9%
\$11-25	109	17.2%
\$26-50	234	36.9%
\$51-100	112	17.7%
\$100 or more	78	12.3%

Measures

In addition to the demographic information, adolescents were asked, “Do any of your other family members gamble?” and a space was provided to check yes or no. This provided assessment of extended family gambling. Extended family members were defined as blood-related relatives that also lived within the same household as the child.

They were then asked, “If yes, which one?” and were asked to write in which family member gambles.

Two assessment measures were utilized in gathering additional information:

1. The 53-item McMaster Family Assessment Device (FAD) is a self-report measure that includes sub-scales to assess six aspects of family functioning, plus a General Functioning score (Epstein, Baldwin, & Bishop, 1983). The six areas include Problem Solving, Affective Responsiveness, Behavioral Control, Communication, Roles, and Affective Involvement. According to West (2007), three sub-scales (Problem Solving, Behavioral Control, and Affective Responsiveness) are related to adolescent gambling behavior. These three scales were used in the current study. The Problem Solving scale refers to the family’s ability to resolve problems within and outside the family. Affective Responsiveness assesses the ability of members to respond to situations with the appropriate quality and quantity of emotion. The Behavioral Control scale refers to the expression and maintenance of behavioral standards (Miller, Bishop, Epstein, & Keitner, 1985). For each FAD item, the respondent is presented with a 4-point Likert scale from strongly agree (1) to strongly disagree (4). This scale has been used to assess family functioning and its relationship with antisocial behavior, sexual risk-taking, and substance abuse (Martin, Bergen, Richardson, Roeger, & Allison, 2004).

The FAD has satisfactory ($r \geq .70$) internal consistency as reported by Nunnally (1978), with Cronbach alphas ranging from $r = .72$ to $.83$ for the six subscales and $r = .92$ for the General Functioning scale. Using Pearson product-moment correlations, temporal stability estimates range from $r = .66$ to $.76$ for the subscales and $r = .71$ for the general

functioning (Epstein, Baldwin, et al., 1983). Concurrent and convergent validity have been well established (Miller et al., 1985).

Internal consistency estimates for the entire sample ranged from $r = .62$ to $.76$ for the six subscales.

2. The 16-item SOGS-RA (South Oaks Gambling Screen-Revised for Adolescents)

(Winters et al., 1993) is the most frequently used measure of adolescent gambling problems. It assesses parental gambling and past year gambling involvement in 10 gambling activities, as well as negative feelings and behaviors associated with gambling. Twelve “yes-no” items are scored 1 or 0, respectively, and the sum of these items is the total SOGS-RA score. The questions pertaining to gambling frequency, parental gambling, and the source from which money is borrowed to finance gambling, do not contribute to the total score. In this study, gambling frequency is considered a dependent variable. Winters et al. (1993) reported acceptable internal consistency ($\alpha = .80$) and high content and construct validity for the SOGS-RA. Within this study, an appropriate level of internal consistency ($\alpha = .83$) was established.

To facilitate comparison across studies, the total SOGS-RA score and gambling frequency served as the primary dependent variables in predictive analyses, and the categorical definitions of adolescent problem gambling were not utilized for this study. In reporting prevalence rates, we elected to remain consistent with Winters et al.’s (1993) original scoring system.

The SOGS-RA includes an independent gambling frequency variable, but these items do not contribute to the total score. The gambling frequency variable was created based on involvement in each of the ten gambling activities. Frequency of participation in

each activity was scored from 0-4 (No Involvement, Less Than Monthly, Monthly, Weekly, or Daily). These scores were summed to determine gambling frequency in our sample (see Table 2).

Procedures

Permission was sought from the University of Memphis Institutional Review Board to use archival data. Permission to collect the self-report data was previously obtained from the IRB, the Memphis City School Board, the principals and teachers of the participating schools, and the students and parents themselves. Anonymity was preserved by not taking any identifying information from the participants before, during or after the administration of the questionnaire. Confidentiality was maintained by having participants place questionnaires in unmarked envelopes before returning them to the researchers. The adolescents were given a debriefing information sheet that included information concerning the purpose of the study and contacts for treatment options for participants who might be concerned about their gambling.

CHAPTER 3

RESULTS

Analytic Plan

Descriptive analyses consisting of means, standard deviations, and frequencies were performed. Preliminary analyses were then conducted to satisfy linear regression assumption of independent observations. In order to determine independent observations, intraclass correlations (ICC) were performed between the mediating variable, family functioning and the dependent variable, adolescent gambling behavior. Pearson product-moment correlations were then conducted to establish a preliminary association between independent, mediating, and dependent variables. The Barron and Kenny (1986) model (Figure 1) was used to establish a mediational relation. The dependent variable, adolescent gambling behavior, was measured using the SOGS-RA. Both total SOGS-RA score and gambling frequency were used as continuous dependent variables. The question, “Do any of your other family members gamble?” was used as the dichotomous independent variable. Last, the three continuous FAD scales were used to establish a mediational relation to the gambling behavior of adolescents. According to Barron and Kenny (1986), mediation has four steps: (1) the independent variable must be correlated with the dependent variable (path c'), (2) the independent variable must be correlated with the mediator variable (path a), (3) the dependent variable must be correlated with the mediator variable (path b), and (4) once the mediator variable is controlled for, the relation between dependent variable and independent variable is reduced and an indirect, or mediation effect, is observed. The indirect effect is then measured using the Sobel test (Sobel, 1982). The Sobel test is used to determine whether the independent variable's indirect effect on the dependent variable through

the mediator variable is significant. According to Barron and Kenny (1986), step 4 does not need to be met if complete mediation is not expected.

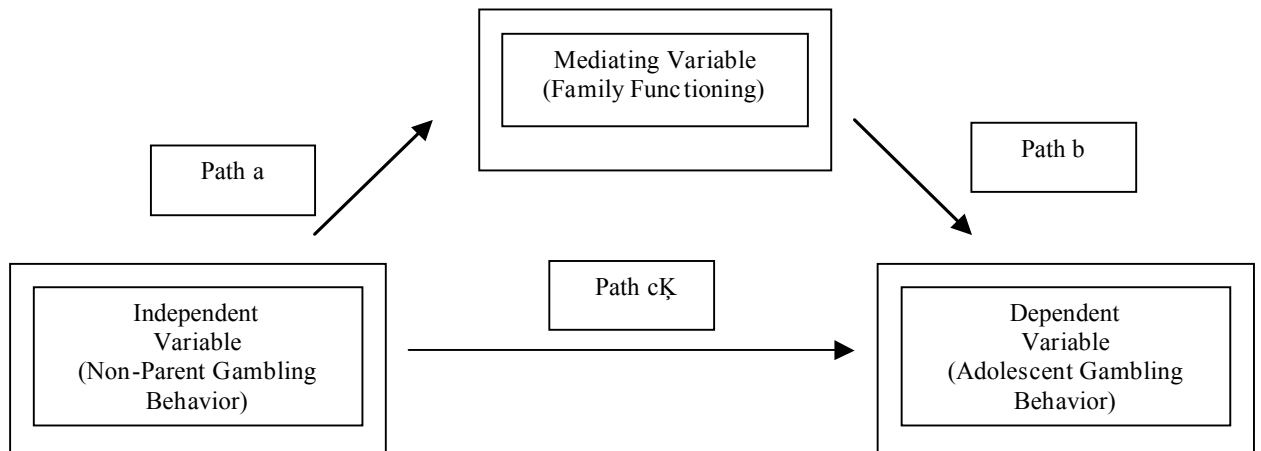


Figure 1. Mediational Pathway

Pearson correlations were initially performed to determine whether all variables within the study held a preliminary relation with one another. Linear regression analyses were then performed to establish each of the four steps of Barron and Kenny's (1986) mediational analysis.

Adolescent Gambling Behavior

To maintain the integrity of the data, gambling behavior estimates were based upon the 634 students endorsing extended family gambling behavior. Eighty-eight percent ($n = 559$) of the sample reported having gambled at least once in their lives and 77% ($n = 488$) reported having gambled in the previous year. Overall, 71.1% ($n = 451$)

were identified as non-problem gamblers, 17% ($n = 106$) as at-risk, and 12.1% ($n = 77$) as problem gamblers. Thirty-eight percent ($n = 247$) reported gambling regularly (weekly or daily participation in at least one gambling activity). Fifty-one percent ($n = 125$) of youth who scored ≥ 2 on the SOGS-RA and were considered either at-risk or problem gamblers reported weekly or daily participation in at least one gambling activity. Approximately 33% ($n = 81$) of adolescents identified as having no problems by the SOGS-RA reported gambling regularly. Seventeen percent ($n = 41$) of participants who scored ≤ 1 on the SOGS-RA reported weekly or daily participation in at least one gambling activity.

Table 2

Prior-Year Participation in Ten Gambling Activities (n = 634)

Activity	Frequency	(%) of total sample
Gambled on the Internet	6	1.2%
Gambled in a Casino	2	0.4%
Played Slot Machines		
/Other Machines	5	1.0%
Played Dice Games	29	6.0%
Played Bingo	10	2.0%
Bet on Sports with Bookie	9	1.8%
Bet on Sports Teams	57	11.7%
Bet on Games of Skill	49	10%
Flip Coins for Money	93	19%
Played Cards for Money	140	29%

The mean score on the SOGS-RA was 1.36 ($SD = 2.22$). The mean gambling frequency for the past year was 5.14 ($SD = 6.37$). The correlation between the SOGS-RA and gambling frequency was $r = .59$. Wiebe et al. (2000) found a similar estimate for their adolescent community sample.

Extended Family Gambling Behavior

Of the total number of adolescent respondents ($n=634$), 12% ($n=78$) indicated extended family members (e.g., grandmother, uncle, cousin) as an individual that

gambled excessively. It is important to note that this is an underestimate, as 27% ($n=170$) did not specify the family member who gambled in excess. No specific activities were reported.

Preliminary Analyses

It was expected that the current samples' observations within each school and class might also be correlated. In order to evaluate the predictive relation between the independent variable of family functioning and the dependent variable of adolescent gambling behavior, it was first necessary to evaluate the extent to which school and class placement were likely to influence results. The intraclass correlations (ICC) for gambling problems using the Total SOGS-RA Score (ICC = 0.001) and family functioning variables to include Problem Solving, Affective Response, and Behavioral Control (ICC = - 0.001 to 0.000) were marginal. The variance inflation associated with correlated observations in the context of a regression analysis of cross-sectional data is given by Scott and Holt (1982) as $1+(n-1) ICC_y ICC_x$ where there are an average of n observations per class, ICC_y is the ICC for the dependent variable and ICC_x is the ICC for the independent variable. Scott and Holt (1982) indicate a variance inflation factor greater than 10 shows high collinearity between observations and warrants immediate action. Given the reported ICCs, the variance inflation associated with the correlated observations in the classes and schools was negligible. As a result, it was appropriate to use standard analytic methods that assume independent observations. Pearson correlations were performed to determine the relation between adolescent gambling variables, extended family gambling variable, and family functioning variables. The adolescent gambling variables included the Total SOGS-RA score and gambling

frequency, both described as continuous variables. Extended family gambling was a dichotomous variable. Family functioning variables were derived from the seven scales of FAD and consisted of three continuous variables (Problem Solving, Behavioral Control, and Affective Response) as predictors of problematic gambling behavior among adolescents. These three variables were again used as mediators of the relation between extended family gambling behavior and adolescent gambling behavior. Both gender and class grades were found to be negatively correlated with Total SOGS-RA scores, while personal income was positively correlated with both Total SOGS-RA scores and gambling frequency. As presented in Table 3, correlations between the demographic variables and gambling behavior ranged from $r = -.23$ to $r = .17$.

Table 3

Pearson Correlations between Demographic Variables and Gambling Behavior (n = 634)

Demographic Variable	Total SOGS-RA	Gambling Frequency
Gender-	.23**	.04
Age	.03	-.01
Grade/Year in School	.02	-.07
Class Grades	-.09*	-.09
Personal Income	.14**	.17**

* $p < .05$. ** $p < .01$.

Primary Analyses

Mediation Analysis

Step 1. In the present study, two separate linear regression analyses were conducted between the independent variable, extended family gambling behavior, and the dependent variable, adolescent gambling behavior (path c). Results indicated extended family gambling behavior as a significant predictor of Total SOGS-RA scores and gambling frequency. Individuals who reported that extended family members participated in gambling activities had higher SOGS-RA scores and were more likely to have higher instances of gambling participation ($p < .05$). See Table 4 for additional information.

Table 4

Linear Regression Analysis for Variables Predicting Extended Family Gambling Behavior by Total SOGS-RA Score and Gambling Frequency (N = 634)

Variable	<u>B</u>	<u>SE B</u>	β	R^2
Total SOGS-RA Score	0.897	.238	.185*	.064
Gambling Frequency	1.970	.645	.152*	.026

Note. * $p < .05$.

Step 2. To evaluate path a, three separate regression analyses were conducted to determine the relation between the independent variable, extended family gambling behavior and the potential mediator variable, family functioning. It is of note that 229 participants (36.1%) were excluded due to missing family functioning data. Failure to respond to family functioning questions resulted in a sample size of 405 participants for mediational steps 2 through 4. Barron and Kenny (1986) suggest equal or similar sample

sizes for mediation in order to reduce the chance for a significant loss of power. For each analysis, extended family gambling behavior served as the independent variable and one variable describing a single aspect of family functioning served as the dependent variable. Three continuous dependent variables were derived using the FAD: Problem Solving, Behavioral Control, and Affective Response. For the first regression analysis, results were not significant for extended family gambling behavior predicting Problem Solving ($p > .05$) (See Table 5). The second regression analysis indicated that extended family gambling behavior did predict Behavioral Control ($p < .05$) (See Table 6). Individuals reporting having extended family members who gambled had fewer instances of behavioral control enforced at home. The final regression analysis revealed that extended family gambling behavior predicted Affective Response ($p < .05$) (See Table 7). Individuals reporting extended family gambling had a greater ability to respond to situations with the appropriate quality and quantity of emotion.

Table 5

Linear Regression Analysis Predicting Problem Solving by Extended Family Gambling Behavior (N = 405)

Variable	<u>B</u>	<u>SE B</u>	β
Problem Solving	.021	.061	.730

Note. $R^2 = .00$ ($p > .05$). * $p < .05$.

Table 6

Linear Regression Analysis Predicting Behavioral Control by Extended Family Gambling Behavior (N = 405)

Variable	<u>B</u>	<u>SE B</u>	β
Behavioral Control		-.130	.066 -.098*

Note. $R^2 = .010$ ($p < .05$). * $p < .05$.

Table 7

Linear Regression Analysis Predicting Affective Response by Extended Family Gambling Behavior (N = 405)

Variable	<u>B</u>	<u>SE B</u>	β
Affective Response		.154	.070 .109*

Note. $R^2 = .012$ ($p < .05$). * $p < .05$.

Step 3. West (2007) previously verified the link between family functioning and adolescent gambling behavior (path b). Again, a sample size of 405 participants was used to avoid a significant loss of power (Barron & Kenny, 1986). Results revealed that both Problem Solving ($p = <.05$) and Behavioral Control ($p = <.05$) predicted Total SOGS-RA scores. That is, when reported problem solving skills were increased and behavioral control was decreased, Total SOGS-RA scores were elevated. Higher levels of Problem Solving ($p = <.05$) and lower levels of Affective Response ($p = <.05$) predicted increased frequency of gambling behavior. See Tables 8 and 9 for additional information.

Table 8

Linear Regression Analysis for Variables Predicting Total SOGS-RA Score by Levels of Family Functioning (N = 405)

Variable	<u>B</u>	<u>SE B</u>	β
Problem Solving		.469	.195 .118*
Behavioral Control		-.630	.181 -.173*
Affective Response		-.064	.171 -.019

Note. $R^2 = .044$ ($p < .05$). * $p < .05$.

Table 9

Linear Regression Analysis for Variables Predicting Gambling Frequency by Levels of Family Functioning (N = 405)

Variable	<u>B</u>	<u>SE B</u>	β
Problem Solving		1.628	.518 .153*
Behavioral Control		.025	.483 .003
Affective Response		-.778	.458 -.085*

Note. $R^2 = .050$ ($p < .05$). * $p < .05$.

Step 4. Linear regression analyses were conducted to determine the relation between extended family gambling behavior and adolescent gambling behavior while considering family functioning as a mediating variable. To reiterate, a sample size of 405 participants was used to avoid a significant loss of power (Barron & Kenny, 1986). According to

Barron and Kenny's (1986) path model, the previously described steps 1 through 3 were significant for the direct effects. The last step in determining mediation is to calculate the indirect effect using the Sobel Test (Sobel, 1982). The Sobel test determines the significance of the indirect effect of the mediator by testing the hypothesis of no difference between the total effect (path c) and the direct effect (path c') (Barron & Kenny, 1986). Macros for SPSS created by Preacher and Hayes (2004) that employ the Sobel formula were used to complete the tests for indirect effects. Using two separate simple regression analyses, results revealed non-significant indirect effects for all levels of family functioning and its mediating role between extended family gambling behavior and adolescent gambling behavior. The results of the final step are presented in Tables 10 and 11.

Table 10

Sobel Test for Indirect Effects Predicting Mediation of Relation Between Extended Family Gambling Behavior and Adolescent Gambling Behavior by Family Functioning (N = 405)

Variable	<u>SE</u>	Z	p-value
Total SOGS-RA			
Problem Solving		.029	.314 .754
Behavioral Control		.046	1.627 .104

Note. * $p < .05$.

Table 11

Sobel Test for Indirect Effects Predicting Mediation of Relation Between Extended Family Gambling Behavior and Adolescent Gambling Behavior by Family Functioning (N = 405)

Variable	<u>SE</u>	Z	<i>p-value</i>
Gambling Frequency			
Problem Solving		.102	.327 .744
Affective Response		.091	-1.196 .232

*Note. *p < .05.*

CHAPTER 4

DISCUSSION

The present study investigated the mediational role of family functioning on the gambling behavior of African American adolescents when extended family was present in the home. The current results replicated the evidence from previous studies and introduced several novel findings. Although family functioning was not found to be a mediator between extended family gambling and adolescent gambling behaviors, extended family gambling appeared to be directly related to the gambling behavior and familial interactions of the young African Americans in our sample. Adolescents identifying non-family adults in the home who engage in gambling-related activities were directly related to their increased gambling frequency and problematic levels of gambling. Further, reports of extended family gambling were directly related to family functioning elements that include Behavior Control and Affective Response.

This study examined extended family members living in the home, an understudied group that goes beyond the common single- or dual-parent relationships within African American homes. Extended family members are a common occurrence among African American families (Hirsch et al., 1999). Some researchers have suggested that extended family members are often responsible for the initiation and approved engagement in gambling-related activities (Derevensky & Gupta, 2004; Shead et al., 2010). Empirical evidence also supports the notion that having a family member who gambles increases the chances of participation in gambling-related behaviors among adolescents (Ellenbogen et al., 2007). The present findings reveal that twelve percent of adolescents in the final sample reported having a family member who gambled

excessively and the same percentage reported gambling at problematic levels. Extended family gambling had a significant and direct effect on adolescents' gambling behavior. Specifically, adolescents who reported having an extended family member who gambled were also more likely to have increased SOGS-RA scores and an increased gambling frequency. This finding is consistent with extant addiction literature, which indicates that adolescents with additional family members who participate in externalizing behaviors such as substance use are more likely to also become involved in those behaviors and develop subsequent problems (Denton & Kampfe, 1994). It is important to add that the majority of participants reported extended family gambling behavior. Restricted range within a sample can often lead to a decline in the ability to observe significant findings (Warner, 2008). However, in this study, the overall sample size was large, which may have mitigated against non-significant results. These significant findings suggest that gambling participation of extended family members is also related to the gambling behavior of African American adolescents.

Having an extended family member who gambles was also related to difficulties with family functioning in the present study. Behavioral Control, the ability to adequately manage behavior, was negatively related to extended family gambling, while Affective Response, the availability of adequate emotional support in response to difficult situations, was positively related to extended family gambling behavior. A non-significant finding was observed between Problem Solving and extended family gambling behavior. Adolescents who reported having an additional family member who gambled were more likely to report low levels of behavior management and high levels of appropriate emotional response at home. Extended family members who participate in

risky behaviors are less likely to enforce rules and monitor behavior within the home environment (Webb et al., 2002). The Affective Response finding was not surprising, considering that extended family members are an added source of emotional support within the African American family (Hirsch et al., 1999). However, if emotional responsivity is present, fewer reports of family members who gamble should exist, as individuals within the family unit tend to listen to adolescents' emotional needs. Such needs can include fewer gambling trips and more time spent with family. This study sheds light on the importance of emotional responsivity, but further examination is warranted to determine its function in the gambling behavior of African American adolescent families. It is unclear why problem solving was observed to be non-significant. Investigations have consistently supported adequate problem solving skills within the family unit as a protective factor against risk taking behaviors such as substance abuse (Hawkins et al., 1992; McCubbin et al., 1985). However, the majority of studies does not differentiate between parent and extended family members and do not refer to an African American sample. In African American families, extended family members are also involved in the child rearing process (Wilson, 1986). It is possible that extended family members are not as involved in raising children, and therefore, are not as influential in terms of family problem solving abilities as researchers once thought. Further assessment of the role of extended family members and their function in problem solving strategies within African American homes is recommended.

The present results successfully replicated previous research, which has established that family functioning is significantly related to the gambling behavior of African American adolescents (e.g., West, 2007; Wickwire et al., 2007). West (2007)

found that family functioning was strongly related to the adolescents' total SOGS-RA score, gambling frequency, and SOGS-RA classification. Specifically, solving problems within the home, behavioral management, and emotional responsivity were all related to gambling behavior in this study. Problem Solving was a significant positive predictor of gambling frequency, while Affective Response was a significant negative predictor of gambling frequency. For total SOGS-RA scores, Problem Solving and Behavioral Control were significant predictors. Individuals reporting high SOGS-RA scores also exhibited high Problem Solving scores and low Behavioral Control scores on the FAD. For gambling classification, adolescents with at-risk and problem gambling status were likely to have shown high Problem Solving abilities and low Behavioral Control in the home. The statistical direction of Problem Solving was an unexpected finding, and West (2007) suggested further examination of problem solving skills in relation to adolescent gambling behavior. While West's (2007) results suggest that poor familial interaction is an important factor, current results reveal that extended family gambling is related to youth's gambling. Furthermore, familial relationships do not mediate that relation, but remain valuable in understanding African American adolescent gambling.

This study expands on West (2007) by determining the mediational role of family functioning in the gambling behavior of an African American adolescent sample. Direct effects were found for extended family gambling and family functioning in relation to African American adolescent gambling behavior. However, results of the Sobel Test (1982), suggested non-significant, indirect effects of the mediational role of family functioning on the observed association between extended family gambling and African American adolescent gambling behaviors. A possible reason that family functioning was

not found to be a significant mediator of adolescent gambling behavior can be attributed to the exclusion of parent-child relationships and parent gambling behavior. Parent-child relationships are important for the reduction and prevention of adolescent participation in risk behaviors (Tilson, McBride, Lipkus, & Catalano, 2004). These findings also hold true for African American adolescents (Farrell & White, 1998). Research has also established a strong connection between parent gambling behavior and African American adolescent gambling participation (West, 2007; Wickwire et al., 2007). Despite such strong associations, this study excluded parents for the following reasons: 1) it is often difficult to differentiate between the contribution of parents and extended family members to the child rearing process since extended family members can often take on parental roles within the African American culture, for example, with childcare and social support (Hirsch et al., 1999); and 2) extant literature lacked a strong correlation between extended family gambling participation and African American adolescent gambling behavior. We now know that extended family gambling behavior is important when considering the gambling behavior of African American adolescents. This finding corroborates previous work, which indicates that extended family involvement is related to adolescent gambling behavior (Derevensky & Gupta, 2004), but also supplements the area by adding the African American ethnicity. However, understanding both parent and extended family gambling within the context of familial relationships is crucial for our understanding of African American adolescent gambling behavior.

The current sample consisted exclusively of African American adolescents. This particular group was selected because literature suggests a higher gambling frequency among African Americans than their Caucasian counterparts (e.g., Stinchfield, 2000) and

African American adolescents are considered to be at risk for problems related to gambling (e.g., Wickwire et al., 2007). Thirty-eight percent of the sample reported regular gambling within a 12-month period, which is consistent with recent adolescent gambling studies that displayed 12-month participation rates ranging from 20% to 86% (e.g., Jacobs, 2000; Wickwire et al., 2007). Regarding SOGS-RA scores, 17% reported an at-risk level of gambling, while 12% were within the problematic range. These rates are elevated when compared to recent estimates (Welte, 2008), and should be interpreted with caution.

The present study has several limitations. While high rates of problematic gambling are cause for concern, it must be reiterated that the present sample was not randomly selected. Participants were drawn from only three public high schools, and although these schools represent different urban neighborhoods, the sample was limited to local youth living in an urban setting and attending public school. At the same time, the ethnicity of the current sample was an accurate representation of this urban school system's ethnic makeup, no parent denied participation for his or her adolescent, and 100% of the students in selected classes elected to participate in the study. The sample also reported living with extended family members, which according to the U.S. Census 2000 data, was representative of the local region (U.S. Bureau of the Census, 2000^a). To reiterate, the majority of the sample (98%) reported extended family gambling behavior. Despite the large sample size, which may have mitigated this bias, this estimate does not allow for variability and perceived extended family gambling behavior estimates should be interpreted with caution. Overall, generalizability is unknown, and the prevalence estimates must be interpreted with caution. As a result, we do not know if the gambling

behavior of these youth or the relationship between their gambling behavior, extended family gambling behavior, and family functioning is due to the sample's ethnicity, the urban setting, the context in which they currently live, demographics, or the public schools themselves. Because of this issue, generalizability is limited to similar samples. In addition to the uncertain generalizability, all behavioral data collected were based on self-report. The FAD self-report measure has not been normed for the diverse characteristics of the African American family. As previously mentioned, parents were also excluded from this study. Research has consistently revealed parental importance, and parents' exclusion may be responsible for the lack of findings for mediation (Wickwire et al., 2010). The mediational design of the current study inherently proposes the possibility of specification errors. According to Barron and Kenny (1986) and Judd and Kenny (1981), the study's methodological design and measures' reliability estimates ensure adequate treatment of the assumptions of mediation. The most common specification error, omission of variables, is likely to have impacted results due to the exploratory nature of the current study. Other variables that could have been examined include parent and extended family self-reports that provide a different perspective on their gambling behavior, as well as information regarding their functioning within the household. An assessment of the percentage of child rearing each family member contributed in the home should have also been added. Despite our exclusion of these factors, we identified a direct effect for extended family gambling behavior and re-established family functioning as a predictor of African American adolescent gambling behavior.

Numerous strengths of this study must also be noted, including: a sound theoretical basis incorporating variables supported by previous literature, an understudied population of interest, and thorough analyses to evaluate statistical assumptions. In addition, all family functioning questions were directly taken from an established family systems questionnaire, the McMaster Family Assessment Device (Epstein et al., 1983). The study also provides an important estimate of the reliability of the SOGS-RA as a measure of gambling problems in an urban, African American population.

The findings presented here suggest several directions for subsequent research. The rate of adolescent gambling found in this sample highlights the need for attention to adolescent gambling problems and the ways in which they are assessed and treated (e.g., Jacobs, 2000). In terms of family functioning, researchers should more closely examine how behavioral control and affective responsivity are linked with African American adolescent gambling. Further exploration is needed to clarify the connection between problem solving and African American adolescent gambling behavior. Investigations should also begin to focus on other familial variables characteristic of African American families and how they relate to adolescent gambling behavior. A moderational examination is theoretically plausible as it can evaluate complex familial variables that may not have a mono-directional relation to the gambling behavior of adolescents. Family is a complex concept and the relation between family functioning and extended family gambling behavior can be considered to have a bi-directional relation with one another.

The finding that extended family members are significantly related to adolescent gambling can be used to inform family-based prevention efforts for African American

adolescents. Family function findings should inform future research and planning for problem behavior interventions at school or in the home with African American adolescents.

The current study improves our understanding of gambling among adolescents in at least three important ways. First, this study represents the largest investigation of the gambling behavior of urban African American youth to date. We found notably high rates of regular, at-risk, and problem gambling, and these findings indicate that gambling behavior in this population demands further study. Second, additional family members are now known to contribute to the gambling behavior of African American adolescents. Further knowledge regarding the importance of extended family for African American youth is warranted. Last, we now have replicated empirical evidence that gambling is related to African American youths' perception of the family's ability to show concern for their well-being and, in particular, their perception of the family's ability to solve problems in the home. Continued exploration of these influences and other reasons that adolescents choose to gamble will contribute to a clearer understanding of African American adolescent gambling and its attending problems.

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