The effects of sex, parenting styles, and family factors on physical risk-taking behavior in children

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Abstract

The present study attempted to describe the effect of sex, parenting styles, and family factors on physical risk-taking behavior on children by analyzing self-report data collected from 93 mothers in the Midwest region of the United States. Previous research has shown that unintentional injury – closely related to physical risk-taking – is one of the leading causes of death, hospitalization, and permanent impairment in children and adolescents (Morrongiello, Zdxieborski, & Normand, 2010; Galligan, & Kuebli, 2011; Wells, Morrongiello, & Kane, 2012; Ablewhite, Kendrick, Watson, & Shaw, 2016). Results of this study indicated significant relationships between levels of authoritarian parenting styles and injury caused by physical risk-taking behavior for female children. Other analysis found indirect relationships between various parenting, child behavior, and family factors that can be used to explain physical risk-taking behavior in children.

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Introduction

Individuals are asked to make decisions every day. "Risk-taking" occurs when an individual is faced with a decision that could negatively affect his social, physical, and mental well-being—however, the chance of this negative outcome occurring is unknown (Blais & Webber, 2006). Risk-taking is broadly grouped into by five categories: social, financial, ethical, sexual, and health (Blais & Weber, 2006). Physical risk-taking, which could be a considered a subcategory of health risk-taking, occurs when an individual actively makes a decision to participate in a behavior or activity that could cause physical injury (Blais & Weber, 2006).

Unintentional injury – closely associated with physical risk-taking – is one of the leading causes of death, hospitalization, and permanent impairment in children and adolescents (Morrongiello, Zdxieborski, & Normand, 2010; Galligan, & Kuebli, 2011; Wells, Morrongiello, & Kane, 2012; Ablewhite, Kendrick, Watson, & Shaw, 2016). Previous research has indicated that rates of physical risk-taking, injury, and death is higher in males than that of females of all ages throughout childhood and adolescence (Ginsburg & Miller, 1982; Morrongiello & Dawber, 1999; Granie, 2009). This disparity in physical risk-taking, injury, and death between males and females could be partially explained by differences in socialization in early childhood (Clearfield & Nelson, 2006; Hagan & Kuebli, 2006; Granie, 2010).

Research has shown that both mothers and fathers view physical risk-taking behavior more positively in male children than female children (Little & Wyver, 2010). Physical risk-taking is generally more tolerated and encouraged in male children because parents typically view risk-taking as a constant and irrepressible aspect of personality in male children that will most likely not change (Little & Wyver, 2010; Morrongiello et al., 2010). For female children, however, physical risk-taking is viewed as a fluid aspect of behavior that is shaped by physical

environment or situations that can be easily manipulated (Little & Wyver, 2010; Morrongiello et al., 2010). Because of parents' different attitudes on physical risk-taking behavior between male and female children, males are often instructed by their parents how to properly participate in physical risk-taking behavior so that they do not become injured (Morrongiello & Dawber, 1999; Morrongiello & Hogg, 2004). In contrast, female children are instructed to avoid physical risks all together (Morrongiello & Dawber, 1999; Morrongiello & Hogg, 2004).

While parents might have a direct impact on the socialization of their children and ultimately their physical risk-taking behavior and beliefs, there are other familial and social factors that might indirectly impact the development of physical risk-taking behavior in children. Therefore, this paper will not only examine the direct effect of gender socialization on physical risk-taking behavior in children, it will also examine the role of family structure, income, and parenting style on physical risk-taking in children.

1.1 Child Sex and Physical Risk-Taking

As discussed previously, disparities in physical risk-taking behavior between male and female children can be partially explained by differences in parental socialization practices due to gender bias. Socialization can occur both explicitly and implicitly as parents might not always be aware of the inconsistencies in their supervision practices between sexes that can lead male children to engage in more independent and physically active play that could potentially lead to injury than female children (Byrd-Craven & Geary, 2007; Endendijk, Groeneveld, van der Pol, van Berkel, Hallers-Haalboom, Mesman, & Bakersman-Kranenburg, 2013). Socialization can also occur both verbally and non-verbally as parents might use verbal instructions or non-verbal behaviors – such as monitoring – to regulate their child's physical risk-taking behaviors (Clearfield & Nelson, 2006).

Although mothers and fathers are both responsible for the socialization of their child, the majority of the previous research has focused on maternal parenting behaviors. Extensive focus on maternal parenting behavior in previous literature might be due to many factors. One of the potential reasons can be explained by the previous conducted on both mothers and fathers has indicated that fathers tend to have a static, more lenient supervision and reaction to child behaviors than do mothers (Morrongiello, Walpole, & McArthur, 2009; Morrongiello et al., 2010). Because mothers tend to have more variance in their supervision practices and reactions to child physical risk-taking, previous research has focused on factors that can be related to differences in these parenting behaviors. Previous research has also shown that maternal parenting behaviors and beliefs can be used to predict and determine the parenting behaviors adopted by fathers (Cabrera, Fagan, Wright, & Schadler, 2011). Therefore, because of these above listed factors, this current study sought to build on previous research by determining factors that could be used to explain the disparities in maternal parenting behaviors between sexes.

Broadly stated, previous research has indicated that while mothers generally rely on the same type of supervision practices, mothers spend more time directly supervising and have different responses to physical risk-taking activities of female children than of male children (Morrongiello & Dawber, 2000). When a mother interferes with her child's physical risk-taking behavior, research has also shown that her emotional response and reaction to the behavior varies depending on the sex of the child. While the maternal emotional reaction attendant to interrupting physical-risk taking can be considered a negative emotion regardless of the child's sex, mothers are more likely to respond with anger or frustration in regards to male physical risk-taking behavior, but for female physical risk-taking, mothers are more likely to respond with

disappointment (Morrongiello & Hall, 2004; Morrongiello et al., 2010). The difference in responses is due to the mother's interpretation of the cause of this behavior (Morrongiello & Dawber, 1999; Morrongiello & Hogg, 2004; Little & Wyver, 2010; Morrongiello et al., 2010). Reacting to male physical risk-taking behavior with anger or frustration occurs because the mother does not think that she can deter her child from taking risks, even though the child could have caused injury (Morrongiello & Hogg, 2004; Morrongiello et al., 2010). Because the mother does not think that physical risk-taking behaviors in her male child can be altered, she will focus future attention on how the child should properly engage in risk-taking behaviors to avoid injury (Little & Wyver, 2010: Morrongiello et al., 2010). The mother will also spend more supervision time instructing him when to stop engaging in a particular risk-taking behavior, but will often times not give a reason as to why he is supposed to stop engaging in this behavior (Little & Wyver, 2010; Morrongiello et al., 2010).

For female children, however, mothers react with disappointment because they have been more focused on instructing daughters on how to avoid risks completely (Morrongiello & Dawber, 1999; Morrongiello & Hogg, 2004). Because mothers of female children are more likely to instruct their children on how they can avoid activities that could lead to physical risk, the mothers might become disappointed or startled over what they feel is atypical behavior for their daughter (Morrongiello et al., 2010). Contrasted to dealing with male children, when female children engage in physical risk-taking behavior, mothers are more likely to not only ask the children to stop engaging in an activity that could lead to injury but to give salient reasons as to why the children should not engage in the activity based on the level of potential injury that could occur (Morrongiello et al., 2010).

Although there are explicit differences in the ways a mother supervises, reacts, and responds to her child's physical risk-taking behavior depending on the sex of the child, these differing maternal parenting behaviors bias might implicitly encourage the development of dependence and independence in female and male children respectively. Female children might develop a sense of dependence as they learn that they are expected to seek permission before engaging in activities that could be considered physical risk-taking (Cabrera et al., 2011). Male children, however, might become more independent as they are allowed more freedom to play with reduced supervision and intrusion from their mothers (Carlerby, Englund, Biitasara, Knutsson, & Gaden, 2012). However, it should also be noted that studies have found that there is a negative relationship between supervision and injury (Wells et al., 2012; Ablewhite et al., 2015). Therefore, by having lower levels of supervision, male children might be more prone to injury than female children because mothers are less likely to intercede while they are participating in a physically risky behavior (Byrd-Craven & Geary, 2007).

Research has shown that mothers engage in more active supervision for female children than male children, further studies have indicated that levels of supervision in female children decrease change with age (Morrongiello & Kiriakou, 2004; Morrongiello et al., 2009). This could be caused in part because gender-specific behaviors begin to develop at around three years of age and are solidified by the time that children enter formal education at five to six years of age (Clearfield & Nelson, 2006; Granie, 2010). Reinforcement of gender-specific behaviors in female children might lead to decreases in participation in physical risk-taking activities because girls are adhering to the implicit gender-biases that promotes the avoidance of risk-behavior (Morrongiello & Dawber, 1999; Morrongiello & Hogg, 2004). This reinforcement ultimately

effects supervision because mothers will often adjust their supervision practices according to the responsiveness of the child (Wells et al., 2012; Ablewhite et al., 2016).

Conversely, mothers do not report changes in level of supervision of male children with age (Morrongiello & Kiriakou, 2004; Morrongiello et al., 2009). This lack of change is explained by previous research which suggests that physical risk-taking is viewed as expected conduct for male children—meaning that mothers keep a constant level, even if it is low, of supervision to prevent injury (Little & Wyver, 2010: Morrongiello et al., 2010).

While a majority of previous research has focused on the anatomical sex of the child, some research has indicated that femininity and masculinity is fluid (Granie, 2010). In a study conducted by Granie (2010), the *Bem Sex Roles Inventory* (BSRI; Bem, 1974) and the *Pre-School Activity Inventory* (PSAI; Golombok & Rust, 1993) were used to determine the effect of gender conformity on injuries caused by physical risk-taking behavior—measured by using the *Injury Behavior Checklist* (IBC; Speltz, Gonzales, Sulzbacher, & Quan, 1990). Results of this study found that, for both boys and girls, more masculine scores are positively correlated with injuries caused by physical risk-taking behaviors (Granie, 2010). The results of this study also indicated that mother's level of gender conformity has potential to influence the gender conformity of their children—thus predicting their susceptibility to engaging in physical risk taking behavior (Granie, 2010).

1.2 Parenting Style and Physical Risk-Taking

There are three parenting styles that are widely accepted and detailed in the literature: authoritative, authoritarian, and permissive (Robinson, Mandelco, Olsen, & Hart, 1995; Smetana, 1995; Coolahan, McWayne, Fantuzzo, & Grim, 2002; Rodriguez, Donovick, & Crowley, 2009). Although it has been argued that there is a fourth parenting style – neglectful – much of the

previous research has focused on the three styles listed above (Rodriguez et al., 2009; Braza et al., 2015). These three parenting styles tend to be exclusive from each other and are characterized by many various subcategories.

Authoritative, sometimes referred to as "active-responsive", parents are generally characterized by autonomy (Coolahan et al., 2002; Rodriguez et al., 2009; Braza et al., 2015). Subcategories of authoritative parenting include: warmth and support, autonomy granting, and regulation (Robinson et al., 2001, Rodriguez et al., 2009; Braza et al., 2015). Authoritative parents typically have high expectations of their child – sometimes referred to as demandingness – but are accepting if their child is not able to meet a goal and are open to compromise (Coolahan et al., 2002; Rodriguez et al., 2009). Authoritative parents also allow their child to have input on decisions pertaining to the family rules or decisions—otherwise known as autonomy (Coolahan et al., 2002; Rodriguez et al., 2009). Lastly, when a child has broken a rule or when the parent is unable to compromise with their child on a particular issue, authoritative parents are more likely to explain their reasoning to children so that they will either refrain from participating in a behavior or understand why a particular decision was made (Coolahan et al., 2002).

In contrast, authoritarian parents, sometimes referred to as "active-restrictive," are characterized as having high expectations for their children but having little understanding or support if an expectation is not met (Coolahan et al., 2002; Domenech Rodriguez et al., 2009; Braza et al., 2015). Subcategories of authoritarian parenting include: physical coercion, non-reasoning punitive, and verbal hostility (Robinson et al., 1995; Coolahan et al., 2002; Robinson et al., 2001). Authoritarian parents have been found to have similar numbers of family rules as do authoritative parents; however, their children are less likely to have an input on rules and are

more likely to receive corporal punishment or verbal abuse when parental expectations are not met (Smetana, 1995; Coolahan et al., 2002). Often, when a child of an authoritarian parent is receiving punishment, the parent will not fully explain why the child is being punished— this failure to explain is otherwise known as non-reasoning punitive behavior (Coolahan et al., 2002; Robinson et al., 2001).

While both authoritative and authoritarian parents have high expectations for their children, permissive parents, occasionally referred to as "passive parents", typically do not have such expectations (Smetana, 1995; Coolahan et al., 2002). Although permissive parents are different from authoritative and authoritarian parents on the expectations that they placed on their child, permissive parents are similar to authoritative parents in that they are more likely than authoritarian parents to show warmth and grant autonomy (Coolahan et al., 2002; Rodriguez et al., 2009). However, unlike authoritative parents, the warmth and autonomy provide by permissive parents could potentially harm the child as permissive parents do not provide boundaries for the child and often allow them to make decisions before they are mature enough to do so (Coolahan et al., 2002; Rodriguez et al., 2009).

Most of the current literature which discusses the effect of parenting styles on children's behavior has focused on how parenting style affects child internalizing and externalizing behaviors (Braza et al., 2015). Although externalizing behaviors are not directly related to physical risk-taking, they often can be indirectly related as some externalizing behaviors – such as misbehavior (Braza et al., 2015). Braza and colleagues (2015) found that children who came from authoritarian or permissive homes were more likely to have externalizing behavior problems. The characteristics of the two parenting styles could explain these results.

While authoritarian parents desire authority over their child's behavior and have increased levels of supervision, they usually do not explain reasons for intervening when they stop their child from engaging in an activity that could lead to injury (Robinson et al., 1995). Therefore, children of authoritarian parents might continue to engage in particular physical risk-taking behaviors because they do not understand how the activity could lead to injury (Robinson et al., 2001; Coolahan et al., 2002). Similarly, children of permissive parents might participate in more physical risk-taking behaviors because not only do these parents have decreased levels of supervision, but they also are least likely to intervene when a child engages in a physical risk-taking behavior (Smetana, 1995; Coolahan et al., 2002).

Authoritative parents were not included in the study conducted by Braza and colleagues (2015). If it is believed, however, that risk-taking could be a subset of externalizing behavior problems, the results from this study would indicate that children of authoritative mothers might participate in less physical risk-taking activities than authoritarian or permissive mothers. This interpolation follows because research has indicated that children of parents who use more harsh discipline – such as physical coercion, verbal hostility, or increased levels of overall punitiveness – will show more signs of negative externalizing behavior than parents who do not engage in harsh discipline (Robinson et al., 2001; Braza et al., 2015). Therefore, by having mothers who are considered "warm" and who offer explanations as to why a particular physical risk-taking behavior is not desired, children of authoritative mothers might participate in less physical risk-taking behavior than their authoritarian or permissive mothered peers (Robinson et al., 1995; Coolahan et al., 2002; Rodriguez et al., 2009; Braza et al., 2015).

1.3 Family Factors and Physical Risk-Taking

In addition to the above-described influences on physical risk-taking, family factors might also influence physical risk-taking behavior in children. Although there are many family factors that could potentially influence physical risk-taking behavior in children, this paper will specifically focus on: parental marital status, number of children in the family, and annual family income.

With the definition of family changing in modern culture, there are many different family structures in which a child can be reared—including two-parent families, single-parent families, and step-families. Research has shown that children reared in low-income and single-parent families are more likely to receive injuries which can result in the need for emergency medical services (O'Connor, Davies, Dunn, Golding, & ALSPAC, 2000; Olsen, Bottorff, & Frankish, 2008). For low-income families, this result could be caused, in part, by the home environment in which the child is raised (Mull, Agran, Winn, & Anderson, 2001). Often, the home environments for low-income children are dangerous and provide hazards, and some repairs might be too expensive for parents, or in some cases single-mothers, to complete (Mull et al., 2001). Because the majority of injuries for young children occur in the home, unsafe housing situations might increase chance of injury for children of low-income mothers (Granie, 2010; Morrongiello et al., 2010). While the home environments might be the cause of increased injury in children in low-income and single-parent families, little research has been conducted to see if injury could also be explained by differences in physical risk-taking behavior for children as an output of income and parental marital status.

According to the results of a study conducted by Coolahan and colleagues (2002), mothers from more disadvantaged circumstances – low-income and low-education – are more likely to demonstrate either permissive or authoritarian parenting styles when interacting with

children. These results could potentially indicate that a child of a mother who has low educational achievement and financial hardship will engage in more physical risk-taking behavior because previous studies have shown that children of authoritarian and permissive parents engage in more physical risk-taking activities (Robinson et al., 1995; Coolahan et al., 2002; Rodriguez et al., 2009; Braza et al., 2015). Similar results were found for parenting styles based on marital status—for example, children in single-parent families were more likely to have authoritarian or passive mothers than children of two-parent families (Coolahan et al., 2002). However, most of these studies have focused on minority families—therefore, it is not apparent if these results were due to income, education, and marital status or based on ethnic cultural values (Mull, Agran, Win & Andersonn, 2001; Coolahan et al., 2002)

Low-income mothers do not differ from middle or high-income mothers only with their parenting styles. Research has shown that mothers differ on various supervision tactics based on their incomes—with supervision being directly related with rate of injury (Wells et al., 2012; Ablewhite et al., 2015). In a study conducted by Mull, Agran, Win, and Anderson (2001), it was found that low-income mothers are be more likely than high-income mothers to rely on the older children of the household to take care of supervision duties (Mull, Agran, Winn, & Anderson, 2001; Ablewhite et al., 2016). This delegation of supervision might lead to more physical risk-taking behavior because some of the children who are placed in supervisory positions might not be old enough to determine which behaviors could lead to potential injury from those that will not (Ablewhite et al., 2016).

Although mothers from lower incomes frequently rely on the eldest siblings to provide supervision, previous research has suggested that reported injury increases solely with the number of children in the home (Mull et al., 2001). Therefore, no matter what level of income

the family has, the greater the number of children in a family might indicate a greater number of incidences of physical risk-taking behavior.

1.4 The Current Study

The foundation of this current study is the research of conducted by Granie (2010). This study was designed to utilize the same measures as the measures in Granie (2010) – *Pre School Activities Inventory* (PSAI; Golombok & Rust, 1993), *Bem Sex Roles Inventory* (BSRI; Bem, 1974), and *Injury Behavior Checklist* (IBC; Speltz, Gonzales, Sulzbacher, & Quan, 1990). The present study extends the prior research by investigating whether risk-taking behavior in boys and girls is related to mothers' parenting styles as measured by the *Parenting Styles and Dimensions Questionnaire* (PSDQ; Robinson et al., 2001). The present study also assessed demographic variables to gain a better understanding of the roles of sex, parenting styles, and other family factors on physical risk-taking behavior in children. According to the literature, three overarching hypotheses with various sub-hypotheses were designed to determine the effect of sex, parenting styles, and family factors on physical risk-taking behavior in children:

1. Male children will participate in more physical risk-taking behavior than female children.
    a. PSAI scores are positively related with IBC scores
    b. PSAI scores for female children will be positively correlated with masculinity scores on the BSRI.
    c. Feminine scores on the BSRI will be negatively related to PSAI scores for female children, but positively correlated with PSAI scores for male children.
    d. IBC scores will be negatively correlated with age for female children, but there will be no change in IBC score for male children across ages.

    e. PSAI scores will be negatively correlated with age for female children but positively correlated with age for male children.

2. Scores on Authoritative PSDQ will be negatively correlated with IBC scores while scores on the Authoritarian and Permissive PSDQ will be positively correlated with IBC scores.
3. IBC scores will be negatively correlated with family income.
    a. Authoritarian and Permissive PSDQ scores will be negatively correlated with family income.
    b. Authoritarian and Permissive PSDQ scores will be negatively correlated with maternal education.
    c. IBC scores will be positively correlated with the amount of children in the household.
    d. Minority mothers will score higher in authoritarian and Permissive styles in the PSDQ than Caucasian mothers.

This study will also independently study the relationship between child birth-order and scores on PSAI and IBC as well as the relationship between BSRI and PSDQ scores. However, no formal hypotheses have been made for these items.

2. Methods

2.1 Recruitment procedures

To conduct this study, 113 mothers of children ages two to five years of age were recruited both electronically and in-person. A system email address at a large Mid-Western university and various social-media platforms such as Facebook were used to recruit participants electronically. Social media was utilized to encourage a snow-ball technique to reach a more diverse pool of participants. Daycares and preschools in the Midwest region were used to recruit participants in person. There was no compensation for participation, but mothers had the opportunity to enter themselves in a drawing for a $50 gift-card after completing the study.

2.2 Participant demographics

Of the 113 mothers who participated in the present study, only data from 93 mothers was analyzed. Not all data submitted was used because 16 mothers did not complete the survey in its entirety and four mothers completed the survey for a child outside the instructed age range.

Of the remaining mothers, the mean age of participants was 34.29 (SD = 4.793) with 90.3% of these mothers identified as Caucasian, 2.2 % identified as Hispanic, 3.2% identified as Asian, 3.2% identified as Native American, and 1.1% identified as bi-racial. The majority of these mothers, 34%, had a 4-year college degree, 32.3% had a master's degree, 14% had a doctoral degree, 9.7% had some college experience, 6.5% had a 2-year college degree, 1.1% had a high-school degree/GED, and 1.1% had a professional degree. One mother did not report the extent of her formal education.

With regard to the children described in the study, 50 surveys (53.8%) were completed for a female child while 43 surveys (46.2%) were completed for a male child. The average age of the children described in this study was 3.51 (SD = 1.059) years. The average age of female

children being 3.70 (SD = 1.035) years and the average age of male children being 3.28 (SD = 1.054). Of these children, 34.4% were recorded as first-born children, 8.6% were recorded as middle-born children, 32.3% were recorded as last-born children, and 22.6% were recorded as only children. Two surveys did not include the age of the child being described.

In case there was a large age gap in-between children, the birth order of the child being described was determined based on the ages of the children currently living in the house. For example, if the survey was completed for a four year-old child who has a 19 year old sibling but no other siblings living in the house, he would be considered an only-child. However, if this same child were to have a three year-old sibling currently living with him, he would be considered a first-born child. Of the children in the study, 98.9% were biological children of the participants and 1.1% were non-biological children of the mother completing the survey.

The vast majority of participants, 95.7%, reported themselves as being married, 1.1% reported being divorced, 2.2% reported being unmarried but living with their partner, and 1.1% reported being in a relationship but not living with their partner.

Because many families today have two sources of incomes, rather than asking for the participants' annual income, participants were requested to report the annual combined family income. Thus, 6.5% of the mothers reported that their family earned less than $30,000 annually; 4.3% earned between $30,000 and $39,999 annually; 7.5% earned between $40,000 and $49,999 annually; 6.5% earned between $50,000 and $59,999 annually; 4.3% earned between $60,000 and $69,999 annually; 9.7% earned between $70,000 and $79,999 annually; 14% earned between $80,000 and $89,999 annually; 8.6% earned between $90,000 and $99,999 annually; 38.7% earned more than $100,000 annually.

Due to changing work-home dynamics, rather than asking mothers if they were employed full-time, part-time, or unemployed, mothers were asked how many hours of intentional-interactions they had with their child per-day. There was a large variance in reported daily intentional-interactions with the range going from 0.75 hours to 24 hours. Due to this large range, it could be argued that the average reported amount of intentional interaction of 4.63 (SD = 3.05) hours per day might not be completely representative of the daily interaction times. However, because the majority of mothers, 67.82%, reported three to six hours of intentional-interactions per day, it can be assumed that the average score is representative of the current population. By asking the average amount of intentional-interaction time a mother spent with her child per-day, a better idea of parent investment to further see how intentional-interaction could potentially mediate risk-taking behaviors in children.

Although mothers are often viewed as the primary caregivers of the children, for the purposes of this study, mothers were asked to indicate whom they rely on most for secondary child-care. Thirty-nine mothers reported that they rely on their spouse for secondary child-care: eight mothers reported that they rely on grandparents; three mothers relied on other family members; one mother reported that she relied on friends; three mothers reported that they relied on paid baby sitters; fifteen mothers reported that they relied on childcare centers; twenty-four mothers reported that they relied on a combination of individuals or groups. This last secondary caregiver area was listed as “other” in analyses.

2.3 Materials

2.3.1 Parental Sex-Determined Gender Behavior Conformity

To measure maternal conformity to gender-specific behavior, this study utilized a 59-item version of the *Bem Sex Roles Inventory* (BSRI; Bem, 1974). The BSRI measured maternal

gender-conformity on three levels: femininity, masculinity, and androgyny (Bem, 1974). For this study, mothers were asked to define how descriptive certain personality attributes applied to them on a 7-point Likert scale. Of these attributes, 19 were defined as masculine (i.e., "has leadership abilities," "ambitious"); 20 were used to define femininity (i.e. "warm", "gentle"), and 20 were defined as androgynous (i.e., "adaptable," "shy"). Possible scores in these areas could range from 1-7 with a score of "1" being least-representative of that gender; a score of "7" being most-representative of that gender.

To analyze the data, the total score was collected from each mother and then divided by the amount of items in each section. Scores were analyzed by separately studying the score on masculinity, femininity, and androgyny scales. The average masculinity score for mothers was 5.086 (SD = 0.71). The average femininity score for mothers was 4.995 (SD = 0.71). The average androgyny score for mothers was 4.392 (SD = 0.41).

2.3.2 Child Sex-Determined Gender Behavior Conformity

To measure child conformity to sex-specific gender behavior, the study utilized a 24-item version of the *Pre-School Activities Inventory* (PSAI; Golombok & Rust, 1993). The PSAI was designed to measure pre-school behavior on three aspects: the toys most played with, the activities most likely to engage in, and overall characteristics of the child (Golombok & Rust, 1993). This study is comprised of 12 male-typed items and 12 female-typed items (Golombok & Rust, 1993). Scores for the PSAI traditionally are scored on a 5-point Likert scale with the lowest score being 1 and the highest score being 5 for each item (Golombok & Rust, 1993).

To analyze the data collected in the PSAI section of this study, overall PSAI score was determined by using the formula provided by Golombok & Rust (1993):

$$\text{Score} = 48.25 + 1.1(\text{Sum of "male" items} - \text{Sum of "female" items})$$

Because the sum of the scores of female-typed items were subtracted from the sum of the scores for male-typed items, scores above the median are considered “masculine” and scores below the median are considered “feminine” (Golombok & Rust, 1993).

For this study, the average score on the PSAI for the entire sample was 50.64 (SD = 17.58). For females, the average score on the PSAI was 37.69 (SD = 12.04) while the average score for males was 65.70 (SD = 8.70).

2.3.3 Child Injury Due to Physical Risk-Taking Behavior

Consistent with the literature underlying this study, the *Injury Behavior Checklist* (IBC; Speltz, Gonzales, Sulzbacher, & Quan, 1990) was utilized to measure child physical risk-taking by gauging how often a child engaged in an activity or behavior that could end in injury. The IBC used for this study was comprised of 24 questions and was scored on a 5-point Likert Scale ranging from 1-5, rather than the traditional 0-4 (Speltz et al., 1990; Granie, 2010).

Scores on the IBC were determined by adding the responses for 24 items. Scores closer to 120 indicated that the child spent more time participating in activities that could lead to injury while scores closer to 24 indicated that the child spent little-to-no time participating in activities that could lead to injury (Speltz et al., 1990). For this study, the average score on the IBC was 51.54 (SD = 11.47). The average IBC score for female children was 50.66 (SD = 12.84) and the average score for male children was 52.56 (SD = 9.68).

2.3.4 Parenting Styles

To measure maternal parenting style, this study utilized a 32-item version of the *Parenting Styles and Dimensions* Questionnaire (PSDQ; Robinson et al., 2001). Similar to the BSRI, this survey was designed to measure maternal parenting style on three levels: authoritative, authoritarian, and permissive (Robinson et al., 2001). For this study, 15 questions

were designed to measure a mother's overall usage of an authoritative parenting style; 12 questions were used to measure overall usage of authoritarian parenting styles; 5 questions were used to measure overall usage of permissive parenting styles (Robinson et al., 2001).

To score overall usage of a particular parenting style, mothers were asked to report how descriptive a certain behavior or action was of their parenting style rated on a 5-point Likert scale with individual item scores ranging from 1-5. To analyze the data, PSDQ scores were found by dividing the total score for a particular parenting style by the total amount of items for that parenting style. Therefore, equations for each of the three parenting styles would look similar to this:

Authoritative Parenting = Score on Authoritative Items/15

Authoritarian Parenting = Score on Authoritarian Items/12

Permissive Parenting = Score on Permissive Items/5

However, during data analyses it was found that all mothers who participated in this study scored highest in authoritative parenting. Therefore, judgements in this study were made based on levels of activity within each parenting style rather than the overall parenting style. Possible scores on the authoritative scale could range from 15-75, while possible scores for the authoritarian and permissive scales were 12-60 and 5-25, respectively.

For each of these parenting styles, there were various subscales. Authoritative parenting style measures were comprised of three subscales: warmth and support, autonomy granting, and regulation (Robinson et al., 2001). Similarly, authoritarian parenting style measures were comprised of three subscales: physical coercion, verbal hostility, non-regulating/punitive behavior (Robinson et al., 2001). The amount of questions per subscale were equally distributed

amongst the authoritative and authoritarian scales with the authoritative subscales having five questions each, and the authoritarian subscales having four questions each.

Indulgence was the only permissive parenting styles subscale, therefore, if a parent were to score high in permissive parenting he would score equally as high in indulgence (Robinson et al., 2001). Unlike overall authoritative, authoritarian, and permissive parenting scores, scores for the subcategories of the PSDQ were calculated by summing the number of responses for each item.

Initial scores on the PSDQ reported that the average score of authoritativeness for mothers in this study was 60.26 (SD = 6.68), authoritarianism was 21.043 (SD = 5.31), and permissiveness was 10.19 (SD = 2.96). For remaining descriptive of the total and sex-split scores on the subscales of the PSDQ and total PSDQ scores based on the sex of the child please refer to Table 1 and Table 2.

2.4 Procedure

After obtaining IRB approval, emails were distributed using the Oklahoma State University E-Mail Address System via OSU Communications. Postings were also made on Facebook, and paper surveys were passed out at local daycare and preschool facilities. The questionnaires in the survey were ordered as follows: BSRI, PSAI, IBC, PSDQ, and demographics.

3. Results

Bivariate correlations were used to determine the effect of sex, parenting style, and family factors on physical risk-taking behavior in children. Because of the size of the data table, it was not possible to report a table including all correlations. Therefore, separate tables were created for each of the various subsections of analysis. Marital status was excluded from analyses because, with 89 of the 93 mothers reporting being married, it was not believed that results from a single status would be representative for all children having parents with varying marital statuses. Remaining items were analyzed separately to describe potential causes for risk taking behavior in children.

3.1 BSRI, PSAI, and IBC Interrelated Effects

Initial bivariate correlations (Table 3) indicate that there was no correlation between child sex and IBC scores for the total population ($r = -0.083$, $p = 0.429$). Although these results were not significant, other bivariate correlations showed a strong relationship between PSAI and IBC scores ($r = 0.288$, $p = 0.005$). However, further analyses of these variables indicated that this result is significant only for female children ($r = 0.471$, $p = 0.001$) and not for male children ($r = 0.152$, $p = 0.332$).

When conducting bivariate analyses, there was a negative relationship found between feminine and androgynous BSRI scores and scores on the PSAI for girls, but a positive one for boys. However, these results were not significant for neither female children (BSRI feminine: $r = -0.020$, $p = 0.890$; BSRI androgynous: $r = -0.120$, $p = 0.407$) nor male children (BSRI feminine: $r = 0.150$, $p = 0.336$; BSRI androgynous: $r = 0.139$, $p = 0.375$). Similarly, correlations for masculine BSRI scores and PSAI scores for female children, though the correlation was positive as hypothesized, were not significant ($r = 0.131$, $p = 0.131$)

PSAI scores for female children will be positively correlated with masculinity scores on the BSRI.

Sex-split analyses comparing scores on IBC scores based on child age, did not yield significant results. However, sex-split analysis did yield significant results for bivariate correlations created for PSAI scores and age for male children ($r = 0.410$, $p = 0.006$). These items were not found to be significantly correlated for female children.

3.2 PSDQ and the BSRI, PSAI, and IBC

3.2.1 Authoritative PSDQ Results

According to the bivariate correlations completed for the authoritative scale of the PSDQ (Table 4), there were correlations between items on the authoritative scale and scores on the PSAI and BSRI.

Overall scores on the authoritative scale of the PSDQ were correlated with scores on the feminine scale of the BSRI and scores on the PSAI. For scores on the feminine scale of the BSRI, a strong positive correlation was found between levels of engagement in an authoritative parenting style and scores on the feminine scale on the BSRI ($r = 0.417$, $p = .226$). Similarly, scores on the PSAI were positively correlated with engagement in authoritative parenting styles ($r = 0.226$; $p = 0.029$). However, further analysis showed that, when data was split based on child sex, bivariate correlations for PSAI scores and scores on the authoritative scale of the PSDQ were only significant for male children ($r = 0.413$; $p = 0.006$).

Analyses of the subscales of the authoritative scale found there to be significant bivariate correlations between authoritative subscales and BSRI and PSAI scales. For scores on the feminine scale on the BSRI, a significant correlation was found with all three subscales of the authoritarian scale of the PSDQ. Scores on the warmth and support subscale for the PSDQ were

found to be significant for the total population ($r = 0.471$, $p = 0.000$), and both male children and female children in further analyses. Bivariate correlations between warmth and support subscale were stronger for female children ($r = 0.633$, $p = 0.000$) than for male children ($r = 0.309$, $p = 0.044$).

The bivariate correlations showed positive correlations when comparing the feminine scale of the BSRI and the autonomy granting ($r = 0.249$, $p = 0.016$) and regulation subscales ($r = 0.300$, $p = 0.003$) of the PSDQ. However, upon sex-split analyses, the results for the correlations for both the autonomy granting ($r = 0.327$, $p = 0.020$) and regulation ($r = 0.303$, $p = 0.033$) subscales were only significant for female children, but not for male children.

Similarly, significant bivariate correlations were found between the androgynous scale of the BSRI and warmth and support subscales for the total population ($r = 0.259$, $p = 0.012$). However, further analysis indicated that these results were only significant for female children ($r = 0.341$, $p = 0.341$).

Though there were no significant bivariate correlations between warmth and support PSDQ subscales and PSAI scores for the total population, during sex-split analyses a significant correlation was found between warmth and support subscales of the PSDQ and PSAI scores was found for male children ($r = 0.540$, $p = 0.000$). While there was no significant bivariate correlations for warmth and support PSDQ subscales when compared with the PSAI, there was a significant bivariate correlation between the PSAI and the regulation subscale of the PSDQ ($r = 0.267$, $p = 0.010$). However, these results were not found to be significant during sex-split analyses.

3.2.2 Authoritarian PSDQ Results

According to the bivariate correlations completed for the authoritarian scale of the PSDQ (Table 5), there were correlations between items on the authoritative scale and scores on the BSRI and IBC.

Overall scores on the authoritarian scale of the PSDQ were negatively correlated with scores on the feminine scale of the BSRI ($r = -0.347$, $p = 0.001$). Further sex-split analysis of the scores on the authoritarian scale of the PSDQ found that negative correlations were stronger for female children ($r = -0.367$, $p = 0.009$) than male children ($r = -0.338$, $p = 0.027$).

While there were no significant correlations found for overall scores on the authoritarian scale and the IBC for the total population, further analyses found correlation for IBC and authoritarian PSDQ scores based on sex. Sex split bivariate correlations for authoritarian PSDQ scores and IBC scores found a strong positive correlation for female children ($r = 0.425$, $p = 0.002$), but not for male children.

Analyses on the subscales of the authoritative scale found there to be significant bivariate correlations between authoritative subscales and BSRI, PSAI, and IBC scores. For the physical coercion subscale score of the PSDQ, correlations were found between both PSAI ($r = 0.323$, $p = 0.002$) and IBC scores. However, during sex-split analyses, the results were only significant for female children when correlating scores on physical coercion subscale scores for both PSAI ($r = 0.284$, $p = 0.045$) and IBC ($r = 0.321$, $p = 0.023$) correlations.

Bivariate correlations used to analyze the non-reasoning/punitive subscale of the authoritarian scale of the PSDQ reported a negative correlation with feminine BSRI scores ($r = -0.297$, $p = 0.004$). Sex-split analyses reported that the correlation between the non-reasoning/punitive subscale of the authoritarian scale and feminine BSRI scores were only significant for female children ($r = -0.279$, $p = 0.050$), but not male children. During sex-split

analyses, it was also found that, for female children, there was a positive correlation between score on the non-reasoning/punitive subscale and IBC scores ($r = 0.356$, $p = 0.011$).

Verbal hostility subscale bivariate correlations found a strong negative correlation when compared with the scores on the feminine BSRI scale ($r = -0.335$, $p = 0.001$) and a positive correlation when compared to scores on the IBC ($r = 0.220$, $p = 0.034$). Sex-split analyses revealed that bivariate correlations for the scores on the verbal hostility subscale and feminine BSRI scale were significant for both male children and female children. However, bivariate correlations for the verbal hostility subscale were only correlated with IBC scores for female children ($r = 0.369$, $p = 0.008$).

3.2.3 Permissive PSDQ Results

Unlike the authoritative and the authoritarian subscales of the PSDQ, the only subscale for the permissive scale in the PSDQ is the indulgent subscale. All results analyzed will represent the level of permissive parenting and indulgence of the child's requests because they are the same thing—just reported as two separate items.

Analyses for the total population based on permissive parenting scores yielded no significant results (Table 6). However, sex-split analyses yielded that, for male children, permissive PSDQ scores were significantly correlated with scores on the androgynous and feminine scales on the BSRI. Both androgynous BSRI ($r = 0.449$, $p = 0.003$) and feminine BSRI ($r = 0.402$, $p = 0.008$) scores yielded strong positive correlations.

3.3 Interrelated Effects of Family Factors

3.3.1 Ethnicity

Bivariate correlations comparing parent ethnicity with scores on the PSDQ, BSRI, PSAI, and IBC found significant correlations with scores on the authoritarian and permissive scale and non-reasoning/punitive subscale of the PSDQ (Table 7).

For the total population, positive correlations were found for the authoritarian scale of the PSDQ ($r = 0.248$, $p = 0.017$), and for the non-reasoning/punitive subscale of the authoritarian scale of the PSDQ ($r = 0.220$, $p = 0.034$). Strong positive correlations were found when comparing parent ethnicity with permissive scale of the PSDQ ($r = 0.331$, $p = 0.002$).

Sex-split bivariate correlations for parent ethnicity found that permissive scores were significant for both male and female children. However, the scores on the authoritarian score and non-reasoning/punitive subscale were only significant for female children. There was a positive correlation for authoritarian parenting style score ($r = 0.361$, $p = 0.010$) and a strong positive correlation for the non-reasoning/punitive subscale of the authoritarian scale ($r = 0.382$, $p = 0.006$).

However, because ethnicity was a categorical item, descriptive statistics were also used to understand in which maternal ethnic groups authoritarian and permissive parenting styles were more prominent (Table 9 and Table 10). Descriptive statistics indicated that Asian mother's scored highest in all three items: Authoritarian ($M = 30.66$, $SD = 11.59$), Non-Reasoning/Punitive ($M = 10$, $SD = 3$), and Permissive ($M = 14.66$. $SD = 1.15$)—with the exception of permissive scores that were similar with Native American mothers ($M = 14.66$, $SD = 1.52$). However, data from these correlations should not be generalized as 84 of the 93 individuals in the study identified as Caucasian.

While significant results were found when creating bivariate correlations for parent ethnicity on authoritarian, non-regulating/punitive, and permissive scores, bivariate correlations

for child ethnicity only found significant results for permissive parenting scores (r = 0.272, p = 0.008). However, upon sex-split analyses, these results were only found to be significant for female children (r = .0319, n = 0.24).

Similar to the analyses for parent ethnicity, because ethnicity was a categorical item, descriptive statistics were also used to understand in which child ethnic groups was associated with higher permissive PSDQ scores (Table 14). These results indicated that, similar to previous descriptive statistics, mothers of Asian children were more likely to engage in a permissive parenting style (M = 15, SD = 1.41). However, data from these correlations should not be generalized as 81 of the 93 children in this study were identified as Caucasian.

No sex-split descriptive statistics were created to determine the permissive scores associated with each gender for the provided ethnicities.

3.3.2 Maternal Educational Achievement and Family Income

Bivariate correlations comparing maternal educational achievement and family income with scores on the PSDQ, BSRI, PSAI, and IBC for the total population yielded a significant correlation for the feminine scale of the BSRI (Table 11). Scores on the feminine scale of the BSRI were found to have a strong, negative relationship with family income (r = -0.272, p = 0.008). However during sex-split analyses, it was found that this result was significant only for mothers of female children (r = -0.290, p = 0.041).

Further sex-split analyses found significant results for permissive scores on the PSDQ, verbal hostility subscale scores on the PSDQ, and androgyny scores on the BSRI. For male children, maternal education achievement was positively correlated with scores on the permissive scale of the PSDQ (r = 0.358, p = 0.020). Similarly, scores on the verbal hostility subscale of the PSDQ were found to be positively correlated with annual family income for male

children (r = 0.308, p = 0.045). For females, parent education was negatively correlated with androgyny scores on the BSRI (r = -0.341, p = 0.015).

Analyses also found a strong, positive correlation for maternal educational achievement and family income (r = 0.469, p = 0.000). However, there were no significant correlations between IBC scores and maternal education achievement or annual family income.

3.3.4 Intentional Interaction

Bivariate correlations comparing maternal intentional interaction with scores on the PSDQ, BSRI, PSAI, and IBC for the total population, a significant correlation was found for the authoritarian scale and non-reasoning/punitive subscales of the PSDQ, income, and feminine scale of the BSRI (Table 12).

Analyses for the PSDQ found negative correlations for both the authoritarian scale of the PSDQ (r = -0.230, p = 0.029) and the non-reasoning/punitive subscale of the PSDQ (r = -0.251, p = 0.017). Sex-split analyses of this data found that these results were not significant for male and female children when analyzed separately.

When correlating intentional interaction with income, strong negative correlations were also found through bivariate correlations (r = -.298, p = 0.004)—these results were significant for both mothers of male and female children. Conversely, when correlating intentional interaction with feminine scales of the BSRI, a strong, positive correlation was found (r = 0.290, p = 0.006). When conducting a sex-split analyses, correlations for the feminine scales of the BSRI were only found to be significant for mothers of male children (r = 0.449, p = 0.003).Other results during sex-split analyses found that, for female children, intentional interaction time was negatively correlated with scores on the IBC (r = -0.329, p = 0.024).

3.3.5 Number of Children in the House

Bivariate correlations comparing the number of children living in the families' houses with scores on the PSDQ, BSRI, PSAI, IBC and other factors for the total population yielded significant correlations based on child sex, parent age, annual family income, scores on the IBC, and secondary caregiver.

For child sex ($r = -0.240$, $p = 0.021$), negative correlations mean that, for the total population, there were more children living in the households of male children than were living in the households of female children. Similarly, a negative relationship was found for bivariate correlations between the number of children in the household and income ($r = -0.206$, $p = 0.048$). While there were negative relationships found for bivariate correlations relating the number of children in the household with income and child sex, a positive relationship was found for bivariate correlations between the number of children and IBC scores ($r = 0.225$, $p = 0.030$).

However, during sex-split analyses, correlations were only significant for female children when correlating the amount of children with income ($r = -0.362$, $p = 0.013$) and IBC ($r = -0.329$, $p = 0.024$). Sex-split analyses also yielded significant results for bivariate correlations between the number of children in the household and scores on the masculine scale of the BSRI for mothers of male children ($r = -0.473$, $p = 0.001$).

3.3.6 Birth Order

Initial bivariate correlations for birth order of the children found significant relations with autonomy granting subscales of the PSDQ ($r = 0.264$, $p = 0.011$), number of children in the house ($r = -0.306$, $p = 0.003$), PSAI scores ($r = -0.294$, $p = 0.005$), and secondary caregiver data ($r = 0.219$, $p = 0.037$) (Table 13). Birth order was determined by categorizing children as a first born (1), middle (2), youngest (3), or only (4). Files were split on the basis of birth order to

conduct further analyses to determine the effect of birth order on aspect of the PSDQ, PSAI, BSRI, and IBC.

After files were split, descriptive statistics were created to gain a better understanding as to why significant results were yielded for the PSDQ, PSAI, and the number of children in the house in preliminary analyses (Table 14).

According to these descriptive statistics, children who were identified as an "only child" in the study were allowed more autonomy than other children in the study (M = 18.67, SD = 2.55). Sex-split descriptive statistics indicated that male children who were identified as "only children" were more likely than female children to be allowed autonomy (M = 20.00, SD = 1.63).

"Middle" children, on average, lived in the families with the highest number of children (M = 3.25, SD = 0.463). This result was expected because for a child to be listed as a middle child they had to have at least one older and younger sibling. Similar to the results reported above, male children who were identified as middle children were more likely to be in families with the highest number of children (M = 3.33, SD = 0.516).

PSAI scores were found to be highest in the middle child group (M = 60.90, SD = 18.27). However, because PSAI is a scale in which lower scores indicate more "feminine" behavior and higher scores indicate more "masculine" behavior, these results might be explained because there were only two female children who were identified as middle children while there were six male children who were identified as middle children. This therefore might have skewed the results to show higher scores on the PSAI.

For male children, sex-split descriptive statistics identified that middle children were more likely to have higher scores (M = 69.70, SD = 9.48) and youngest children were more

likely to have lower scores (M = 62.4, SD = 9.86) on the PSAI. Conversely, for female children, youngest children were more likely to have higher scores (M = 35.97, SD = 14.91) and only children were more likely to have lower scores (M = 32.72, SD = 7.97) on the PSAI.

To gain a better understanding of the secondary childcare practices for children based on birth order, a frequency table was created to determine what type of secondary care was used most frequently (Table 15). This table shows that most mothers depended on their spouses for secondary child care more than any other group for all four birth order categories. Therefore, it was decided that secondary caregiver might be more dependent on the number of children in the house rather than the birth order of the child. This theory will be discussed more in the section below.

3.3.7 Secondary Caregiver

Initial bivariate correlations for birth order of the child found significant relations with warmth and support subscales of the PSDQ, maternal educational achievement, interactional interaction time, child age, and birth order (Table 16). Similar to birth order, since secondary caregiver was categorical information, files were split to create descriptive statistics to further determine the effect of secondary caregiver on aspect of the PSDQ and other family factors (Table 17). Frequencies were used to explain the average maternal educational achievement and birth order for secondary child care. This analysis will also look at secondary childcare in regards to annual family income (even though results in initial correlations were not found to be significant) to better understand the effect of income on childcare.

According to the descriptive statistics shown, mothers who relied on their spouses for secondary care (n = 39) scored higher on the warmth and support subscale of the PSDQ than did mothers who reported relying on other groups for secondary child care support (M = 23.15, SD =

2.02). Likewise, mothers who said that they relied on friends (n = 1) scored lower on warmth and support subscales than did mothers using other groups (M = 19). However, because there was only one mother who reported using friends as primary childcare support, this result should not be generalized to the total population of mothers who rely on their friends for childcare support.

Mothers who reported relying on their spouse for secondary childcare also reported the largest amount of intentional interaction time with their children (M = 5.41, SD = 3.85). However, it should be noted, that one mother in this group reported having 24 hours of intentional interaction—potentially skewing results. Mothers who reported relying on other family members for childcare support (n = 3), likewise reported the least amount of intentional interaction time (M = 3.50, SD = 3.04).

Although all ages of the present study were reported in almost every form of secondary child care, mothers who relied on paid baby sitters (n = 3) typically had the oldest children (M = 4, SD = 1). Similarly, mothers who reported being more dependent on other family members, typically had the youngest children (M = 2.33, SD = 0.577).

Frequency tables were created to understand the average educational achievement and birth order for children in each secondary caregiver category (Table 19).

Most of the mothers who reported earning a high school/GED, completing some college, earning a 2- year college degree, and 4-year college degree, reported relying on their spouses for secondary childcare. However, for mothers who reported obtaining a master's degree, 43.33% (n=13) reported relying on combination of individuals or groups for secondary child-care support. Exactly 30% (n =4) of mothers with a doctoral degree and the one mother with a professional degree reported relying on childcare centers for secondary child support.

With regard to birth order, the majority of children for each birth order category were placed with their mothers spouses for secondary childcare. However, for the youngest child, mothers equally reported the use of a combination of individuals or groups for secondary child-care support.

According to data collected from frequency tables comparing annual family income with secondary caregiver information (Table 20), most mothers in varying annual family incomes, with a few exceptions, relied on their spouse for secondary childcare. While these results indicated that most mothers rely on their spouses for secondary childcare, it was also found that mothers in the $50,000-$59,999 and the $70,000-$79,999 annual income ranges reported equal numbers of mothers relying on their spouses and childcare centers for secondary childcare. Similarly, mothers in the $100,000 or more annual income range reported relying equally on their spouse and a combination of individuals or groups for secondary childcare support. The mothers in the $40,000-49,999 annual income range were the only mothers who reported relying more on a combination of individuals or groups for secondary childcare support than their spouses.

4. Discussion

4.1 Discussions of the Current Study

The current study attempted to use bivariate correlations, descriptive statistics, and frequencies to determine the effect of sex, parenting styles, and various family factors on physical risk-taking behavior in children. Based on the analysis of the data collected in the present study, it was determined that some of the proposed hypotheses were supported while some of the proposed hypotheses were not.

4.1.1 Hypothesis 1

The first broad hypothesis that male children will participate in more physical risk-taking behavior than will female children was partially supported by the results in this study. Although bivariate correlations did not find an overt, significant relationship between risk-taking behavior and child sex, data did show a negative correlation indicating that female children typically engage in less risk taking than male children.

Although the first broad hypothesis was not supported, the first sub-hypothesis that proposed that scores on the PSAI would be positively correlated with IBC scores was supported. By scoring higher on PSAI scores – indicating that the child engaged in more "masculine" behavior – children were more likely to engage in activities that could lead to physical injury. However, since during sex-split analyses results were found to be significant only for female children, it might be concluded that PSAI scores are only predictive of physical risk-taking behavior in female children since higher scores indicate that they are engaging in more "masculine" behavior.

When relating PSAI and IBC scores to child age, there were no significant findings in regards to IBC scores; however, sex-split analyses indicated that PSAI was positively associated

with age for male children. Therefore, these results might partially support previous reports that sex-determined gender behavior is solidified by the time that they reach five or six years of age (Kanka, Wagner, Schober, & Spiel, 2013).

With regard to correlations made to analyze scores on the BSRI and PSAI, although results were not found to be significant, they indicated some support for the proposed hypotheses that: 1) PSAI scores for female children will be positively correlated with masculinity scores on the BSRI, and 2) Feminine scores on the BSRI will be negatively related to PSAI scores for female children, but positively correlated with PSAI scores for male children. Although these results were not overtly significant, they support previous research that indicated that mothers who strongly associate with the behaviors characteristic of their sex-determined gender are more likely to parent their child to adhere to strict sex-typed gender behaviors (Fulcher, Sutfin, & Patterson, 2008). Conversely, mothers who do not strongly associate with the behaviors characteristic of their sex-determined gender might be less likely to parent their child to adhere to sex-typed gender behaviors.

4.1.2 Hypothesis 2

The second broad hypothesis – that scores on the authoritative scale of the PSDQ will be negatively correlated with IBC scores while scores on the authoritarian and permissive scales PSDQ will be positively correlated with IBC scores – was also partially supported, yet partially refuted, by the results. Results from the analysis of this study found positive, non-significant relationships between IBC scores and scores on the authoritarian and permissive scales of the PSDQ—therefore, refuting the proposed hypothesis. Analysis of data yielded results supporting the hypothesis because strong, positive correlations between scores on the IBC and the authoritarian scale of the PSDQ were found. Since these results were correlational, it is not

possible to determine which item causes the other or if there is a potential third variable that was not included in these analyses. However, the fact that the sex-split analyses which yielded that this result was significant only for female children might indicate that mothers have more authoritarian-like responses to physical risk-taking behavior due to differences in gender beliefs on risk-taking (Morrongiello & Dawber, 1999; Cabrera et al., 2011). As mentioned above, these maternal parenting styles might be responses to physical risk-taking behaviors rather than physical risk-taking behavior being a product of maternal parenting styles. This is because research has indicated that mother's often determine their parenting styles from the receptiveness of their child (Ablewhite et al., 2016).

Further analyses of the subscales of the authoritarian and authoritative parenting styles yielded significant results which might indicate that maternal parenting style is dependent on the gender of the child. These results are specifically found with regard to: regulation, warmth and support, physical coercion, non-reasoning punitive, and verbal hostility.

For the warmth and support subscale of the authoritative scale of the PSDQ, the strong positive correlation that was found might indicate that mothers have more positive responses to male children who engage in more "masculine" behavior than male children who engage in more "feminine" behavior. The results that showed a strong positive correlation for regulation subscale score and the PSAI for the total population might indicate that mothers are also more likely to discuss the potential threats of physical-risk taking behavior.

Although the significant correlations for the subscales of the authoritarian scale of the PSDQ were found to be significant for the total population, sex-split analyses found that they were significant only for the PSAI and IBC scores of female children. Since they were significant only for female children, these results might indicate that mothers respond differently

towards male and female physical risk-taking behavior. Because these authoritarian responses include what can be considered as more harsh physical and verbal reactions as well as a lack of explanation for why their daughters should disengage in certain behaviors, results of this study contradict with previous studies that indicate that these responses are more characteristic for mothers of male children.

However, because there were no mothers that scored higher on the authoritarian or permissive scales than the authoritative scale, future studies should survey more diverse populations so that reports can be made on the effect of overall parenting style and child behavior.

4.1.3 Hypothesis 3

The third broad hypothesis that IBC scores would be negatively correlated with family income was not overtly supported by results of this study because there was no correlation between income and IBC scores. Likewise, many of the results found in this study contradicted prior findings that were used to create the sub-hypotheses which posited that authoritative and permissive scores on the PSDQ would be negatively correlated with family income and maternal education.

Although there were no significant correlations found for income and PSDQ scores for the total population, for sex-split analyses, it was found that there was a positive correlation between income and verbal hostility scores on the subscale of the PSDQ. Though this is just one subscale of the authoritarian scale of the PSDQ, because education was correlated with income, it could potentially challenge previous results that had been reported indicating that scores on authoritarian parenting might decrease with increases in education and income (Coolahan et al., 2002).

In the same way, the positive correlations between maternal educational achievement and scores on the permissive scale of the PSDQ also challenges previous research that posits that permissive parenting is more characteristic of low income and low educated parents (Coolahan et al., 2002).

Although the results of this study were contrary to the proposed hypotheses above, results supported parts, if not all, of the last two sub-hypotheses of the third hypothesis: 1) IBC scores will be positively correlated with the number of children in the household, and 2) Minority mothers will score higher in authoritarian and permissive styles in the PSDQ than will Caucasian mothers.

Correlations for the amount of children in the household and IBC scores in this study supported previous research that suggested that increases in the number of children in the household increases likelihood for a child to withstand injury—most likely due to physical risk-taking behaviors (Mull et al., 2001). Likewise, minority mothers reported higher scores on the permissive scale of the PSDQ, supporting previous research on the parenting styles of minority families (Mull et al., 2001). However, because our population was overwhelmingly Caucasian, future studies should work to recruit a more equally distributed ethnic population to better understand the effect of ethnicity on parenting styles and other outcomes.

4.1.4 Un-hypothesized Results

Although this study collected data on the secondary caregiver of the child, the birth order of the child, and daily intentional interaction times between mother and child, bivariate correlations and descriptive statistics might indicate potential significant results for future research studies.

The significant negative bivariate correlation results for intentional interaction and scores on the IBC for female children might indicate that increased maternal activity might decrease the likelihood for a child to become injured. This indication could be explained by the negative correlation between intentional interaction time and scores on the non-reasoning/punitive subscale of the PSDQ. By having a decreased amount of non-regulating/punitive behaviors, mothers might be more likely to discuss the consequences of engaging in physical risk-taking activity. However, future research should be conducted to investigate the relationship between parenting style and IBC scores since these results were not paralleled with positive correlations with scores on the regulating subscale of the PSDQ.

For birth order, descriptive statistics on the PSAI scores for female children might be supportive of previous research which indicates that mothers with multiple children might be less likely to socialize children to participate in sex-determined behaviors than mothers of an "only child" (Kanka et al., 2013). It has also been seen that there are varying levels of socialization based on the sex make-up of the children in the household (Kanka et al., 2013). However, this study did not ask for the sex of the other children in the household, therefore, questions should be asked to determine the sex of the other children in the household.

4.2 Limitations and Future Research

The present research attempted to explain the role that gender biased socialization, parenting styles, and family factors had on the development of physical risk-taking behavior in children. After analyzing and reviewing the data collected during this study, there are three major limitations to the study.

The first limitation is that the only individuals sampled for this study were the mothers of the children and did not include data on the fathers of the children included in the study.

Although research suggests that mothers have a top-down influence on their spouses (Cabrera et al., 2011), other research has indicated that fathers typically engage in more authoritarian parenting styles than do mothers (Braza et al., 2015). Therefore, further research should be conducted to understand how combined parenting styles between mothers and fathers ultimately influence physical risk-taking behavior in children.

The second limitation of this study is that the majority of the mothers sampled in the study identified themselves as being married, highly educated, and having an increased annual family income. Although previous research has shown that single mothers tend to engage in more authoritarian and passive parenting styles, it is believed that these results could not be replicated in this study because 89 of the 93 mothers identified as married. Therefore, future studies should attempt to actively recruit more single mothers to have a sample more representative of the general population. Another limitation due to mother marital status is that mothers who were married were married to the biological or step-father of the child described in the survey. Research has indicated that children from step-families have the same behavioral outcomes as children from single-parent families (O'Connor et al., 2000). Therefore, if this study had recognized the difference between a mother's marriage being to the child's biological father or to a step-father, there might have been significant results in areas that were not found to be significant during these analyses.

Similarly, because a majority of our mothers reported having a four-year college or master's degree and high annual family incomes, results found comparing income and education might not be entirely representative of the population at large. Therefore, further studies should include data on individuals with lower educational attainment or annual family income to learn

more about the effect of parental education and family income on parenting styles and the development of physical risk-taking behaviors.

With regard to parent sex and maternal marital status, the current study did not ask the sex of the mother's spouse. Therefore, children in the study who were identified as coming from two-parent households might potentially have same-sex parents. Though previous research has indicated that children from same-sex parents are socialized to adhere to sex-determined gender beliefs to the same extent as children from different-sex parent, future research might be able to find innate differences between groups of children (Fulcher et al., 2008).

Thirdly, this survey did not ask mothers any questions pertaining to the overall development of their children. Therefore, this study did not collect data on the potential intellectual and physical developmental delays for the children described in the study. Further research should be conducted to see the effect of physical or intellectual developmental delays have on gender bias, parenting style, and family factors and their influence on physical risk-taking behavior in children.

Lastly, this study did not ask mothers to provide information on the personality of their children. However, previous research has shown that, overall, risk-taking behavior is positively correlated with levels of sensation seeking (Little & Wyver, 2010; Lasenby-Lessard & Morrongiello, 2011). Previous research has shown that not only do children who have high levels of sensation seeking engage in more risk-taking behavior, but they also are more likely to downplay the risks associated with certain physical risk-taking behaviors (Little & Wyver, 2010). Therefore, future research should focus on the effect of sensation seeking on parenting styles and other factors reviewed in this present study.

4.3 Conclusions

The present study attempted to determine the effect of sex, parenting styles, and various family factors on physical risk-taking behavior in children. Although not all hypotheses were supported by results, some significant correlations found during analyses might contradict prior research and can lead to future research studies. Future studies should focus on how parental involvement interacts with the development of physical risk-taking behavior. This research should specifically investigate the relationship between maternal parenting style and physical risk-taking behavior to determine which item is more predicative of the other.

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APPENDIX

Table 1. Subscales of the Authoritative Scale of the PSDQ Descriptive Statistics

	TOTAL					MALE					FEMALE				
	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD
Warmth and Support Score	93	14.00	25.00	22.43	2.22	43	14.00	25.00	22.70	2.46	50	16.00	25.00	22.20	1.99
Physical Coercion Score	93	4.00	14.00	6.95	2.18	43	4.00	12.00	7.44	2.33	50	4.00	14.00	6.52	1.97
Autonomy Granting Score	93	11.00	23.00	17.00	3.05	43	11.00	23.00	16.81	2.98	50	11.00	23.00	17.16	3.13
Non-Reasoning Punitive Score	93	4.00	15.00	6.27	2.08	43	4.00	11.00	6.21	2.03	50	4.00	15.00	6.32	2.13
Regulation Score	93	9.00	20.00	16.51	2.75	43	9.00	20.00	17.12	2.54	50	10.00	20.00	15.98	2.85
Verbal Hostility Score	93	4.00	16.00	7.83	2.40	43	5.00	15.00	7.70	2.25	50	4.00	16.00	7.94	2.54
Indulgent Score	93	6.00	18.00	10.19	2.96	43	6.00	16.00	9.93	2.45	50	6.00	18.00	10.42	3.34

Table 2. Parenting Style Scores on the PSDQ Descriptive Statistics

	TOTAL					MALE					FEMALE				
	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD	N	Min	Max	Mean	SD
Permissive Score	93	6.00	18.00	10.19	2.96	43	6.00	16.00	9.93	2.45	50	6.00	18.00	10.42	3.34
Authoritative Score	93	41.00	72.00	60.27	6.68	43	44.00	70.00	61.12	6.03	50	41.00	72.00	59.54	7.17
Authoritarian Score	93	12.00	43.00	21.04	5.31	43	14.00	35.00	21.35	5.15	50	12.00	43.00	20.78	5.49

Table 3. Child Sex and Age and interrelated effects on BSRI, PSAI, and IBC scores (male, female)

Factor	1	2	3	4	5	6	7
1. Child Sex	--						
2. Child Age	.199	--					
3. BSRI Masculine Score	-.174	-.023 .014, .010	--				
4. BSRI Feminine Score	-.099	.021 .018, .061	-.077 -.122, -.074	--			
5. BSRI Androgynous Score	-.063	.096 .095, .128	.167 .201, .118	**.544**** **.531**, .556****	--		
6. PSAI score	**-.799****	-.114 **.410****, -.133	**.218*** .139, .131	.105 .150, -.020	.043 .139, -.120	--	
7. IBC	-.083	-.078 -.111, -.032	.049 -.099, .124	-.078 .206, -.271	.052 .247, -.099	**.288**** .152, **.471****	--

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4. Authoritative PSDQ Score effects on IBC, PSAI, and BSRI (male, female)

Factor	1	2	3	4	5	6	7	8	9
1. Authoritative Score	--								
2. Warmth and Support Score	**.750****	--							
	.693, .821****								
3. Autonomy Granting Score	**.767****	**.388****	--						
	.674, .855****	0.190, **.614****							
4. Regulation Score	**.814**,**	**.486****	**.375****	--					
	.747, .856****	**.356*, .602****	0.205, **.536****						
5. IBC	.085	-.087	.136	.106	--				
	.213, .002	.116, -.273	.162, -.273	.142, .062					
6. PSAI	**.226***	.202	.073	**.267****	.052	--			
	.413,** .120	**.540****, -.071	.075, .273	.297, .104	.247, -.099				
7. BSRI Androgynous Score	.198	**.259***	.183	.044	.052	.043	--		
	.129, .249	.183, **.341***	.129, .243	-.010, .069	.247, -.099	.139, -.120			
8. BSRI Feminine Score	**.417****	**.471****	**.249***	**.300****	-.078	.105	**.544****	--	
	.334*, .462**	**.309*, .633***	.166, **.327***	.267, **.303***	.206, -.271	.150, -.020	**.531**, .556****		
9. BSRI Masculine Score	.112	.075	-.041	.200	.049	**.218***	.167	-.077	--
	.047, .129	.063, .051	-.088, .015	.122, .209	-.099, .124	.139, .131	.201, .118	-.122, -.074	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 5. Authoritarian PSDQ Score effects on IBC, PSAI, and BSRI (male, female)

Function	1	2	3	4	5	6	7	8	9
1. Authoritarian Score	--								
2. Physical Coercion Score	**.758**** **.742**, .798****	--							
3. Verbal Hostility Score	**.862**** **.835**, .890****	**.489**** **.407**, .617****	--						
4. Non-reasoning/punitive score	**.764**** **.758**, .774****	**.322**** .282, **.392****	**.532**** **.540**, .527****	--					
5. IBC	**.264*** .005, **.425****	**0.246*** .134, **.321***	**.220*** -.026, **.369****	.164 -.138, **.356***	--				
6. PSAI Score	.144 -.102, .209	**.323**** .249, **.284***	.023 .127, .095	.002 -.169, .162	.052 .247, -.099	--			
7. BSRI Androgynous Score	-.120 .110, -.229	.100 -.058, -.183	-.053 .077, -.160	-.141 .077, -.228	.052 .247, -.099	.043 .139, -.120	--		
8. BSRI Feminine Score	**-.347*** **-.338*, -.367****	-.194 .166, -.277	**-.335**** **.317*, -.343**	**-.297**** **-.316*, -.279***	-.078 .206, -.271	.105 .150, -.020	**.544**[**] **.531**, .556****	--	
9. BSRI Masculine Score	.121 .227, -.021	.190 .170, .149	.063 .245, -.060	.036 .236, -.121	.049 -.099, .124	**.218**[*] .139, .131	.167 .201, .118	-.077 -.122, -.074	--

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 6. Permissive PSDQ Score effects on IBC, PSAI, and BSRI

Factor	1	2	3	4	5	6
1. Permissive Score	--					
2. IBC	.097 -.064, .184	--				
3. PSAI Score	-.020 -.067, .142	.052 .247, -.099	--			
4. BSRI Androgynous Score	.146 **.449**,** -.056	.052 .247, -.099	.043 .139, -.120	--		
5. BSRI Feminine Score	-.118 .008, -.185	-.078 .206, -.271	.105 .150, -.020	**.544**[**] **.531**, .556****	--	
6. BSRI Masculine Score	.023 **.402**.** -.196	.049 -.099, .124	**.218**[*] .139, .131	.167 .201, .118	-.077 -.122, -.074	--

**. Correlation is significant at the 0.01 level (2-tailed).

Table 7. Parent Ethnicity bivariate correlations with IBC, PSAI, BSRI, and PSDQ (male, female)

Function	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Parent Ethnicity	--														
2. IBC	.010	--													
	-.139, .096														
3. PSAI Score	.061	.052	--												
	-.062, .160	.247, -.099													
4. BSRI Androgynous Score	-.004	.052	.043	--											
	.004, -.018	.247, -.099	.139, -.120												
5. BSRI Feminine Score	-.120	-.078	.105	**.544****	--										
	-.252, .015	.206, -.271	.150, -.020	**.531**, .556****											
6. BSRI Masculine Score	.094	.049	**.218***	.167	-.077	--									
	.181, -.017	-.099, .124	.139, .131	.201, .118	-.122, -.074										
7. Authoritative Score	.115	.085	**.226***	.198	**.417****	.112	--								
	.120, .110	.213, .002	**.413**,** .120	.129, .249	**.334*, .462****	.047, .129									
8. Authoritarian Score	**.248***	**.264***	.144	-.120	**-.347***	.121	-.205	--							
	.149, **.361***	.005, **.425****	-.102, .209	.110, -.229	**.338*, -.367***	.227, -.021	-.156, -.252								
9. Permissive Score	**.311****	.097	-.020	.146	-.118	.023	-.089	**.453****	--						
	.334, .326	-.064, .184	-.067, .142	**.449**,** -.056	.008, -.185	**.402**.** -.196	**.358*,** -.109	-.024, -.109							
10. Warmth and Support Score	-.019	-.087	**.259***	**.259***	.183	.044	**.750****	**-.158**	-.082	--					
	.040, .000	.116, -.273	.183, **.341***	.183, **.341***	.129, .243	-.010, .069	**.693**, .821****	**.693**, -.821****	-.102, -.056						
11. Autonomy Granting Score	.193	.136	**.471****	**.471****	**.249***	**.300****	**.767****	-.099	.152	**.388****	--				
	.210, .186	.162, -.273	**.309*, .633***	**.309*, .633***	.166, **.327***	.267, **.303***	**.674**, .855****	**.674**, .855****	.249, .089	0.190, **.614****					
12. Regulation Score	.088	.106	.075	.075	-.041	.200	**.814**,**	.203	-.259*	**.486****	**.375****	--			
	.091, .079	.142, .062	.063, .051	.063, .051	-.088, .015	.122, .209	**.747**, .856****	**.747**, .856****	-.201, -.276	**.356*, .602****	0.205, **.536****				
13. Physical Coercion Score	.186	**0.246***	**.323****	.100	-.194	.190	.042	**.758****	.167	.083	-.024	.043	--		
	.138, .247	.134, **.321***	.249, **.284***	-.058, -.183	.166, -.277	.170, .149	.164, -.107	**.742**, .798****	.093, .270	.247, -.173	.190, -.080	.023, -.024			
14. Verbal Hostility Score	.189	**.220***	.023	-.053	**-.335****	.063	**-.210***	**.862****	**.513****	-.183	-.055	**-.240***	**.489****	--	
	.125, .266	-.026, **.369****	.127, .095	.077, -.160	**.317*, -.343**	.245, -.060	-.201, -.210	**.835**, .890****	**.457**, .544****	-.141, -.219	-.072, -.047	-.215, -.248	**.407**, .617****		
15. Non-reasoning/Punitive Score	**.220***	.164	.002	-.141	**-.297****	.036	**-.324****	**.764****	**.390****	**-.280****	-.165	**-.287****	**.322****	**.532****	--
	.081, **.382****	-.138, **.356***	-.169, .162	.077, -.228	**.316*, -.279***	.236, -.121	**-.362*,** -.299*	**.758**, .774****	.295, **.451****	-.201, **-.362****	-.273, -.084	-.264, **-.305***	.282, **.392****	**.540**, .527****	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 8. Parent Ethnicity and PSDQ Descriptive Statistics

		Total					Male					Female				
Parent Ethnicity	Significant PSDQ Scores	N	Min	Max	M	SD	N	Min	Max	M	SD	N	Min	Max	M	SD
White/Caucasian	Authoritarian Score	84	12.00	35.00	20.6190	4.68246	39	14.00	35.00	21.1538	4.92864	45	12.00	32.00	20.1556	4.46173
	Permissive Score	84	6.00	18.00	9.8810	2.80019	39	6.00	15.00	9.6154	2.25500	45	6.00	18.00	10.1111	3.20668
	Non-Reasoning Punitive Score	84	4.00	15.00	6.1190	1.95371	39	4.00	11.00	6.1795	2.05031	45	4.00	15.00	6.0667	1.88776
	Valid N (listwise)	84					39					45				
Hispanic	Authoritarian Score	2	16.00	17.00	16.5000	.70711	1	16.00	16.00	16.0000	--	1	17.00	17.00	17.0000	--
	Permissive Score	2	7.00	13.00	10.0000	4.24264	1	13.00	13.00	13.0000	--	1	7.00	7.00	7.0000	--
	Non-Reasoning Punitive Score	2	4.00	5.00	4.5000	.70711	1	4.00	4.00	4.0000	--	1	5.00	5.00	5.0000	--
	Valid N (listwise)	2					1					1				
Asian	Authoritarian Score	3	20.00	43.00	30.6667	11.59023	3	20.00	43.00	30.6667	11.59023	1	21.00	21.00	21.0000	--
	Permissive Score	3	14.00	16.00	14.6667	1.15470	3	14.00	16.00	14.6667	1.15470	1	10.00	10.00	10.0000	--
	Non-Reasoning Punitive Score	3	7.00	13.00	10.0000	3.00000	3	7.00	13.00	10.0000	3.00000	1	6.00	6.00	6.0000	--
	Valid N (listwise)	3					3					1				
Native American	Authoritarian Score	3	22.00	34.00	26.3333	6.65833	2	22.00	34.00	28.0000	8.48528	1	23.00	23.00	23.0000	--
	Permissive Score	3	13.00	16.00	14.6667	1.52753	2	13.00	16.00	14.5000	2.12132	1	15.00	15.00	15.0000	--
	Non-Reasoning Punitive Score	3	7.00	9.00	8.0000	1.00000	2	7.00	9.00	8.0000	1.41421	1	8.00	8.00	8.0000	--
	Valid N (listwise)	3					2					1				
Other	Authoritarian Score	1	21.00	21.00	21.0000	--	1	21.00	21.00	21.0000	--	0	--	--	--	--
	Permissive Score	1	10.00	10.00	10.0000	--	1	10.00	10.00	10.0000	--	0	--	--	--	--
	Non-Reasoning Punitive Score	1	6.00	6.00	6.0000	--	1	6.00	6.00	6.0000	--	0	--	--	--	--
	Valid N (listwise)	1					1					0	--	--	--	--

Table 9. Child Ethnicity bivariate correlations with IBC, PSAI, BSRI, and PSDQ (male, female)

Function	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Child Ethnicity	--														
2. IBC	.039	--													
	-.085, .118														
3. PSAI Score	-.014	.052	--												
	-.094, -.013	.247, -.099													
4. BSRI Androgynous Score	-.088	.052	.043	--											
	-.005, -.173	.247, -.099	.139, -.120												
5. BSRI Feminine Score	-.136	-.078	.105	**.544****	--										
	-.116, -.158	.206, -.271	.150, -.020	**531**, .556****											
6. BSRI Masculine Score	.139	.049	**.218***	.167	-.077	--									
	.142, .136	-.099, .124	.139, .131	.201, .118	-.122, -.074										
7. Authoritative Score	.078	.085	**.226***	.198	**.417****	.112	--								
	.275, -.067	.213, .002	**.413**,** .120	.129, .249	**.334*, .462****	.047, .129									
8. Authoritarian Score	.142	**.264***	.144	-.120	**-.347***	.121	-.205	--							
	.001, .255	.005, **.425****	-.102, .209	.110, -.229	**-.338*, -.367****	.227, -.021	-.156, -.252								
9. Permissive Score	**.272****	.097	-.020	.146	-.118	.023	-.089	**.453****	--						
	.213, **.319***	-.064, .184	-.067, .142	**.449**,** -.056	.008, -.185	**.402**.** -.196	**.358*,** -.109	-.024, -.109							
10. Warmth and Support Score	.023	-.087	**.259***	**.259***	.183	.044	**.750****	**-.158**	-.082	--					
	.125, -.090	.116, -.273	.183, **.341***	.183, **.341***	.129, .243	-.010, .069	**.693**, .821****	**93**, -.821***	-.102, -.056						
11. Autonomy Granting Score	.094	.136	**.471****	**.471****	**.249***	**.300****	**.767****	-.099	.152	**.388****	--				
	.301, -.075	.162, -.273	**.309*, .633***	**.309*, .633***	.166, **.327***	.267, **.303***	**.674**, .855****	**674**, .855***	.249, .089	0.190, **.614****					
12. Regulation Score	.071	.106	.075	.075	-.041	.200	**.814**,**	.203	-.259*	**.486****	**.375****	--			
	.156, .003	.142, .062	.063, .051	.063, .051	-.088, .015	.122, .209	**.747**, .856****	**747**, .856***	-.201, -.276	**356*, .602****	0.205, **.536****				
13. Physical Coercion Score	.096	**0.246***	**.323****	.100	-.194	.190	.042	**.758****	.167	.083	-.024	.043	--		
	.033, .159	.134, **.321***	.249, **.284***	-.058, -.183	.166, -.277	.170, .149	.164, -.107	**742**, .798***	.093, .270	.247, -.173	.190, -.080	.023, -.024			
14. Verbal Hostility Score	.166	**.220***	.023	-.053	**-.335****	.063	**-.210***	**.862****	**.513****	-.183	-.055	**-.240***	**.489****	--	
	-.070, .261	-.026, **.369****	.127, .095	.077, -.160	**.317*, -.343**	.245, -.060	-.201, -.210	**835**, .890***	**457**, .544***	-.141, -.219	-.072, -.047	-.215, -.248	**407**, .617****		
15. Non-reasoning/Punitive Score	.127	.164	.002	-.141	**-.297****	.036	**-.324****	**.764****	**.390****	**-.280****	-.165	**-.287****	**.322****	**.532****	--
	.042, .198	-.138, **.356***	-.169, .162	.077, -.228	**-.316*, -.279***	.236, -.121	**-.362*,** -.299*	**758**, .774***	.295, **.451****	-.201, **-.362****	-.273, -.084	-.264, **-.305***	.282, **.392****	**540**, .527****	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 10. Child Ethnicity and PSDQ Descriptive Statistics

Child Ethnicity		N	Min	Max	M	SD
White/Caucasian	Permissive Score	81	6.00	18.00	9.8148	2.72998
	Valid N (listwise)	81				
Hispanic	Permissive Score	1	13.00	13.00	13.0000	
	Valid N (listwise)	1				
Asian	Permissive Score	2	14.00	16.00	15.0000	1.41421
	Valid N (listwise)	2				
Native American	Permissive Score	2	13.00	16.00	14.5000	2.12132
	Valid N (listwise)	2				
Other	Permissive Score	7	7.00	18.00	11.5714	3.77964
	Valid N (listwise)	7				

Table 11. Income and Parent Education effects on BSRI, IBC, and PSDQ (male, female)

Factor	1	2	3	4	5	6	7
1. Income	--						
2. Parent Education	**.469****	--					
	.431, .500****						
3. BSRI Androgynous	-.017	-.082	--				
	.124, -.167	.232, **-.341***					
4. BSRI Feminine Score	**-.272****	-.047	**.544****	--			
	-.269, **-.290***	-.014, -.071	**.531**, .556****				
5. BSRI Masculine Score	.101	.051	.167	-.077	--		
	.112, .072	.112, -.024	.201, .118	-.122, -.074			
6. Permissive Score	.093	.170	.146	-.118	.023	--	
	.204, .033	**.358*,** .085	**.449**,** -.056	.008, -.185	**.402**.** -.196		
7. Verbal Hostility Score	.170	.153	-.053	**-.335****	.063	**.513****	--
	.308*, .071	.178, .137	.077, -.160	**.317*, -.343**	.245, -.060	**.457**, .544****	

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 12. Intentional Interaction Time Significant Bivariate Correlations with IBC, BSRI, and PSDQ (male female)

Factor	1	2	3	4
1. Intentional interaction time	--			
2. IBC	-.199 .168, **-.329***	--		
3. BSRI Feminine Score	**.290**** **.449**,** .246	-.078 .206, -.271	--	
4. Non-reasoning punitive score	**.251*** **-.267, -.260**	.164 -.138, **.356***	**-.297**** **-.316*, -.279***	--

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Table 13. Significant Bivariate Correlations on the Effect of Birth Order on PSDQ, PSAI, and other family factors

Factor	1	2	3	4	5	6
1. Birth Order	--					
2. Autonomy Granting Score	**.264***	--				
3. Amount of children in the house	**.306****	-.150	--			
4. PSAI Score	**-.294****	.073	.175	--		
5. Parent Age	**.257***	.130	-.081	-.149	--	
6. Secondary Caregiver	**.219***	-.002	-.097	-.012	.011	--

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 14. Descriptive Statistics for Birth Order effects on PSDQ, PSAI, and Amount of Children in the House

		Total					Male					Female				
Birth order		N	Min	Max	M	SD	N	Min	Max	M	SD	N	Min	Max	M	SD
First-born child	Autonomy Granting Score	32	11.00	23.00	16.1250	3.09787	14	12.00	23.00	16.6429	3.10353	18	11.00	21.00	15.7222	3.12119
	Amount of children in house	32	2	3	2.03	.177	14	2	2	2.00	0.000	18	2	3	2.06	.236
	PSAI score	32	25.15	75.75	54.0594	15.96555	14	58.15	75.75	68.3643	5.92256	18	25.15	72.45	42.9333	11.76447
	Valid N (listwise)	32					14					18				
Middle-born child	Autonomy Granting Score	8	11.00	20.00	17.7500	3.01188	6	11.00	20.00	17.5000	3.39116	2	17.00	20.00	18.5000	2.12132
	Amount of children in house	8	3	4	3.25	.463	6	3	4	3.33	.516	2	3	3	3.00	0.000
	PSAI score	8	30.65	81.25	60.9000	18.27457	6	55.95	81.25	69.7000	9.48172	2	30.65	38.35	34.5000	5.44472
	Valid N (listwise)	8					6					2				
Youngest-born child	Autonomy Granting Score	30	12.00	23.00	16.7000	3.03031	18	12.00	23.00	16.1111	2.72005	12	12.00	21.00	17.5833	3.36988
	Amount of children in house	30	1	5	2.47	.937	18	1	5	2.50	.985	12	1	4	2.42	.900
	PSAI score	30	14.15	80.15	51.8433	17.75327	18	40.55	80.15	62.4278	9.86679	12	14.15	62.55	35.9667	14.90514
	Valid N (listwise)	30					18					12				
Only child	Autonomy Granting Score	21	14.00	23.00	18.6667	2.55604	4	18.00	22.00	20.0000	1.63299	17	14.00	23.00	18.3529	2.66789
	Amount of children in house	21	0	3	1.05	.498	4	0	1	.75	.500	17	1	3	1.12	.485
	PSAI score	21	15.25	76.85	38.8738	15.20477	4	55.95	76.85	65.0250	8.72520	17	15.25	44.95	32.7206	7.96914
	Valid N (listwise)	21					4					17				
No data reported	Autonomy Granting Score	2	15.00	15.00	15.0000	0.00000	1	15.00	15.00	15.0000	--	1	15.00	15.00	15.0000	--
	Amount of children in house	2	2	2	2.00	0.000	1	2	2	2.00	--	1	2	2	2.00	--
	PSAI score	2	54.85	65.85	60.3500	7.77817	1	65.85	65.85	65.8500	--	1	54.85	54.85	54.8500	--
	Valid N (listwise)	2					1					1				

Table 15. Frequency Table for Secondary Caregiver based on Child Birth Order

		Total					Male					Female				
Birth order		N	Min	Max	M	SD	N	Min	Max	M	SD	N	Min	Max	M	SD
First-born child	Autonomy Granting Score	32	11.00	23.00	16.1250	3.09787	14	12.00	23.00	16.6429	3.10353	18	11.00	21.00	15.7222	3.12119
	Amount of children in house	32	2	3	2.03	.177	14	2	2	2.00	0.000	18	2	3	2.06	.236
	PSAI score	32	25.15	75.75	54.0594	15.96555	14	58.15	75.75	68.3643	5.92256	18	25.15	72.45	42.9333	11.76447
	Valid N (listwise)	32					14					18				
Middle-born child	Autonomy Granting Score	8	11.00	20.00	17.7500	3.01188	6	11.00	20.00	17.5000	3.39116	2	17.00	20.00	18.5000	2.12132
	Amount of children in house	8	3	4	3.25	.463	6	3	4	3.33	.516	2	3	3	3.00	0.000
	PSAI score	8	30.65	81.25	60.9000	18.27457	6	55.95	81.25	69.7000	9.48172	2	30.65	38.35	34.5000	5.44472
	Valid N (listwise)	8					6					2				
Youngest-born child	Autonomy Granting Score	30	12.00	23.00	16.7000	3.03031	18	12.00	23.00	16.1111	2.72005	12	12.00	21.00	17.5833	3.36988
	Amount of children in house	30	1	5	2.47	.937	18	1	5	2.50	.985	12	1	4	2.42	.900
	PSAI score	30	14.15	80.15	51.8433	17.75327	18	40.55	80.15	62.4278	9.86679	12	14.15	62.55	35.9667	14.90514
	Valid N (listwise)	30					18					12				
Only child	Autonomy Granting Score	21	14.00	23.00	18.6667	2.55604	4	18.00	22.00	20.0000	1.63299	17	14.00	23.00	18.3529	2.66789
	Amount of children in house	21	0	3	1.05	.498	4	0	1	.75	.500	17	1	3	1.12	.485
	PSAI score	21	15.25	76.85	38.8738	15.20477	4	55.95	76.85	65.0250	8.72520	17	15.25	44.95	32.7206	7.96914
	Valid N (listwise)	21					4					17				
No data reported	Autonomy Granting Score	2	15.00	15.00	15.0000	0.00000	1	15.00	15.00	15.0000	--	1	15.00	15.00	15.0000	--
	Amount of children in house	2	2	2	2.00	0.000	1	2	2	2.00	--	1	2	2	2.00	--
	PSAI score	2	54.85	65.85	60.3500	7.77817	1	65.85	65.85	65.8500	--	1	54.85	54.85	54.8500	--
	Valid N (listwise)	2					1					1				

Table 16. Significant Bivariate Correlations for Secondary Caregiver

Function	1	2	3	4	5	6
1. Secondary caregiver	--					
2. Warmth and support score	**-.206***	--				
3. Parent education	**.207***	-.016	--			
4. Intentional interaction time	**-.231***	.101	-.063	--		
5. Child age	**-.275****	.184	.198	-.119	--	
6. Birth order	**.219***	.035	.088	.078	-.165	--

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Table 17. Descriptive Statistics for the Significant Bivariate Correlations for Secondary Caregiver

Secondary caregiver		N	Min	Max	M	SD
Spouse	Warmth and Support Score	39	16.00	25.00	23.1538	2.02014
	Intentional interaction time	38	1.00	24.00	5.4079	4.08335
	Child Age	39	2	5	3.85	.988
	Valid N (listwise)	38				
Child's grandparent	Warmth and Support Score	8	18.00	25.00	21.5000	2.39046
	Intentional interaction time	8	2.00	10.00	5.2500	2.76457
	Child Age	8	2	5	3.75	1.165
	Valid N (listwise)	8				
Other family members	Warmth and Support Score	3	20.00	24.00	22.6667	2.30940
	Intentional interaction time	3	1.50	7.00	3.5000	3.04138
	Child Age	3	2	3	2.33	.577
	Valid N (listwise)	3				
Friends	Warmth and Support Score	1	19.00	19.00	19.0000	--
	Intentional interaction time	1	4.00	4.00	4.0000	--
	Child Age	1	3	3	3.00	--
	Valid N (listwise)	1				
Paid babysitters	Warmth and Support Score	3	20.00	22.00	20.6667	1.15470
	Intentional interaction time	3	3.00	6.00	4.0000	1.73205
	Child Age	3	3	5	4.00	1.000
	Valid N (listwise)	3				
Chidcare center	Warmth and Support Score	15	19.00	25.00	22.4667	1.92230
	Intentional interaction time	15	1.00	6.50	3.6000	1.44173
	Child Age	15	2	5	3.27	.961
	Valid N (listwise)	15				
Other	Warmth and Support Score	24	14.00	25.00	21.8750	2.45503
	Intentional interaction time	22	2.00	7.00	4.0455	1.53459
	Child Age	24	2	5	3.13	1.076
	Valid N (listwise)	22				

Table 18. Frequency Table for Secondary Caregiver and Maternal Educational Achievement

Parent Education		Frequency	Percent	Valid Percent	Cumulative Percent
High school/GED	Spouse	1	100.0	100.0	100.0
Some College	Spouse	5	55.6	55.6	55.6
	Other family members	1	11.1	11.1	66.7
	Childcare center	1	11.1	11.1	77.8
	Other	2	22.2	22.2	100.0
	Total	9	100.0	100.0	
2-year College Degree	Spouse	3	50.0	50.0	50.0
	Child's grandparent	1	16.7	16.7	66.7
	Friends	1	16.7	16.7	83.3
	Chidcare center	1	16.7	16.7	100.0
	Total	6	100.0	100.0	
4-year College Degree	Spouse	15	46.9	46.9	46.9
	Child's grandparent	3	9.4	9.4	56.3
	Other family members	1	3.1	3.1	59.4
	Childcare center	6	18.8	18.8	78.1
	Other	7	21.9	21.9	100.0
	Total	32	100.0	100.0	
Masters Degree	Spouse	11	36.7	36.7	36.7
	Child's grandparent	1	3.3	3.3	40.0
	Other family members	1	3.3	3.3	43.3
	Paid babysitters	2	6.7	6.7	50.0
	Childcare center	2	6.7	6.7	56.7
	Other	13	43.3	43.3	100.0
	Total	30	100.0	100.0	
Doctoral Degree	Spouse	3	23.1	23.1	23.1
	Child's grandparent	3	23.1	23.1	46.2
	Paid babysitters	1	7.7	7.7	53.8
	Chidcare center	4	30.8	30.8	84.6
	Other	2	15.4	15.4	100.0
	Total	13	100.0	100.0	
Professional Degree	Childcare center	1	100.0	100.0	100.0
No data reported	Spouse	1	100.0	100.0	100.0

Table 19. Frequency Table for Secondary Caregiver and Child Birth Order

Birth order		Frequency	Percent	Valid Percent	Cumulative Percent
First-born child	Spouse	18	56.3	56.3	56.3
	Child's grandparent	3	9.4	9.4	65.6
	Other family members	1	3.1	3.1	68.8
	Friends	1	3.1	3.1	71.9
	Paid babysitters	2	6.3	6.3	78.1
	Childcare center	2	6.3	6.3	84.4
	Other	5	15.6	15.6	100.0
	Total	32	100.0	100.0	
Middle-born child	Spouse	3	37.5	37.5	37.5
	Child's grandparent	1	12.5	12.5	50.0
	Other family members	1	12.5	12.5	62.5
	Childcare center	1	12.5	12.5	75.0
	Other	2	25.0	25.0	100.0
	Total	8	100.0	100.0	
Youngest-born child	Spouse	9	30.0	30.0	30.0
	Child's grandparent	3	10.0	10.0	40.0
	Other family members	1	3.3	3.3	43.3
	Childcare center	8	26.7	26.7	70.0
	Other	9	30.0	30.0	100.0
	Total	30	100.0	100.0	
Only child	Spouse	9	42.9	42.9	42.9
	Child's grandparent	1	4.8	4.8	47.6
	Paid babysitters	1	4.8	4.8	52.4
	Childcare center	4	19.0	19.0	71.4
	Other	6	28.6	28.6	100.0
	Total	21	100.0	100.0	
No data reported	Other	2	100.0	100.0	100.0

Table 20. Frequency Table for Secondary Caregiver and Annual Family Income

Income		Frequency	Percent	Valid Percent	Cumulative Percent
Less than $30,000	Spouse	4	66.7	**66.7**	66.7
	Child's grandparent	1	16.7	16.7	83.3
	Other	1	16.7	16.7	100.0
	Total	6	100.0	100.0	
$30,000-$39,999	Spouse	2	50.0	**50.0**	50.0
	Other family members	1	25.0	25.0	75.0
	Chidcare center	1	25.0	25.0	100.0
	Total	4	100.0	100.0	
$40,000-$49,999	Spouse	2	28.6	28.6	28.6
	Chidcare center	2	28.6	28.6	57.1
	Other	3	42.9	**42.9**	100.0
	Total	7	100.0	100.0	
$50,000-$59,999	Spouse	2	33.3	**33.3**	33.3
	Other family members	1	16.7	16.7	50.0
	Chidcare center	2	33.3	**33.3**	83.3
	Other	1	16.7	16.7	100.0
	Total	6	100.0	100.0	
$60,000-$69,999	Spouse	4	100.0	100.0	100.0
$70,000-$79,999	Spouse	3	33.3	**33.3**	33.3
	Child's grandparent	2	22.2	22.2	55.6
	Chidcare center	3	33.3	**33.3**	88.9
	Other	1	11.1	11.1	100.0
	Total	9	100.0	100.0	
$80,000-$89,999	Spouse	6	46.2	**46.2**	46.2
	Child's grandparent	1	7.7	7.7	53.8
	Paid babysitters	1	7.7	7.7	61.5
	Chidcare center	1	7.7	7.7	69.2
	Other	4	30.8	30.8	100.0
	Total	13	100.0	100.0	
$90,000-$99,999	Spouse	3	37.5	**37.5**	37.5
	Child's grandparent	1	12.5	12.5	50.0
	Friends	1	12.5	12.5	62.5
	Paid babysitters	1	12.5	12.5	75.0
	Chidcare center	1	12.5	12.5	87.5
	Other	1	12.5	12.5	100.0
	Total	8	100.0	100.0	
$100,000 or more	Spouse	13	36.1	**36.1**	36.1
	Child's grandparent	3	8.3	8.3	44.4
	Other family members	1	2.8	2.8	47.2
	Paid babysitters	1	2.8	2.8	50.0
	Chidcare center	5	13.9	13.9	63.9
	Other	13	36.1	**36.1**	100.0
	Total	36	100.0	100.0	

IRB Approval

Oklahoma State University Institutional Review Board

Date: Wednesday, January 27, 2016 Protocol Expires: 12/6/2018

IRB Application No: AS15108

Proposal Title: The effects of social-economic status, parenting beliefs and styles, and family structure on risk-taking behavior in children

Reviewed and Processed as: Exempt
Modification

Status Recommended by Reviewer(s) **Approved**

Principal Investigator(s):

Erin Wood
Stillwater, OK 74078

Shelia M. Kennison
116 N. Murray
Stillwater, OK 74078

The requested modification to this IRB protocol has been approved. Please note that the original expiration date of the protocol has not changed. The IRB office MUST be notified in writing when a project is complete. All approved projects are subject to monitoring by the IRB.

☒ The final versions of any printed recruitment, consent and assent documents bearing the IRB approval stamp are attached to this letter. These are the versions that must be used during the study.

The reviewer(s) had these comments:

Modification to 1) change title from "Child Risk-Taking" to "The effects of social-economic status, parenting beliefs and styles, and family structure on risk-taking behavior in children", 2) recruit outside of Payne county, 3) add social media recruitment, 4) change recruitment script to reduce confusion, 5) make changes to demographic questions, 6) instruct the parent/guardian to choose one child to describe when completing the surveys on the consent form.

Signature :

Hugh Crethar, Chair, Institutional Review Board

Wednesday, January 27, 2016
Date