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Article

Testing the Link Between Dyadic Concordance in Corporal Punishment, Positive Parenting, and Crime in An International Sample of Young Adults****

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ABSTRACT

Previous research on corporal punishment (CP) has found associations between CP and detrimental child outcomes including depression, behavioural problems, and crime. Conversely, positive parenting has been found to foster positive child outcomes but, positive parenting does not ameliorate the negative effects of CP. To date, research has not examined how parents' differential use of CP might be related to crime, while still controlling for positive parenting. The present study seeks to address the gaps in the CP literature by examining the effects of CP and positive parenting on criminality within the context of dyadic concordance types (DCTs). DCTs examine the behaviour of both parents in disciplining children with CP: father-only, mother-only, both, or neither parents. Using the large-scale, International Parenting Study ($n = 9{,}376$), we determined that CP perpetrated by both parents or by the mother only were most significantly associated with criminal propensity and criminal activity of individuals in early adulthood.

Corporal punishment (CP) is widely used by parents as a disciplinary technique in order to manage children's behaviour (Straus et al, 2014). Despite the fact that CP is widely prohibited in statute or other legal means across the globe (Global Initiative to End All Corporal Punishment, n.d.), CP is still extensively used by parents in many nations (Straus et al, 2014). Previous research shows that CP is related to an increased probability of crime and that positive parenting decreases that risk, as well as other behavioural problems by children and later in life (Hetherington et al, 1971; Patterson and Stouthamer-Loeber, 1984; Straus et al., 2014). This has been found to be true in both cross-sectional and longitudinal research (Gershoff and Grogan-Kaylor, 2016).

There are gaps, however, in research which examine these constructs together: CP, positive parenting, and crime. The present study adds to the existing literature on the relationship between CP, positive parenting, and negative child outcomes, specifically in the area of crime, by examining CP using the dyadic concordance type (DCT) framework which assesses the unique behaviour of mothers alone, fathers alone, and mothers and fathers together.

I. CORPORAL PUNISHMENT – DEFINITIONS

CP is the use of physical force on a child with the intention of inflicting pain, but not injury, in order to modify or control children's behaviour (Straus, 2001). In the USA, we often refer to CP as 'spanking', which is the infliction of pain in the form of hitting a child on the buttocks or other parts of the body with an open hand (Gershoff and Grogan-Kaylor, 2016). This approach has been used for decades across multiple scholars and fields of research (e.g. McLoyd and Smith, 2002; Ferguson, 2013; Afifi and Romano, 2017). In addition, CP can also include acts such as, grabbing, smacking or slapping a child, and other acts used to inflict pain but that do not cause injury (Straus et al, 2014).

II. PREVALENCE OF CORPORAL PUNISHMENT

Despite decades of research showing a negative relationship between CP and child outcomes (Straus, 2001; Straus et al, 2014), CP remains a prevalent form of discipline in American families. One recent study (Stansbury et al, 2012) reported that out of 106 'discipline interactions' between parents and children that they observed, 23 per cent of those interactions involved physical punishment of the child. Examples of the physical punishments they observed included 'having their arms pulled, or being pinched, slapped or spanked' (Stansbury et al, 2012). A third study within the last 10 years (Taylor et al, 2010) found that two-thirds of parents of 3-year olds had 'spanked' their children in the previous month. Despite research showing an overall decline in the use of CP, parents still endorse and report using CP against children (Ryan et al, 2016). Research also shows that CP is not only used in the discipline of toddlers and young children, but also infants. One study from the last decade (Zolotor et al, 2011) found that 5 per cent of mothers reported 'spanking' their 3-month-old infants since they were born. The odds of a child being 'spanked' increased by 27 per cent with each month of age, thereafter, until the rate of CP increased to a reported 70 per cent of mothers who had 'spanked' their 2-year old in the past year (Zolotor et al, 2011). Notably, by the age of 9 or 10, 94 per cent of children have reported being 'spanked' at least once in their lifetime (Straus and Stewart, 1999).

While the professional literature has thoroughly explored the use of CP on children, less research has been conducted on the use of CP on older children and adolescents. Several studies using data from the Fragile Families and Child Wellbeing Study provide longitudinal data on parents' use of CP on children ranging from ages 1 to 9 years. One examination of these data (Schneider et al, 2015) found that maternal use of CP 10 or more times a year, as reported by 9-year-olds was prevalent among 15 per cent of the sample; only 7 per cent of mothers reported using CP at

that frequency. Another examination of this data (MacKenzie et al, 2015) explored 'spanking' across the first decade of life using the FFCWS data. The results showed that about half of the sample (49 per cent) reported being 'spanked' at some point by their mother at age 9 years, with 4 per cent reporting high-frequency 'spanking' of two or more times per week.

III. THE EFFICACY OF CP AS A DISCIPLINARY TECHNIQUE

A large body of research has examined the effectiveness of CP as a form of discipline for children. There is strong evidence which shows that 'spanking' may initially correct a child's misbehaviour, but that within minutes the majority of children repeat the behaviour for which they were just punished (Holden et al, 2014). Scholars argue that 'spanking' is ineffective for children under the age of 18 months because they are too young to understand the connection between the behaviour and the punishment (Leung et al, 1992). It is also argued that the use of corporal punishment models aggression and teaches children that is it acceptable to use pain or violence as a mode of conflict resolution in relationships with others (Bandura, 1973; Straus and Yodanis, 1996). In keeping with this approach, research has shown that being raised in a context where CP is part of societal norms makes one more likely to endorse the use of CP, even if one didn't experience it as a child (Douglas, 2006).

IV. NEGATIVE EFFECTS OF CORPORAL PUNISHMENT

Previous research on the effects of CP has found a link between CP and a host of negative outcomes for the child, such as lower self-esteem, depression, increased child aggression, and other behavioural problems, and using violence against a partner later in adulthood (Bryan and Freed, 1982; Seagull and Weinshank, 1984; Straus and Kantor, 1994; DuRant et al, 1995; Spencer, 1999; Turner and Muller, 2004; Douglas and Straus, 2006; Evans et al, 2012; Straus et al, 2014; Gershoff and Grogan-Kaylor, 2016). A meta-analysis of 88 studies examined the effects of corporal punishment on children (Gershoff, 2002). This study confirmed previous research showing that child compliance is short-lived and that CP is a risk factor for physical abuse, as well as for child aggression. Gershoff (2002) actually found that the link between CP and aggression was stronger when the sample consisted of 10- to 12-year-old children

A recent meta-analysis of 75 studies was conducted to address concerns expressed regarding past meta-analyses (Gershoff, 2002), as well as to incorporate more rigorous research (Gershoff and Grogan-Kaylor, 2016). The results show that even when confounding variables, such as physical or psychological abuse, are removed from the models, 'spanking' is still associated with negative child outcomes. In fact, 'spanking' and physical abuse had similar effect sizes in relation to negative child outcomes and these effects were identical in direction. Secondly, research on CP has often been criticized for largely being cross-sectional, as opposed to longitudinal. This meta-analysis included longitudinal and cross-sectional studies; the results showed that the effect sizes in longitudinal research did not significantly differ from effect sizes in cross-sectional research.

As noted, previous research on CP has also found that it is related to engaging in higher rates of crime and delinquency (Hetherington et al, 1971; Patterson and Stouthamer-Loeber, 1984; Straus et al, 2014; Gershoff and Grogan-Kaylor, 2016), a relationship that has theorized to exist because CP is also linked to higher rates of antisocial personality characteristics (Gámez-Guadix et al, 2011) and conduct disorder-related problems (Engfer and Schneewind, 1982; Evans et al, 2012). In the previously discussed meta-analysis of 88 studies (Gershoff, 2002), results showed that parental CP was significantly and negatively related to delinquent and antisocial behaviour. One study (Barry, 2007) specifically examined the relationship between five formative experiences and violent crime. The results showed that one formative experience, CP, had the highest positive correlation with frequent violent crime. This indicates that, when corporal punishment is used, there is a higher likelihood that the child/adolescent will engage in delinquency and/or violent crime later in life.

Despite the widespread use of CP, Sweden became the first nation to ban the use of it in 1979 (Durrant, 1999; Straus et al, 2014). One study (Durrant, 2000) examined trends in youth crime and well-bring in Sweden following the ban of corporal punishment. Results showed considerable decreases in youth crime in Sweden since the 1970s. While a direct causal relationship cannot be inferred from these results, Durrant also found that children did not exhibit increases in negative or antisocial behaviour following the abolition of CP in Sweden. In fact, this study found overall improvements in the well-being of youth. Today, 53 nations prohibit the use of CP against children (Global Initiative to End All Corporal Punishment, n.d.).

V. CORPORAL PUNISHMENT AND PARENTING STYLE

Corporal punishment has been found to be associated with negative outcomes for children and in later life adulthood. That said, CP can be used within the context of many different parenting styles, even those that are largely warm and caring (Rohner et al, 1991; McKee et al, 2007; Altschul et al, 2016). Positive parenting, sometimes referred to as parental warmth, can be described as the use of behaviours such as: positive reinforcement, praising the child, encouraging the child, verbally responding to the child in a positive manner, and affectionate behaviour (Altschul et al. 2016). Research on positive parenting has found that positive parenting enhances children's prosocial behaviour (Eisenberg et al, 2006). In a recent study examined the effects of maternal warmth on child aggression and social competence, within the context of using corporal punishment (Altschul et al, 2016). Results showed that 'spanking' was associated with an increase in child aggression over time. Maternal warmth was associated with increases in child social competence. Most important, there was no relationship between 'spanking' and maternal warmth; they were independent of each other.

While CP has shown positive associations with delinquency (Hetherington et al., 1971; Patterson and Stouthamer-Loeber, 1984; Straus et al, 2014; Gershoff and Grogan-Kaylor, 2016), parental warmth and positive parenting practices have been found to be negatively associated with delinquency (Fletcher et al, 2004; Kopak and Hawley, 2012). In one study (Yun et al, 2016) the researchers examined the relationship between positive parenting and parental warmth with adolescent delinquency.

Over the course of 6 years, 3,697 eighth graders were interviewed and assessed on measures of parental warmth, delinquency, adolescent disclosure, and parental knowledge. Results showed that parental warmth was significantly and negatively associated with adolescent delinquency.

Keeping these results in mind, positive parenting and warmth do not extinguish the negative effects of CP, when these practices are used in conjunction with one another. As previously discussed, in their study of 3,279 families with young children, one set of researchers (Altschul et al, 2016) found 'spanking' and maternal warmth to be independent of each other. That is, if a mother reported 'spanking' her child, this did not necessarily mean she ranked low in warmth. Similarly, if the mother reported never having 'spanked' her child, this did not indicate higher levels of maternal warmth. Furthermore, results showed that if a mother uses both warmth and CP with her child, the use of warmth does not eradicate the negative effects of using corporal punishment. The two variables (i.e. maternal warmth and corporal punishment) had separate, independent effects on the child. These results are consistent with other research concerning CP, positive parenting, and negative outcomes for children and youth (Straus et al, 2014).

VI. CORPORAL PUNISHMENT AND GENDER DIFFERENCES

The existing literature shows that boys are more often the targets of CP than are girls, but there are mixed results regarding the potential impact of being 'spanked' on different genders and by parents of different genders (Gershoff, 2002; Straus et al, 2014). For example, one recent study (Xing and Wang, 2017) examined gender differences in the use of corporal punishment on preschool-aged children. The researchers found positive correlations between paternal and maternal CP and child externalizing behaviour, for both boys and girls. Additionally, mothers were more likely to use CP for boys than for girls. Overall, findings showed that maternal hostility exacerbated the association between paternal CP and externalizing behaviour for boys but not for girls. Furthermore, paternal hostility reinforced the link between paternal CP and child externalizing behaviour for girls but not for boys. Finally, paternal CP showed consistent positive correlations with girls' externalizing outcomes, regardless of mothers' hostility.

Similar results exist for pre-adolescents/adolescents. A longitudinal study of children 'spanked' between the ages of 8–13 years showed that in young adulthood boys who were 'spanked' more frequently engaged in higher rates of criminal activity (Straus et al, 2014). Similarly, in the International Dating Violence Study of almost 14,000 college students, both females and males who were 'spanked' at age 12 years were more likely to verbally coerce a partner to engage in sex once in young adulthood. The same was true with regard to physically forcing a partner to have sex, but the increased probably was greater for men than for women (Gámez-Guadix et al, 2011). A further analysis of the International Dating Violence Study showed that experiencing CP in childhood was linked to higher rates of assaulting a partner in young adulthood, especially among young women (Douglas and Straus, 2006). Studies like these show that the field has examined the intersection of CP and

gender, but not within the context of different parenting and disciplinary styles, which is a focus of this article and is introduced in the following section.

VII. CORPORAL PUNISHMENT AND DYADIC CONCORDANCE TYPES

Research in the area of CP and developmental criminology has addressed what predicts mothers' or fathers' use of CP (Jocson et al, 2012) and harsh parenting styles from CP (Evans et al, 2012), but existing research is just beginning to explore parents' unique contributions in the use of CP through which is a recently introduced dyadic approach to understanding family relationships problems (Straus, 2015; Rodriguez and Straus, 2016). The four DCT categories used in any analysis are: (i) only actor 1 engages in behaviour; (ii) only actor 2 engages in behaviour; (iii) both actors engage in behaviour; and, (iv) neither actor engages in behaviour. For this article, the DCT categories are *Father-Only, Mother-Only, Both* hit the child, or *Neither* hit the child, which have been used in previous research on CP (Straus and Michel-Smith, 2014; Winstok and Straus, 2014; Straus, 2015, 2016). This practical approach to dyadic behaviour builds on systems theory by allowing researchers to examine the whole family, while still examining the actions from individuals within the family system (Straus and Douglas, 2017). The theoretical basis and methodology of DCTs for describing and analyzing many forms of intra-family problems is presented in a previous paper (Straus, 2015). Although the DCT framework has been used to examine CP, it has not been used within the context of models that include parental warmth or positive parenting. The analyses in this article will also examine the interaction of CP using the DCT framework with gender. This is the most unique contribution of this article.

VIII. CURRENT STUDY AND RESEARCH QUESTIONS

Previous research shows a positive association between CP and juvenile delinquency, conduct disorder, and/or crime (Evans et al, 2012; Straus et al, 2014). Further, research also shows that parent use of CP and parental warmth toward a child are independent one of another (Altschul et al, 2016). In this study, we build on this previous research by examining the unique contributions of CP using the DCT framework, as well as positive parenting, in their relationship to child crime and delinquency. Specifically, we examined the idea that a child rearing practice can have a different effect when carried out the by mother or the father and the association between corporal punishment and positive parenting and its effect on child behaviour and how this can vary by and interact with the gender of the child. The research questions for this study are:

1. What percent of parents 'spank' in the USA and other nations, and how often does it happen?
2. In what percent of cases does the perpetration of 'spanking' fall into the DCT categories of: mother, father, or by both parents? How does this vary by gender of the former child?

3. Is experiencing CP at age 10 years related to measures of criminal propensity and actual crime as a young adult, and does it make a difference which parent 'spanks'? How does this result vary by gender of university student?
4. Is positive parenting at age 10 years related to a lower probability of criminal propensity and actual crime as a young adult?
5. How does the relationship between CP and criminal propensity and criminal behaviour change when positive parenting is accounted for?

1. Method

A. Sample and Procedures

The data for this study was obtained as part of the International Parenting Study (IPS) (Fauchier and Straus, 2008; Straus, 2008). Data were gathered by a consortium of researchers in 31 different sites, located in 14 nations, between October 2007 and March 2010. Each IPS consortium member used the same core questionnaire, except for the final section, which was reserved for each member to add questions about issues of specific local or theoretical interest.

The procedures for the IPS were reviewed and approved by the University of New Hampshire Institutional Review Board and by the equivalent board or administrators at each of the 31 participating universities. Collectively, the sites represent four regions of the world: Asia, Europe, North America, and Middle East. Participation was restricted to students age 18 years or older. Potential participants read a consent form that stressed that participation was entirely voluntary and that they were free to not answer any question they chose to omit. Steps were taken to ensure the privacy and anonymity of the data. The recruitment strategy and questionnaire format varied by site, but the majority of students were recruited in class (71 per cent) and completed a paper version of the questionnaire. After completing the questionnaire, participants were thanked for their help and given a debriefing form re-explaining the purpose of the study and providing a list social and mental health service referrals. The surveys were returned to the lead researcher and the data was processed and prepared by research assistants.

The questionnaires were completed by 11,069 students in 14 nations. Seventy per cent of the respondents are female, which reflects the gender composition of the psychology, sociology, nursing, education, family studies, and social work courses from which most of the participants were recruited. Their mean age was 21 with a range of 18–40 (SD 3.90). Ninety per cent of the sample reported being born in the country of data collection and 80 per cent self-identified as belonging to the majority racial or ethnic group of each country. One missing data was accounted for, the sample size for the analyses presented in this article is $n = 9{,}376$. Table 1 gives the sample size, percent female and the mean age of the students in each of the 14 nations.

Although questions were phrased to accommodate varied family compositions, 96 per cent of the students reported on both biological parents. The educational attainment of both the father and mothers was high: 42.8 per cent of fathers and 41 per cent of mothers completed a college degree. Employment status, however, varied substantially with 92.6 per cent of fathers working full time, but 55.1 per cent of mothers working full time.

Table 1. International parenting study sample characteristics for 14 nations

Region		Nation	*n*	Female (%)	Mean age
Total			9,376	69.2	21.01
Asia	TWN	Taiwan	428	57.9	20.19
	HKG	Hong Kong	404	66.6	22.87
Europe	BEL	Belgium	734	73.2	19.74
	GRC	Greece	820	71.6	20.80
	ITA	Italy	239	77.4	21.69
	POL	Poland	150	52.0	21.49
	RUS	Russia	899	58.5	20.04
	GBR	Scotland	177	66.7	20.14
	SVN	Slovenia	167	86.8	21.78
	CHE	Switzerland	81	95.1	23.67
	ESP	Spain	481	89.0	21.48
Middle East	ISR	Israel	326	59.8	23.90
N. America	CAN	Canada	1190	75.2	23.07
	USA	United States	3280	67.0	20.25

The questionnaire asked about parenting behaviours that were used with the participants when they were 10 years old. This age was chosen because a main purpose of the IPS was to investigate the effects of varied methods of discipline used by parents, such as corporal punishment and positive parenting. The peak CP ages in the US are 2 through 5, but many adults do not remember much, if anything, about CP incidents at those ages. CP is used on 10 year olds with about 60 per cent of children in the USA (Straus et al, 2014). It is also an age when children are old enough to remember and describe CP incidents. Thus, it meets the need for the measure of the presumed independent variable (CP) to have occurred before the dependent variable (criminal beliefs and behaviour).

B. Measures

CP. The questionnaire included the adult recall child-report form of the *Dimensions of Discipline Inventory* (DDI) (Fauchier and Straus, 2010; Straus and Fauchier, 2011; Van Leeuwen et al, 2012). The CP scale is a standard part of this instrument. The CP scale consists of four items, each of which is asked separately, to estimate how often the father and the mother had each used CP against the respondents when they were 10 years old: Spanked or smacked you. Shook or grabbed you. Hit you with a belt or paddle. Washed your mouth out with soap. The response categories for mothers and for fathers, assessed separately, were: N = Never 0 = Not in that year, but in another year; 1 = 1–2 times in that year; 2 = 3–5 times in that year; 3 = 6–9 times in that year; 4= Monthly (10–14 times in that year); 5= A few times a month (2–3 times a month); 6= Weekly (1–2 times a week); 7= Several times a week (3–4 times); 8= Daily (5 or more times a week); 9 = Two or more times a day. The alpha coefficients of internal consistency reliability for the male participants =0 .745 and for female participants = 0.875. The variable used in this study

captured whether the university student experienced any CP during the year that the student was 10 years old. The data captures the four DCT categories: *Mother-Only, Father-Only, Both Parents, and Neither Parent.*

Positive Parenting. The Positive Parenting scale used the same response categories as the CP scale to estimate how often each parent demonstrated warmth toward the respondent when s/he was a child, for example: Did or said things to show that they loved and supported you; Explained why they did what they did to correct you; Encouraged and supported you; Checked on you so that they could tell you that you were doing a good job. This was recorded separately for both mothers and fathers, but was summed for this study. The alpha coefficient for reliability for male participants = 0.84; for female participants = 0.85. The summary scores were split into terciles using the 'visual binning' procedure in SPSS, which resulted in positive parenting scores of low, medium, and high.

Criminal Measures. There were two measures used to capture criminal tendencies. The first, Criminal Beliefs which measured criminal propensity, was adapted from the *Legal Cynicism* scale (Sampson and Bartusch, 1998) and included 5 items, including: There are no right or wrong ways to make money; Laws are meant to be broken; and It is okay to do anything you want. The response categories were: 1= Strongly disagree, 2= Disagree, 3= Agree, 4= Strongly agree. Eight additional items were part of this scale that were taken from work on human values and beliefs (Inglehart et al, 1998). Statements/questions included: Killing in self-defense; Avoiding a fare on public transport; and Lying in your own interest. The response categories were: 1 = Never justified, 2= Sometimes justified, 3 = Often justified, 4 = Usually justified, 5 = Always justified. The Criminal Beliefs scale consists of the mean of the 13 items. The alpha score for reliability was 0.80 for male; 0.70 for female participants.

Criminal Behaviour in adolescence and young adulthood was measured by the short form of the Criminal History scale of the Personal and Relationships Profile (Straus and Mouradian, 1999; Straus et al, 2010). The questions ask the participants the extent to which they agree or disagree with 3 items about themselves: Since the age of 15, I have physically attacked someone with the idea of seriously hurting them; Since the age of 15, I have stolen money (from anyone, including family); Since the age of 15, I hit or threatened to hit someone who is not a member of my family. The response categories: were 1= Strongly disagree, 2= Disagree, 3= Agree, 4= Strongly agree. The scale consists of the mean of the three items and was transformed to percentile scores. The alpha coefficients of reliability for men = 0.60; and for women = 0.58.

National Context. There are large differences between the 14 nations on many of the variables in this study, including use of CP and the prevalence of crime. The relation of CP to criminal beliefs and behaviour was therefore examined within each of the 15 national contexts.

Control Variables. Five variables which are known to be associated with both inter-parent assault (the independent variable) and criminality were included as covariates. First, we controlled for mother and father level of education. It is important to control for these two variables because they are indicators of family socioeconomic status, which many studies have found to be related to both partner assault

and many other crimes (Benson et al, 2004; Malcoe et al, 2004; Caetano et al, 2010; Sabina, 2013; WHO, 2013). Participants indicated the level of education that each of their parents completed: grade school, some high school, completed high school, some college/technical school, completed 4-year college/university, some post-graduate education, or completed a post-graduate degree. Each of these variables was *z*-scored separately and then transformed into quintiles.

Misbehaviour as a child was measured and included as a control variable to deal with the possibility that the criminality of the student reflected continuation of a long-standing pattern of misbehaviour (Douglas and Straus, 2007). Participants were asked to indicate: 'Please list two examples of minor misbehaviours you performed around age 10, and two examples of serious misbehaviours you performed around age 10.' Then they were asked about their frequency in carrying out these misbehaviours: 'Repeat a minor misbehaviour after being corrected for it?' and 'Do a serious misbehaviour?' Their response options were: N=Never; 0 = Not in that year, but in another year; 1 = 1–2 times in that year; 2 = 3–5 times in that year; 3 = 6–9 times in that year; 4 = Monthly (10–14 times in that year); 5 = A few times a month (2–3 times a month); 6 = Weekly (1–2 times a week); 7 = Several times a week (3–4 times); 8 = Daily (5 or more times a week); and 9 = Two more times a day. For the purposes of the analyses in this article, these two variables were summed and then transformed into quintiles.

Age of the participant was included in the analyses because research shows that partner assault, like most other crime, decreases with age (Suitor et al, 1990; Kessler et al, 2001; Johnson et al, 2014).

The tendency to report in a socially desirable way was assessed by a short form version of the Limited Disclosure scale of the *Personal and Relationships Profile* (Straus et al. 2010). This has been used in our previous work on a large, international dataset as well (Douglas, 2006). This 6-item scale includes behaviours and emotions that are slightly undesirable but true of most people, including: 'I sometimes feel resentful when I don't get my way' and 'I sometimes try to get even rather than forgive and forget.' The more items a respondent denies, the more likely it is that the respondent will avoid reporting potentially embarrassing opinions or experiences, such as those related to violence. The response categories: were 1= Strongly disagree, 2= Disagree, 3= Agree, 4= Strongly agree. The 6 items were summed and then transformed into quintiles. The alpha coefficients for reliability for men = 0.50; and for women = 0.58.

C. Data Analysis

The DCT framework was used to examine what difference it makes if a child is hit only by the father, only by the mother, or by both (or none at all). The DCTs were identified by dichotomous coding. Fathers who used CP one or more times in the year were coded 1 and other fathers as 0; and the same for the mothers. The CP by father was crossed with CP by the mother. The resulting four cells identify whether the child experienced CP only by the father, only by the mother, by both, or by neither.

Table 2. Prevalence of corporal punishment & percent in each dyadic concordance type ($n = 9{,}376$)

Region	Nation	DCT type for using corporal punishment: Neither (%)	Father-Only (%)	Mother-Only (%)	Both (%)	Total Prevalence Rate of CP (%)
All		33.3	8.5	13.9	44.3	66.7
Asia	Taiwan	27.3	8.9	18.7	45.1	72.7
	Hong Kong	33.9	8.9	17.8	39.4	66.1
Europe	Belgium	35.3	11.6	12.7	40.5	64.7
	Greece	30.9	6.1	15.1	47.9	69.1
	Italy	20.9	3.8	24.3	51.0	79.1
	Poland	23.3	3.3	6.0	67.3	76.7
	Russia	36.2	8.2	18.6	37.0	63.8
	Scotland	39.5	7.9	13.0	39.5	60.5
	Slovenia	31.7	10.8	12.6	44.9	68.3
	Switzerland	25.9	9.9	24.7	39.5	74.1
	Spain	29.9	8.7	16.0	45.3	70.1
Mid East	Israel	48.8	8.6	8.0	34.7	51.2
N. America	Canada	42.9	9.6	12.4	35.2	57.1
	USA	30.0	8.4	11.9	49.7	70.0

Analysis of covariance was used to test the theory that criminogenic effects of CP and the protective effects of positive parenting are contingent on which parent or combination of parents engaged in these behaviours. The five control variables already listed were included as covariates. The role of gender in these analyses was included for main effects and as an interaction with the DCT categories for CP.

IX. RESULTS

1. Prevalence of Corporal Punishment and Dyadic Concordance Types

The results show that overall, in the total sample of 14 nations, 66.7 per cent of university students reported being 'spanked' when they were 10 years old. Table 2 displays these results in the third column from the left. The prevalence rates ranged from a high of 79 per cent in Italy to a low of 51 per cent in Israel. Only three nations fall substantially below the two-third mark of children being hit at age 10: Canada, Israel, and Scotland. Table 2 also displays the prevalence rates for each DCT: *Father-Only, Mother-Only*, and *Both*. The DCT with the highest prevalence rate was *Both*, meaning that when they were children, the university students were most likely to be hit by both of their parents. In almost every nation, mothers were more likely to 'spank' than were fathers. However, a further consideration regarding this latter finding is noted in the discussion.

Table 3. Stepwise analysis of covariance predicting the relationship between corporal punishment, positive parenting, and criminal propensity ($n = 9{,}376$)

Source	*df*	*SS*	*MS*	*F*	*p*	η^2
Model 1: Corporal Punishment Without Positive Parenting, $R^2 = 0.201$,						
Corporal punishment	3	20726.385	6908.795	10.915	<0.001	.003
Respondent sex	1	78286.264	78286.264	123.681	<0.001	.013
Child misbehaviour	1	30221.821	30221.821	47.746	<0.001	.005
Nation	13	512699.907	39438.454	62.307	<0.001	.079
Participant age	1	50920.303	50920.303	80.447	<0.001	.008
Father's education level	1	3886.521	3885.521	6.140	0.013	.001
Mother's education level	1	42.760	42.760	0.068	0.795	.000
Limited disclosure	1	402666.676	402666.676	636.158	<0.001	.063
Corporal Punishment x Resp. Sex	3	3497.526	1165.842	1.842	0.137	.001
Error	9,395	5946722.65	632.967			
Total	9,421	22638016.000				
Model 2: Corporal Punishment With Positive Parenting, $R^2 = 0.203$,						
Corporal punishment	3	19756.337	6585.459	10.426	<0.001	.003
Respondent sex	1	79517.914	79517.914	125.886	<0.001	.013
Positive parenting	2	16742.411	8371.206	13.253	<0.001	.003
Child misbehaviour	1	28753.260	28753.260	45.520	<0.001	.005
Nation	13	500291.822	38483.986	60.925	<0.001	.078
Participant age	1	53734.731	53734.731	85.068	<0.001	.009
Father' education level	1	3102.444	3102.444	4.912	0.027	.001
Mother's education level	1	0.306	0.306	0.000	0.982	.000
Limited disclosure	1	366941.399	366941.399	580.911	<0.001	.059
Corporal Punishment x Resp. Sex	3	3748.246	1249.415	1.978	0.115	.001
Error	9,348	5904803.49	631.665			
Total	9,376	22475432.000				

2. Corporal Punishment, Positive Parenting, and Crime

Table 3 displays the results for the ANCOVAs predicting criminal propensity. The top half of the table provides the results for the model with only CP (minus positive parenting), along with the control variables. The results show that CP is positively and statistically significantly related to criminal propensity ($p < 0.001$). The bottom half of the table shows the final model, with the inclusion of positive parenting. The results show that even though the amount of variance accounted for in the model (R^2) only changed marginally, that when controlling for positive parenting, CP is still significantly and positively related to criminal propensity. Further, the effect size ($\eta 2$) for CP does not change. Table 4 displays the results for the same type of analyses, predicting criminal behaviour in adolescence and early adulthood. The results are similar to criminal propensity. The fit of the model does improve some by

Table 4. Stepwise analysis of covariance predicting the relationship between corporal punishment, positive parenting, and criminal behaviour in adolescence and early adulthood ($n = 9{,}376$)

Source	*df*	*SS*	*MS*	*F*	*P*	η^2
Model 1: Corporal Punishment Without Positive Parenting, $R^2 = 0.228$,						
Corporal punishment	3	39.248	13.083	46.875	<0.001	.015
Respondent sex	1	153.408	153.408	549.661	<0.001	.055
Child misbehaviour	1	14.356	14.356	51.436	<0.001	.005
Nation	13	80.275	6.175	22.125	<0.001	.030
Participant age	1	5.330	5.330	19.098	<0.001	.002
Father's education level	1	.081	0.081	.289	0.591	.000
Mother's education level	1	.565	0.565	2.024	0.155	.000
Limited disclosure	1	204.731	204.731	733.555	<0.001	.072
Corporal Punishment × Resp. Sex	3	6.212	2.071	7.419	<0.001	.002
Error	9,393	2621.536	0.279			
Total	9,419	24528.694				
Model 2: Corporal Punishment With Positive Parenting, $R^2 = 0.233$,						
Corporal punishment	3	36.636	12.212	43.980	<0.001	.014
Respondent sex	1	155.536	155.536	560.147	<0.001	.057
Positive parenting	1	13.722	6.861	24.708	<0.001	.005
Child misbehaviour	1	13.866	13.866	49.935	<0.001	.005
Nation	13	90.534	6.964	25.081	<0.001	.034
Participant age	1	4.563	4.563	16.435	<0.001	.002
Father's education level	1	0.022	0.002	.080	0.778	.000
Mother's education level	1	0.316	0.316	1.140	0.286	.000
Limited disclosure	1	184.871	184.871	665.795	<0.001	.067
Corporal Punishment × Resp. Sex	3	6.142	2.047	7.374	<0.001	.002
Error	9,346	2595.103	0.278			
Total	9,374	24423.139				

including the variable positive parenting (R^2 changing from 0.228 to 0.233), but it does not diminish the statistical significance of CP in the model, nor substantially change the effect size for CP (η^2), 0.015 to 0.014.

3. CP and Crime by Gender

The interactions between CP and participant sex, with and without Positive Parenting, are reported in Tables 3 and 4. Table 3 shows that the interactions between CP and participant sex for criminal propensity were not significant, regardless of whether or not Positive Parenting was included in the model. The interactions between CP and participant sex for criminal behaviour were significant, however, both with and without positive parenting included.

Table 5. Estimated marginal means for final models predicting criminal behaviour in adolescence and early adulthood by dyadic concordance type categories ($n = 9{,}376$)

	Men		Women	
DCT CP Category	Mean	(SE)	Mean	(SE)
Criminal behaviour in adolescence and early adulthood				
Neither	1.58[a]	(0.03)	1.26[a,b]	(0.01)
Father-Only	1.63[a]	(0.05)	1.29[a]	(0.02)
Mother-Only	1.68	(0.05)	1.35[c]	(0.02)
Both	1.77[c,d]	(0.03)	1.37[c,d]	(0.01)

Note: Estimated marginal means while controlling for child misbehaviour, nation, participant age, father's education level, mother's education level, and limited disclosure.
[a]Statistically significantly different from Both.
[b]Statistically significantly different from Mother-only.
[c]Statistically significantly different from Neither.
[d]Statistically significantly different from Father-only.

Table 5 displays the estimated marginal means by DCT type of CP. We did not estimate the marginal means for criminal propensity by gender because the interaction between gender and CP was not significant for this dependent variable. The estimated marginal means for criminal behaviour by DCT type of CP by gender, however, are displayed in Table 5. The results show that across the board, men score higher than women in criminal behaviour. For males, being 'spanked' by both parents is associated with higher rates of crime, as compared to any of the other DCT categories of CP. For females the results are similar, where being 'spanked' by mother only and both parents are associated with higher levels of actual criminal behaviour in adolescence and early adulthood. Figure 1 graphically displays the estimated marginal means as well.

X. DISCUSSION

The purpose of this study was to address the gaps in the CP literature by examining the associations between CP, positive parenting, and criminality within the context of DCTs, and to further show the harmful impact of CP against children. We found that the majority of university students in the ISP (66.7 per cent) reported that when they were 10 years old, that they were 'spanked' by their parents. Furthermore, results showed that corporal punishment was most often administered by both parents, as opposed to father-only or mother-only. Second most prevalent was mothers only. Research shows that in heterosexual parent relationships, mothers still do more caregiving than fathers, thus they have more opportunity to use CP or 'spank' their children (Sayer and Gornick, 2012).

In regards to criminality, CP was found to be positively and statistically significantly related to criminal propensity and actual crime, even when controlling for positive parenting. For males and females, being 'spanked' by both parents and being 'spanked' by only the mother was associated with higher rates of criminal behaviour.

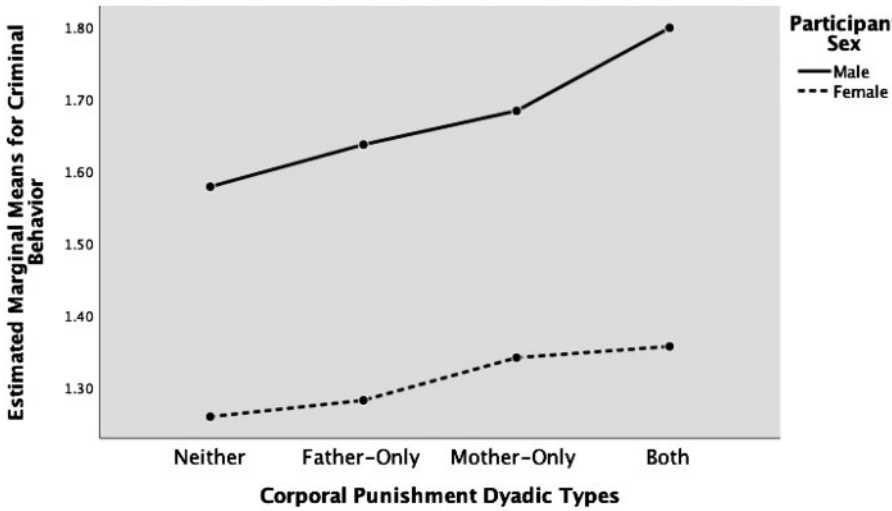

Figure 1. Estimated marginal means, predicting criminal behaviour by corporal punishment dyadic concordance type ($n = 9{,}346$).
Note: Estimated marginal means while controlling for child misbehaviour, nation, participant age, father's education level, mother's education level, and limited disclosure.

However, being 'spanked' by both parents showed the strongest association with actual criminal behaviour for both men and women.

The results support previous findings in regards to the prevalence rates of corporal punishment found in this study. Other research has shown high rates of CP in international studies (Douglas and Straus, 2006; UNICEF, 2014). The results in this study had an overall mean of 66 per cent, but ranged from 51 per cent to 79 per cent. Many nations that ban CP (Global Initiative to End All Corporal Punishment, n.d.) were represented in this study and some had higher rates of CP reported (e.g. Italy). In most instances those bans on CP would not have been in effect when the university students who participated in this study would have been 10 years old, which was the focus of the CP questions in the IPS. As explained in the upcoming limitations section, an examination of CP today may show lower rates of CP as public policy and social customs continue to change (Ryan et al, 2016). As previously noted, as of the writing of this article, 53 nations have banned, either through statute or case law, the use of CP against children (Global Initiative to End All Corporal Punishment, n.d.). Nevertheless, there is evidence (Stansbury et al, 2012) that at least in the USA, CP continues to be used on children by over half of parents in the country (Straus et al, 2014). Further, the results of this study show that when used by parents against children, it is most likely used by both parents and then by mothers only.

Furthermore, our findings support previous CP literature that have found associations between CP and crime (Hetherington et al, 1971; Patterson and Stouthamer-Loeber, 1984; Straus et al, 2014; Gershoff and Grogan-Kaylor, 2016). Specifically, our findings are consistent with previous research in that positive parenting was associated with a lower risk for criminal behaviour, while the negative effects of CP

remained statistically significant. Previous research on parenting style has found that the use of positive parenting practices do not ameliorate the negative outcomes of CP (Altschul et al, 2016).

The present study contributes to the research on CP with the addition of examining the relationship of CP and crime through the lens of DCT categorization. The findings are discrete from previous research in that they consider the behaviour of both parents in four DCT categories: father-only, mother-only, both parents used CP, or neither parent used CP, as opposed to research which simply examines whether a subject experienced CP at all and if so, how frequently (Straus, 2015). Both male and female university students showed the highest levels of criminal behaviour when they had been 'spanked' by both parents. Being 'spanked' by the mother only also showed a greater association between CP and crime for males and females in comparison to the father-only and neither parent DCT categories. These findings have important implications for practitioners and parent educators, in terms of communicating the harmful effects of CP on children.

With regard to the use of DCTs, in general, this study is consistent with previous research which used the DCT framework to examine CP and other harmful parenting approaches (Straus and Douglas, 2017). Data from LONGSCAN and the Fragile Families and Child Wellbeing Study show that the DCT category of 'both' is more prevalent than mother-only or father-only. The results of this study are also consistent with other research that has examined the roles of both parties in a single couple for various other behaviours, such as partner abuse and sexual coercion. This research has shown that relationships in which both couples perpetrate abuse and violence against each other is more harmful on individuals than relationships in which just one member of the couple is violent (Straus, 1999, 2004a, 2004b; Hines and Douglas, 2010a, 2010b). Research using the DCT framework shows that it is not just the presence of particular undesirable or harmful behaviours that is associated with risks for poorer outcomes, one must also consider the actors involved in the behaviours.

XI. LIMITATIONS AND FUTURE RESEARCH

Use of a university student sample necessitated a reliance on retrospective recall of events that happened years earlier. We could not establish the accuracy of those recollections, either through comparison of reports to those of other family members or through measurement at the time of the referent periods. Asking participants to count how many times per year an event happened 5 or 10 years earlier is likely to be less accurate than asking about a more recent period; however, frequency counts with consistent anchor points, such as those used in this study, are still more likely to produce accurate results than general ratings that participants will interpret differently, such as 'sometimes' or 'usually.' Furthermore, additional data collected from these participants (Fauchier, 2007) suggests that the majority of them had accurate and clear recollections of discipline during the target period (8 per cent indicated that they had remembered very clearly; 34 per cent remembered pretty clearly; 41 per cent generally remembered; 9 per cent remembered some things but forgot others; 7 per cent had a hard time remembering). One area for future research would be to

collect real-time data on parents' use of CP using the DCT framework and to examine its relationship to negative outcomes, such as criminality. This may yield more consistent and reliable findings.

Another limitation is that even for a university sample, this study had relatively few racial or ethnic minority participants, due to the makeup of the universities. The sample also contained more females than males due to the greater prevalence of females in the social science courses from which the data were collected. Therefore, the samples may not necessarily represent the larger population in the nations where the students lived. However, the primary focus of this study is not on describing nations but on testing theories regarding CP, positive parenting, and criminal propensity or criminal behaviour. The sample also collected data on university students whose parents were in heterosexual relationships or marriages. Future research should explore the use of CP by parents in LGBTQ relationships and the individual roles of each actor in child discipline, and how this is related to child well-being and pro-social behaviours.

The study focused on the preadolescent period because it was more likely than earlier periods to elicit accurate recall. However, the nature of discipline during preadolescence is markedly different from discipline at younger ages. The present findings about differences between mothers and fathers cannot be extended to other developmental periods. Additionally, it is possible that when asked to indicate their misbehaviours during childhood, that respondents interpreted this differently. Despite this limitation, it is consistent with other social science research which relies on respondent interpretation of questions (Fowler, 1995; Dillman, 2000). Furthermore, the respondents reported on their mothers' and fathers' corporal punishment when they were 10 years old, but they reported on their parents' warmth and support when they were children. This discrepancy in time may affect the results and future research should seek to examine both CP and warmth within the same time frame. Child age has a strong influence on discipline usage: some techniques such as removal of privileges and yelling increase as children get older, whereas other techniques such as time-out and 'spanking' decrease over time (Straus and Stewart, 1999; Barkin et al, 2007). The difference between the amount of time mothers and fathers spend with children decreases as children age (Yeung et al, 2001) and differences in discipline practices may show a corresponding decrease over the course of childhood. Thus, future research should explore the use of CP by parents within a DCT framework and how this potentially changes as children age.

Finally, the DCT framework can be used to understand parenting practices and disciplinary techniques among a broad range of behaviours and approaches. These different approaches and combinations of parental behaviours can be examined in an effort to understand their potential impact on child well-being.

XII. CONCLUSION

This study confirmed previous research that shows a relationship between CP and later life criminality, even in the face of positive parenting, and thus, joins a substantial body of literature providing evidence to support a ban against CP. The most significant contribution of this article was the introduction of the DCT framework,

which allowed us to examine the unique relationship of each parent's disciplinary techniques on our primary outcome measure. CP that is carried out in straight relationships by both parents appears to be most harmful to children, followed by CP that is carried out by mothers only. This is important information for practitioners and parenting educators, because it acknowledges the importance of each parent's contribution to the development of a child and his or her orientation toward engaging and actually engaging in criminal behaviour. It is also important for informing future research methodology in the design and execution of studies the examine parent-child relationships. This information could be the foundation for broad-scale public education that focuses on parental discipline and emphasizes the importance of parents and children as a system. Finally, the findings of this study further confirm the harmful effects of CP on children and youth; and they provide more evidence to support the legal changes in the use of CP which have swept the world in the last near-four decades. The findings confirm government action and policy change to cease harmful behaviours by parents and other caregivers against children.

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