A Critical Examination of the Causal Link Between Child Abuse and Adult Dating Violence Perpetration and Victimization From a Propensity Score Matching Approach

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There has been a considerable amount of published research investigating the link between experiencing child abuse and later offending and victimization. Most of the evidence gleaned from these studies demonstrates support for a cycle of violence. However, prior research has overwhelmingly been based on correlational observations. Considering this limitation, the current study uses a rigorous, quasi-experimental research design to assess the causal effect of experiencing child abuse on adult dating violence perpetration and victimization. Relying on data from a large sample of college students and utilizing a propensity score matching approach, the results indicate that the link between child abuse and adult dating

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violence victimization and perpetration is spurious. Study limitations and implications are discussed.

INTRODUCTION

Domestic violence is a serious public health issue, affecting an estimated 26.4 percent of women and 15.9 percent of men yearly in the United States (Breiding, Black, and Ryan 2008) and resulting in physical injury, obesity, smoking, depression, low self-esteem, and anxiety disorders among survivors (Campbell 2002; Coker et al. 2002; Gibb, Abramson, and Alloy 2004; Gover 2004; Kemp et al. 1995; Messman-Moore, Long, and Siegfried 2000). One of the most enduring empirical questions surrounding domestic violence concerns what distinguishes people or circumstances that results in involvement in a violent relationship. In the body of literature on predictors of interpersonal violence perpetration and/or victimization, one of the most frequently studied variables includes childhood maltreatment, or childhood physical abuse, childhood sexual abuse, and/or witnessing family violence in childhood (Jennings et al. 2011; Riggs, Caulfield, and Fair 2009).

The U.S. Department of Health and Human Services (2009) estimated that 794,000 children were identified as victims of childhood abuse or neglect in 2007. Most suffered neglect (59 percent), followed by physical abuse (10.8 percent), sexual abuse (7.6 percent), and psychological maltreatment (4.2 percent). These data are limited to children whose circumstances were investigated or assessed by a Child Protective Service agency, underestimating the true extent of childhood maltreatment in the United States. An even greater magnitude of children are exposed to family and interparental domestic violence, with up to 20.3 percent of children witnessing family violence throughout their lifetime (Finkelhor et al. 2009). Childhood maltreatment has been associated with a series of adolescent and adult challenges, such as depression (National Research Council 1993), suicidal thoughts or tendencies (Widom 2000), substance abuse (Widom, Ireland, and Glynn 1995), and aggression (Maas, Herrenkohl, and Sousa 2008), as well as involvement in an abusive relationship. Individuals who have survived childhood maltreatment have more than twice the odds of becoming involved in a violent relationship in adulthood (Menard 2002).

Social Learning Theory

One prominent theoretical perspective examining the origins of family and relationship violence is social learning theory, or the intergenerational transmission of violence perspective (Akers and Sellers 2009; Bandura

1979). Aggression directed at intimates and family members is hypothe-sized to be learned in childhood as a tool of control. Role models, such as same-sex parents or higher status individuals, perform aggression in order to manipulate others, and children observing these patterns learn similar behaviors (Akers and Jennings 2009; Akers and Sellers 2009; Bandura 1978). Children may also have the opportunity to directly experience the benefits and consequences of aggression. The experience or observation of violence in a child's family of origin is anticipated to relate to adolescent or adult tendencies of responding to relationship frustration with aggres-sion (Bernard and Bernard 1983; Mihalic and Elliott 1997). In particular, social learning theory hypothesizes that domestic violence offenders are more likely to have observed domestic violence in childhood, to feel favor-ably or neutral toward partner violence, to partner with individuals who are supportive of and/or perpetrate partner violence, and to anticipate greater rewards than losses from perpetrating partner violence (Sellers, Cochran, and Branch 2005).

Consistent with the social learning hypothesis, research has identified the experience of child abuse as a common risk factor for adult partner vio-lence perpetration and victimization (Coffey et al. 1996; Jennings et al. 2011; Laner and Thompson 1982; Parks et al. 2011; Smith and Williams 1992). However, some research has observed a more complicated relationship between childhood maltreatment and adult partner violence. For example, Marshall and Rose (1988) found that childhood abuse was significantly related to dating violence victimization and perpetration among men but related to dating violence victimization only among women. A similar study examining a sample with male and female respondents found a significant relationship between childhood abuse and adult partner violence perpetra-tion and victimization only among males who had survived severe paternal physical violence (Alexander, Moore, and Alexander 1991).

Beyond childhood abuse, exposure to family violence in childhood alone is also associated with partner violence perpetration and victimization (Bernard and Bernard 1983; Coffey et al. 1996; Gover, Kaukinen, and Fox 2008; Gwartney-Gibbs, Stockard, and Bohmer 1987; Jennings et al. 2011; Langhinrichsen-Rohling, Hankla, and Stormberg 2004; O'Keefe 1997; O'Keefe, Brockopp, and Chew 1986; Ronfeldt, Kimerling, and Arias 1998). However, similar to the relationship between childhood abuse and dating violence, the association between witnessing family violence and violent intimate relation-ships varies based on multiple factors. For instance, Jankowski et al. (1999) observed that exposure to domestic violence perpetration only by a same-sex parent significantly increases the likelihood of perpetrating physical part-ner violence in adulthood. Violent attitudinal beliefs, such as endorsement of the concept that assaulting women is acceptable, have been related to both childhood observation of paternal perpetration of domestic violence and adult perpetration of partner violence in addition to male peer agreement with these attitudes (Silverman and Williamson 1997).

Similarly, polyvictimization, or multiple forms of maltreatment, including childhood abuse, sexual abuse, and exposure to family violence, has been found to compound the relationship between maltreatment in childhood and adult dating violence (O'Keefe 1998). For example, Heyman and Smith Slep (2002) observed that child abuse and exposure to domestic violence predicted physical relationship violence victimization and perpetration for women and doubled the risk of relationship violence victimization for men. Furthermore, men who had experienced any forms of child abuse had an increased risk of relationship violence perpetration, but that risk was not escalated by exposure to intimate partner violence (Heyman and Smith Slep 2002).

Results found in studies by Alexander et al. (1991) and Heyman and Smith Slep (2002) demonstrate a more complex relationship between childhood abuse and adult relationship violence and are consistent with Stith et al.'s (2000) meta-analysis of 39 studies, which found a weak to moderate relationship between exposure to violence in one's family of origin and adult physical violence perpetration and victimization. Although the weak to moderate strength of the association between childhood abuse and adult relationship violence may appear unexpected, these findings are entirely consistent with the reality that most survivors of childhood abuse do not perpetrate violence in adulthood (Ehrensaft et al. 2003). Consequently, the emerging research question of interest is what distinguishes survivors who go on to perpetrate from the majority who do not?

One explanation for the novelty of this question is that, until recently, models examining childhood abuse and adult violent behavior rarely controlled for variables that have been related to violent criminality outside of childhood family violence (Maxwell and Maxwell 2003). For instance, witnessing interparental violence has been independently shown to predict both adult relationship violence perpetration and victimization (Ehrensaft et al. 2003). Furthermore, although Ards and Meyers (2001) found that childhood victimization was generally unrelated to adult victimization, one particular cohort (i.e., 18- to 24-year-old females) was found to have an increased odds of moderate or severe partner abuse if they had experienced physical child abuse. More recently, Swogger et al. (2012) also observed that survivors of childhood physical abuse with higher levels of impulsive and irresponsible tendencies had an increased likelihood of perpetrating partner violence, although not general aggression, in adulthood.

THE CURRENT STUDY

The present study continues this line of inquiry by examining the relationship between child abuse and adult dating violence perpetration and victimization from a quasi-experimental, propensity score matching approach.

As noted earlier, many criminological inquiries into the relationship between childhood abuse and adult criminality fail to consider variables related to childhood maltreatment that have been found to influence adult violent criminal behavior (Maxwell and Maxwell 2003). Thus, propensity score matching is applied to assess the causal effect of experiencing childhood abuse on later adult dating violence perpetration and victimization among a sample of undergraduate students from a large southeastern university.

METHODS

Instrument and Procedure

This investigation used the Family and Relationship Experiences and Attitudes Among College Students survey (Gover et al. 2008), which consists of 167 questions covering topics such as experience with dating violence perpetration and victimization, risk-taking behaviors, exposure to violence during childhood, and various demographics. Data were collected via convenience samples of undergraduates recruited from various liberal arts and science classes at a university in the southeastern United States. Data collection took place between August and December of 2005. There was a 99 percent response rate.

Measures

OUTCOME VARIABLES

Physical violence perpetration and physical violence victimization were measured using modified items from the Revised Conflict Tactics Scales (Straus et al. 1996). Specifically, participants were asked how often in the past year they *engaged in* or *experienced* the following behaviors: (a) threw something that could hurt, (b) twisted arm or hair, (c) kicked, (d) slapped, (e) pushed or shoved, (f) punched or hit with their hand or an object, (g) choked, (h) slammed against the wall, and (i) grabbed. Responses included 0 = never, 1 = once in the past year, 2 = twice in the past year, 3 = three to five times in the past year, and 4 = six or more times in the past year. The perpetration of physical violence measure obtained an alpha of .85, and the physical violence victimization measure obtained an alpha of .83. Respondents' scores on the perpetration and victimization measures were collapsed into dichotomous variables, where 1 represented perpetrating or experiencing at least one form of violence or abuse on or by a dating partner in the past year and 0 indicated that the respondents had not perpetrated or experienced dating violence in the prior year.

TREATMENT VARIABLE

Childhood physical abuse was measured with seven items from the Revised Conflict Tactics Scales (Straus et al. 1996). Specifically, students were asked whether they *had experienced* or *had not experienced* the following behaviors from a parent, guardian, or caretaker: (a) throw something that could hurt you; (b) push, grab, or shove you; (c) pull your hair; (d) slap or hit you; (e) hit you with some object (not including spanking); (f) punish you with a belt, board, cord, or other hard object (not including spanking); or (g) hit you so hard that it left bruises or marks. The measure demonstrated an alpha of .79. For the purpose of this analysis, the childhood physical abuse measure was recoded into a dichotomous variable that indicated whether respondents had experienced at least one of the seven abusive behaviors during their childhood. Those who had experienced at least one of the seven abusive behaviors during their childhood were coded as 1 = treatment, and those who did not report experiencing at least one of the behaviors were coded as 0 = control.

PROPENSITY SCORE COVARIATES

To account for selection processes, we included 24 covariates as potential confounders. These covariates were used to create the conditional probability or propensity score for childhood abuse victimization.

Witnessing parental violence was measured by asking respondents whether during their childhood they had witnessed their father perpetrate physical violence against their mother (i.e., father-to-mother violence) and/or their mother perpetrate physical violence against their father (i.e., mother-to-father violence). Social learning parental violence variables were included as dichotomous measures that indicated whether respondents had witnessed violence between parents at least once during their childhood (1) or not (0).

Substance use was measured by asking participants whether in the past year they had (a) used alcohol, (b) used cigarettes, (c) used drugs, or (d) drunk and drove. Responses included 0 = never, 1 = once, 2 = a few times, and 3 = often.

Friends' substance use was measured using four questions that asked participants whether in the past year their friends had (a) used alcohol, (b) used cigarettes, (c) used drugs, or (d) drunk and drove. Responses included 0 = never, 1 = once, 2 = a few times, and 3 = often. Risky sexual behavior was measured using a three-item scale. Scale items included "How old were you when you had sexual intercourse?" (0 = *I have never had sexual intercourse* to 6 = *18 years or older*), "During your life how many people have you had sexual intercourse with?" (0 = *I have never had sexual intercourse* to 6 = *6 or more partners*), "During the last 3 months, how many people have you had sexual intercourse with?" (0 = *I have never had sexual intercourse* to 6 = *6 or more partners*; Gover 2004). The measure demonstrated an alpha of .76.

Self-control was measured using 23 additive scale items from Grasmick et al. (1993). Sample scale items included the following: "I often act on the spur of the moment without stopping to think," "I don't devote much thought and effort to preparing for the future," "I often do whatever brings me pleasure here and now, even at the cost of some distant goal," and "I'm more concerned with what happens to me in the short run than in the long run." Likert response items were used with a range of 1 to 4, with higher numbers indicating lower self-control. The self-control measure obtained an alpha of .89.

Control variables. Variables found in prior research to influence college students' risk for dating violence victimization and perpetration were included in the analysis as additional confounders (Gover 2004). These additional confounders were respondents' sex, age, race (White, Black, Hispanic), college class rank (freshmen, sophomore, junior, senior), growing up in a household with their natural parents, living off campus, and being in an exclusive dating relationship.

Analytic Strategy

Ideally, to identify the effect of child abuse on later dating violence perpetration and victimization we would randomly assign some children to child abuse victimization and others to no child abuse victimization. In the presence of random assignment, an unbiased estimate of the treatment effect (child abuse), *x* versus *y,* could be obtained by simply comparing the mean of the outcome variable across treatment and control groups. However, for the present study, randomly assigning child abuse victimization would have been unethical and nonsensical. Thus, in the absence of random assignment, one method of obtaining an unbiased estimate of the treatment effect is to use a propensity score.

Propensity score matching (Rosenbaum and Rubin 1983) has been utilized by criminologists to control for differences among treatment and control groups (for examples, see Gibson et al. 2009; Loughran et al. 2009; Sampson, Laub, and Wimer 2006). In this method, the propensity score is the conditional probability of receiving treatment conditional on a vector of covariates, $\mathbf{x}$ (Rosenbaum and Rubin 1983). The propensity score, $e(\mathbf{x})$, is called a *balancing score* because conditional on the propensity score, the distribution of the observed covariates is independent of the treatment assignment. In other words, correctly estimating a balancing score should remove all of the predictive information found in the observed covariates so that there are no systematic differences between the two groups (Rosenbaum and Rubin 1983). For the present research, propensity score matching allowed child abuse victims to be matched with non–child abuse victims who had similar propensities for child abuse victimization.

In this study, overt biases were removed by propensity score matching. Specifically, a propensity score, an individual's conditional probability of being in the treated group (child abuse victims) rather than the control group (non-victims) given the individual's observed covariates, was estimated via a logit model. It is important to note that although propensity scores only match on the treatment variable (e.g., child abuse victimization), they tend to balance all of the observed covariates in the model as well. Next, the child abuse victims and non-victims were compared across the propensity score covariates before and after matching. Finally, and most important, we assessed the causal link between child abuse victimization and adult dating violence perpetration and victimization by comparing the prevalence of dating violence perpetration and victimization for the child abuse victims and non-victims before and after matching.

RESULTS

Table 1 presents the bivariate comparisons of the propensity score covariates prior to and after matching using a series of t tests. As can be seen, nearly all of the propensity score covariates differed significantly for child abuse victims and non-victims prior to matching. Specifically, among the child abuse victims compared with the child abuse non-victims, there was a greater proportion of males (non-victims: $M=0.29$; victims: $M=0.38$; $t=-2.99$, $p<.01$), Hispanics (non-victims: $M=0.11$; victims: $M=0.17$; $t=-3.10$, $p<.01$), Blacks (non-victims: $M=0.06$; victims: $M=0.17$; $t=-5.41$, $p<.001$), juniors (non-victims: $M=0.22$; victims: $M=0.27$; $t=-1.86$, $p<.10$), seniors (non-victims: $M=0.14$; victims: $M=0.19$; $t=-2.32$, $p<.01$), students who lived off campus (non-victims: $M=0.57$; victims: $M=0.67$; $t=-3.30$, $p<.01$), witnesses of their father hitting their mother (non-victims: $M=0.02$; victims: $M=0.09$; $t=-5.04$, $p<.001$), witnesses of their mother hitting their father (non-victims: $M=0.03$; victims: $M=0.11$; $t=-5.66$, $p<.001$), cigarette users (non-victims: $M=0.21$; victims: $M=0.31$; $t=-3.76$, $p<.001$), drunk drivers (non-victims: $M=0.25$; victims: $M=0.34$; $t=-3.37$, $p<.01$), students with peers who used cigarettes (non-victims: $M=0.58$; victims: $M=0.64$; $t=-2.22$, $p<.05$), and students with peers who drove drunk (non-victims: $M=0.51$; victims: $M=0.57$; $t=-1.82$, $p<.10$). In contrast, among the child abuse victims compared with the child abuse non-victims, there was a smaller proportion of Whites (non-victims: $M=0.78$; victims: $M=0.57$; $t=7.44$, $p<.001$), freshmen (non-victims: $M=0.41$; victims: $M=0.31$; $t=3.23$, $p<.01$), and students who were raised in a natural two-parent household (non-victims: $M=0.81$; victims: $M=0.74$; $t=2.86$, $p<.01$). In addition, child abuse victims were significantly older (non-victims: $M=19.08$; victims: $M=19.36$; $t=-4.01$, $p<.001$), engaged in more risky sexual behavior (non-victims: $M=3.33$; victims: $M=4.36$; $t=-4.32$, $p<.001$), and had less self-control (non-victims: $M=68.80$; victims: $M=71.28$; $t=-4.39$, $p<.001$) compared with non-victims.

TABLE 1 Bivariate Comparisons of Covariates Before and After Matching for Child Abuse Non-Victims and Child Abuse Victims

	Before matching			After matching		
Variable	Non-victims ($n = 593$)	Victims ($n = 469$)	t	Non-victims ($n = 346$)	Victims ($n = 346$)	t
Male	0.29	0.38	−2.99**	0.34	0.35	−0.08
Age	19.08	19.36	−4.01***	19.19	19.21	−0.27
White	0.78	0.57	7.44***	0.70	0.73	−0.67
Hispanic	0.11	0.17	−3.10**	0.14	0.12	0.90
Black	0.06	0.17	−5.41***	0.09	0.08	0.14
Freshman	0.41	0.31	3.23**	0.38	0.37	0.31
Sophomore	0.24	0.23	0.22	0.23	0.25	−0.71
Junior	0.22	0.27	−1.86†	0.24	0.22	0.64
Senior	0.14	0.19	−2.32*	0.16	0.17	−0.31
Natural parent household	0.81	0.74	2.86**	0.81	0.79	0.76
Lives off campus	0.57	0.67	−3.30**	0.62	0.61	0.31
Exclusive dating relationship	0.40	0.40	0.15	0.39	0.40	−0.23
Witnessed father hit mother	0.02	0.09	−5.04***	0.02	0.05	−1.37
Witnessed mother hit father	0.03	0.11	−5.66***	0.04	0.05	−1.09
Alcohol use	0.84	0.85	−0.33	0.85	0.86	−0.21
Cigarette use	0.21	0.31	−3.76***	0.27	0.26	0.34
Drug use	0.04	0.05	−0.71	0.05	0.04	0.55
Drink and drive	0.25	0.34	−3.37**	0.29	0.29	0.00
Peer alcohol use	0.95	0.96	−0.71	0.94	0.95	−0.33
Peer cigarette use	0.58	0.64	−2.22*	0.64	0.63	0.47
Peer drug use	0.14	0.17	−1.57	0.16	0.16	0.21
Peer drink and drive	0.51	0.57	−1.82†	0.55	0.53	0.69
Risky sexual behavior	3.33	4.36	−4.32***	3.77	3.76	0.01
Low self-control	68.80	71.28	−4.39***	69.90	69.89	0.02

†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

In light of the substantive and statistically significant differences between the child abuse non-victims and victims, we conducted a propensity score analysis. In the first stage of this analysis, we estimated a propensity score using all of the propensity score covariates mentioned previously (sex, age, race, college class rank, family structure, off-campus residence, involved in an exclusive dating relationship, witnessing parental violence, alcohol use, cigarette use, drug use, driving drunk, peer alcohol use, peer cigarette use, peer hard drug use, peer driving drunk, risky sexual behavior, and low self-control). Following the estimation of the propensity score, we matched child abuse non-victims and victims using a simple 1:1 nearest neighbor matching criterion. In an effort to exclude bad matches and increase the precision of the matching procedure, we utilized a strict caliper of .05 of the standard deviation of the logit of the propensity score. After this matching procedure was performed we assessed balance across all of

the propensity score covariates, including their potential interactions. No imbalances were detected after the matching. The overall balance test (Hansen and Bowers 2008) was also not statistically significant, $\chi^2(23, N = 692) = 6.718$, $p > .05$, which provided an additional indication that the application of the matching procedure improved the overall balance.

Following these steps, a series of diagnostic plots were prepared in order to provide additional illustrations of the propensity score matching analysis. Specifically, Figure 1 displays a dot plot of the distribution of the propensity scores for the matched and unmatched child abuse non-victims and victims. What is readily apparent from this visual presentation is that the region of common support for where the matches were identified spanned the range of the distribution in observed propensity scores. Or in other words, matches were realized across the distribution of propensity scores, with the exception of cases with extreme scores (e.g., outliers).

Figure 2 presents a line plot of the observed standardized mean differences before and after matching, and Figure 3 displays histograms of the overlaid kernel density estimates of the standardized differences before and after matching. Both of these diagnostic plots demonstrate that covariate balance was considerably improved in the matched sample compared with the
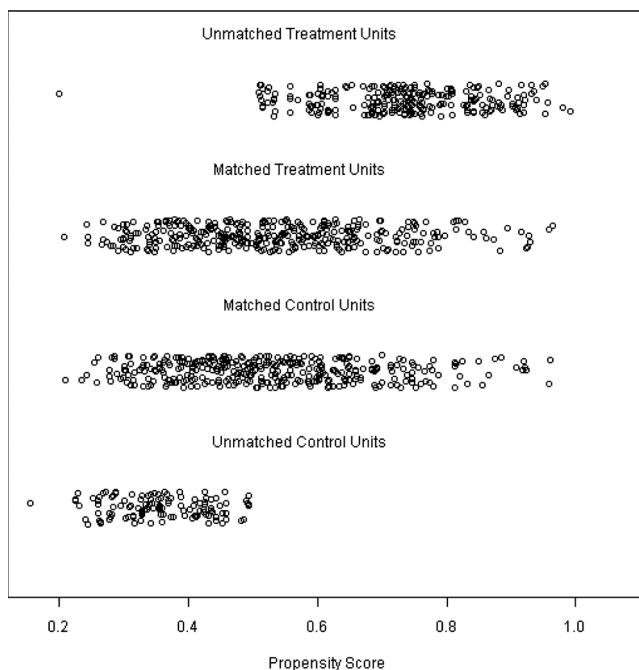

FIGURE 1 Dot plot of propensity scores for matched and unmatched child abuse non-victims (controls) and child abuse victims (treated).
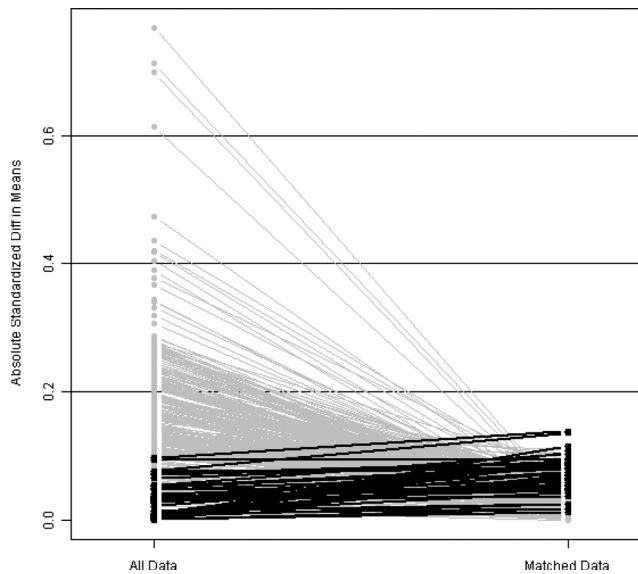
FIGURE 2 Line plot of standardized mean differences (Diff) before and after matching for child abuse non-victims (controls) and child abuse victims (treated).

unmatched sample. Support for this substantial improvement is also evidenced by an examination of the *t*-test comparisons after matching (see Table 1). Specifically, none of the 18 statistically significant differences in the covariates between the child abuse non-victims and victims before matching were statistically significant after matching.

Turning toward the final stage of the analysis, we note that Figure 4 graphically displays the causal effect of being a victim of child abuse on subsequent physical dating violence perpetration in young adulthood both before and after matching. The results presented here suggest that once child abuse non-victims and victims are statistically matched across a host of relevant confounders the statistically significant effect of experiencing childhood abuse on subsequent physical dating violence perpetration in young adulthood is rendered nonsignificant: [before matching ($t=-3.24$, $p<.01$)/after matching ($t=-1.59$, $p=.11$)].

Figure 5 depicts the causal effect of being a victim of child abuse on subsequent physical dating violence victimization in young adulthood both before and after matching. Similar to the previous analysis estimating the causal effect of child abuse on subsequent perpetration, the results displayed here also demonstrate that matching child abuse non-victims and victims across a number of relevant confounders considerably diminishes the causal effect of child abuse on later dating violence victimization in young adulthood to the point of rendering it nonsignificant: [before matching ($t=-4.67$, $p<.001$)/after matching ($t=-0.98$, $p=.33$)].

Standardized differences before matching

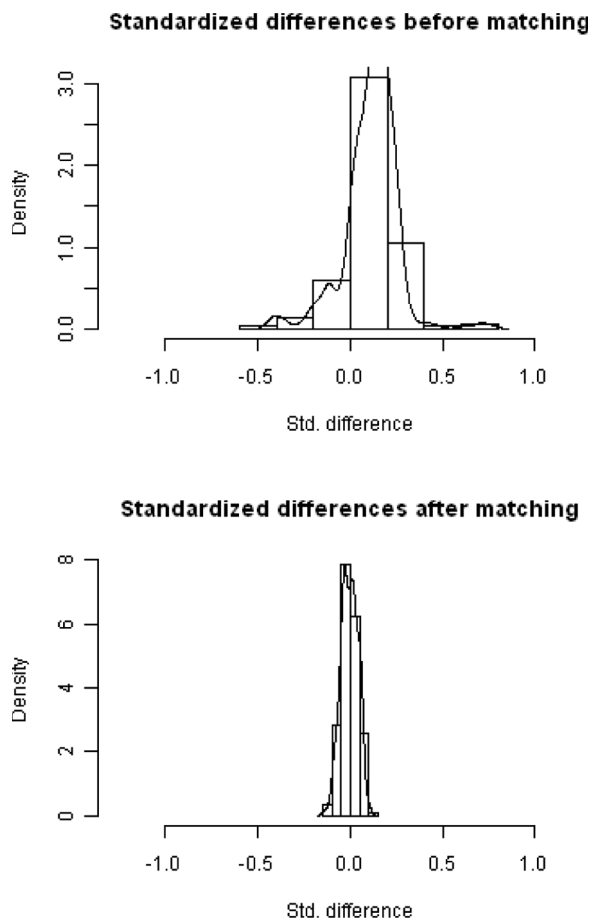**Standardized differences after matching**

FIGURE 3 Distribution of standardized (Std.) mean differences before and after matching for child abuse non-victims (controls) and child abuse victims (treated) with overlaid kernel density estimate.

DISCUSSION

A considerable amount of prior research has examined the link between experiencing childhood abuse and later violence perpetration and victimization (Alexander et al. 1991; Coffey et al. 1996; Jennings et al. 2011; Laner and Thompson 1982; Marshall and Rose 1988; Parks et al. 2011; Smith and Williams 1992). The research in this area has generally demonstrated that individuals who are abused in childhood have a higher likelihood of being involved in offending and victimization at later stages in the life course (Coffey et al. 1996; Jennings et al. 2011; Laner and Thompson 1982; Parks et al. 2011; Smith and Williams 1992), although some studies have reported the link to be less apparent (Alexander et al. 1991; Marshall and Rose 1988). Furthermore, previous research has also identified relevant covariates that
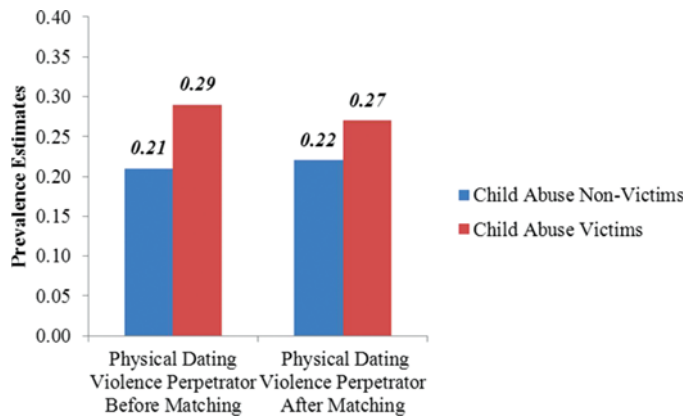
FIGURE 4 Dating violence perpetration differences before and after matching for child abuse non-victims (controls) and child abuse victims (treated). Physical dating violence perpetrator: [before matching ($t = -3.24$, $p < .01$)/after matching ($t = -1.59$, $p = .11$)]. (Color figure available online.)

may also play a role in explaining this relationship, such as social learning (witnessing interparental violence; Bernard and Bernard 1983; Coffey et al. 1996; Gover et al. 2008; Gwartney-Gibbs et al. 1987; Jennings et al. 2011; Langhinrichsen-Rohling et al. 2004; O'Keefe 1997; O'Keefe et al. 1986; Ronfeldt et al. 1998) and low self-control (Swogger et al. 2012). Nevertheless, despite the important contributions of this prior research, the majority of these observed relationships have been correlational, not causal. Acknowledging this limitation, the current study sought to assess the causal link between childhood abuse and adult dating violence perpetration and victimization in a rigorous quasi-experimental research design using a
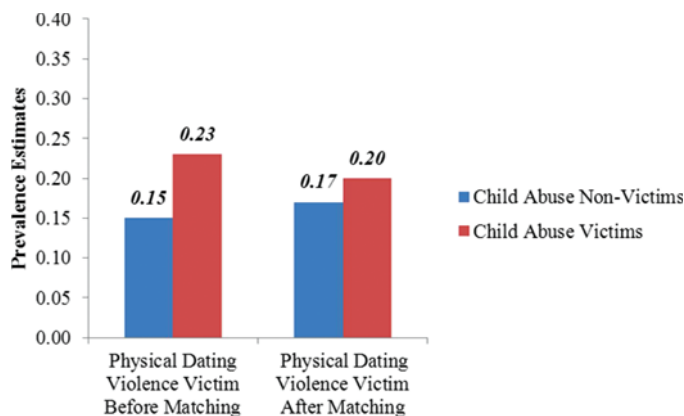

FIGURE 5 Dating violence victimization differences before and after matching for child abuse non-victims (controls) and child abuse victims (treated). Physical dating violence victim: [before matching ($t = -4.67$, $p < .001$)/after matching ($t = -0.98$, $p = .33$)]. (Color figure available online.)

propensity score matching approach. A number of key findings emerged from this effort, and these results are further elaborated on here.

Prior to matching, child abuse non-victims differed from victims on nearly all of the theoretically derived covariates (as well as control variables). It is important to note that more victims than non-victims reported witnessing their father hit their mother, witnessing their mother hit their father, using cigarettes, drinking and driving, having friends who use cigarettes, having friends who drink and drive, engaging in more risky sexual behavior, and having less self-control. In light of the substantive and statistically significant differences between the child abuse non-victims and victims, a propensity score analysis was conducted. After propensity score matching, none of the 18 statistically significant differences in the covariates/control variables between non-victims and victims before matching were statistically significant.

Next, the causal effect of child abuse victimization on subsequent physical dating violence perpetration and victimization in young adulthood both before and after matching was examined. Findings demonstrated that after child abuse non-victims and victims were statistically matched across a host of relevant confounders, the statistically significant effect of experiencing childhood abuse on both subsequent physical dating violence perpetration and victimization in young adulthood was rendered nonsignificant. Such results contradict prior correlational studies and related assertions concerning a causal relationship between experiencing childhood abuse and later involvement in relationship violence (Coffey et al. 1996; Jennings et al. 2011; Laner and Thompson 1982; Parks et al. 2011; Smith and Williams 1992). The present findings provide strong evidence that child abuse and dating violence may actually be spurious and that, instead, other factors that are disproportionately present in the lives of child abuse victims (i.e., low self-control and involvement in risky behaviors and/or with risky peers) may be important links in the causal chain of partner violence perpetration and victimization. Thus, one promising avenue for adult partner violence prevention and intervention efforts may be the circumvention of the development of such risk factors in young children/adolescents. For example, the present findings provide insight for the targeted recruitment of children/adolescents who have experienced child abuse for involvement in healthy lifestyle programs that focus on prosocial activities and character development.

The present study has several important implications for theory and policy, but some limitations should also be noted. This study utilized self-report accounts of dating violence perpetration and victimization as well as retrospective accounts of child abuse/exposure to interparental violence. Self-report data are susceptible to measurement error because of issues with respondent recall and/or inaccurate reporting (Hindelang, Hirschi, and Weis 1981). For example, it is possible that participants did not accurately report their experiences regarding violence victimization/perpetration because of

well-established social desirability issues (i.e., embarrassment, fear of retaliation/punishment). In addition, the current data are from a rather homogenous sample of college students, so caution should be exercised when generalizing the findings to young adults outside of university populations. Finally, although propensity score matching provides a rigorous method of balancing differences between treatment and control groups, it is limited in its reliance on observed covariates. Thus, we acknowledge that the treatment and control groups may differ on other important characteristics omitted from the current model. Thus, we reaffirm Smith and Todd's (2005) assertion that propensity score models are not a "magic bullet" (p. 307) for evaluating treatment effects in the absence of random assignment. Future research must attempt to replicate the current study in an effort to create added support for the present findings.

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