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Using Structural Equations to Model Akers' Social Learning Theory With Data on Intimate Partner Violence

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Abstract

Akers' social learning theory (SLT) is one of the predominate theories of criminal behavior; moreover, its empirical validity has been consistently supported by the extant research literature. However, a number of limitations plague this literature: Rarely is the full social learning model tested such that all four social learning constructs are operationalized and, where complete tests are found, they have either focused near exclusively on substance use/abuse or have examined only the direct, independent effects of its key theoretical constructs. The present study employs structural equations to test a more complete SLT model against self-reported data on intimate partner violence. Doing so permits an examination of both the direct and indirect effects of differential association, imitation, definitions, and differential reinforcement as well as the reciprocal/feedback effects of intimate partner violence back onto these social learning constructs as explicated by Akers.

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Akers' social learning theory (SLT) is one of the predominant theories of criminal behavior; it is a general theory and has been applied successfully to a wide range of deviant and criminal behaviors (Akers & Sellers, 2009); it is also one of the most frequently tested (Stitt & Giacopassi, 1992), most strongly supported (Pratt et al., 2010), most widely endorsed (Ellis, Cooper, & Walsh, 2008; Ellis & Walsh, 1999), and most frequently cited criminological theories (Cohn & Farrington, 1996). It has fared well when tested against rival theories (Akers & Cochran, 1985; Akers & Lee, 1999; Benda, 1994; Burton, Cullen, Evans, & Dunaway, 1994; Conger, 1976; Hwang & Akers, 2003; Kandel & Davies, 1991; Matsueda, 1982; Matsueda & Heimer, 1987; McGee, 1992; White, Pandina, & LaGrange, 1987); it has been supported cross-culturally (Bruinsma, 1992; Hwang & Akers, 2003; Wang & Jensen, 2003; Winfree, Griffiths, & Sellers, 1989; Zhang & Messner, 1995) and it typically plays a major role in attempts at theoretical integration (Catalano, Kosterman, Hawkins, Abbott, & Newcomb, 1996; Elliott, Huizinga, & Ageton, 1985; Kaplan, Johnson, & Barley, 1987; Thornberry, Moore, & Christenson, 1994).

If Akers' SLT is so widely endorsed, frequently tested, and strongly supported, why another test of it? The answer, we assert, is that most tests of the theory are incomplete in that one or more of its key theoretical constructs (most often imitation and occasionally differential reinforcement) have been omitted from the tests (Brezina & Piquero, 2003; Chappell & Piquero, 2004; Winfree, Mays, & Vigil-Backstrom, 1994). Where the tests have fully operationalized each of its four key constructs, most have examined only the direct and independent effects of these constructs (Akers & Cochran, 1985; Akers, Krohn, Lanza-Kaduce, & Radosevich, 1979; Akers, La Greca, Cochran, & Sellers, 1989; Boeringer, Shehan, & Akers, 1991; Cochran, Sellers, Wiesbrock, & Palacios, 2011; Hwang & Akers, 2003; Krohn, Akers, Radosevich, & Lanza-Kaduce, 1982; Krohn, Lanza-Kaduce, & Akers, 1984; Lanza-Kaduce, Akers, Krohn, & Radosevich, 1984; Lauer, Akers, Massey, & Clarke, 1982; Sellers, Cochran, & Branch, 2005; Sellers, Cochran, & Winfree, 2003; Skinner & Fream, 1997) but have ignored the processual nature of these causal constructs as described by Akers such that differential associations have both direct effects on deviant behavior as well as partially mediated or indirect effects operative through imitation, definitions, and differential reinforcements. Likewise, most of these more complete tests of Akers' SLT have also ignored the reciprocal and feedback effects of deviant

behavior back onto these four social learning constructs. In the few occasions in which the tests have examined direct, indirect, and reciprocal effects, typically through some version of path or structural equation modeling (SEM), the dependent variable is almost always a measure of substance use/abuse (Akers & Lee, 1996; Krohn, 1999; Krohn, Skinner, Massey, & Akers, 1985; Lee, Akers, & Borg, 2004). We are aware of no other tests of Akers' SLT in which all four of its key theoretical constructs are operationalized and tested against a form of criminal/deviant behavior other than substance use and modeled in such a way that both their direct and indirect effects can be observed as well as any reciprocal effects of behavior back onto these social learning variables. The present study is a modest attempt to correct for this limitation.

Akers' SLT

Akers' SLT, as we know it today, is the product of modifications to and revisions of Burgess and Akers' (1966) "Differential Association-Reinforcement Theory," which, in turn, constitutes a reformulation of Sutherland's (1947) Differential Association Theory. Akers has continued his early work with Burgess to develop what is now known as SLT; this development of the theory relies primarily on four major theoretical concepts: *differential association, definitions, differential reinforcement*, and *imitation*. With these four theoretical concepts, Akers argues that the probability that persons will engage in criminal behavior is increased when they

> differentially associate with others who commit criminal behavior and espouse definitions favorable to it, are relatively more exposed in-person or symbolically to salient criminal/deviant models, define it as desirable or justified in a situation discriminative for the behavior, and have received in the past and anticipate in the current or future situation relatively greater reward than punishment for the behavior. (Akers, 1998, p. 50)

The best, most current, most fully elaborated, and most carefully explicated presentation of Akers' SLT can be found in his monograph *Social Learning and Social Structure* (Akers, 1998, 2009); below, we make a good faith effort to honor his ideas.

For Akers, *differential association* is the process through which individuals are exposed to definitions favorable and unfavorable to illegal/deviant behavior. It has both behavioral and normative dimensions to it. The behavioral dimension involves both the direct interaction with significant others and the indirect association and identification with members of more distant reference groups who

engage in behavior. The normative dimension refers to the patterns of norms and values to which one is exposed through these associations. These associations vary in their frequency, duration, priority, and intensity, such that those that occur early in life (priority), last longer (duration), take place more often (frequency), and involve significant others with whom one is closely attached (intensity), will have the greater effect on one's own definitions and behavior. These associations not only expose individuals to definitions favorable and unfavorable to the violation of the law, but they are also the primary source of differential reinforcement and role models to be imitated.

Definitions are a person's own evaluative judgments, attitudes, or meanings attached to a particular behavior. They are "orientations, definitions of the situation, and other evaluative and moral attitudes that define the commission of an act as right or wrong, good or bad, desirable or undesirable, justified or unjustified" (Akers & Sellers, 2009, p. 90). The more a person's definitions approve of an act or effectively neutralize moral prohibitions against an act, the greater the likelihood that the person will engage in the act. These definitions favorable and unfavorable to criminal behavior are developed primarily through differential association as well as through imitation and differential reinforcement. Definitions constitute a mind-set that makes one more or less willing to commit a particular act should an opportunity present itself; they also affect the perpetration of an act by serving as internal discriminative stimuli—cues or signals as to what behaviors are likely to yield the greatest reinforcement in a given situation. These definitions may be both general and specific and may be positive, negative, or neutralizing. General definitions are broad widely shared normative evaluations that per se approve of conforming behavior and disapprove of criminal behavior. Specific definitions are normative evaluations unique to a particular form of behavior. Positive definitions are approving normative judgments, whereas negative definitions are disapproving. Neutralizing definitions are situation-specific and serve to justify behavior that is otherwise disapproved.

Imitation is engaging in a behavior one observed another doing. The individual observes a role model's behavior being reinforced and emulates the behavior of the model in anticipation of receiving similar reinforcement himself or herself. Imitation plays an especially important role in the onset or acquisition of novel behavior; its impact is considerably diminished with regard to the maintenance or cessation of an established behavior pattern.

The primary learning mechanism in social behavior, according to Akers, is operant (instrumental) conditioning in which behavior is influenced (enhanced or repressed) by the stimuli that follow or are consequences of it. Behavior is strengthened and, thus, more likely to be repeated through rewards (positive reinforcements) and the avoidance of punishment (negative

reinforcement); behavior is weakened and, thus, less likely to be repeated by the presentation of aversive stimuli (positive punishment) and the loss of reward (negative punishment). Reinforcements and punishments may be non-social (such as the direct effects physiological of drugs or the endogenous psychic rewards provided by risky thrills—see Wood, Cochran, Pfefferbaum, & Arneklev, 1995; Wood, Gove, Wilson, & Cochran, 1997) or social (e.g., acceptance or approval from significant others or criminal sanctions following arrest and conviction). Whether or not a behavior is acquired, strengthened, repeated, maintained, persists, is weakened, repressed, and/or desisted depends on the balance of past, present, and anticipated rewards and punishments attached to that behavior relative to the balance of rewards and punishments attached to alternative behaviors—*differential reinforcement*. Akers' theory proposes that the individuals or groups that comprise the major sources of an individual's reinforcements and punishments will have the greatest influence on that individual's behavior.

In summation, Akers' SLT posits that deviant behavior is a function of the frequency, duration, priority, and intensity of interactions with and exposure to significant others (differential associations) who serve as the primary sources of one's own evaluative (general and specific, positive, negative, and/or neutralizing) judgments about the appropriateness of that deviant behavior (definitions); these significant others also serve as role models whose own deviant behavior is emulated (imitation) when it is observed to have been reinforced, and they are the primary source of the balance of actual and anticipated, positive and negative, rewards and punishments (differential reinforcement) for one's own deviant behavior. Importantly, Akers' SLT is a *processual* theory involving a complicated set of feedback and non-recursive relationships. Akers and his colleagues (1979) proposed a typical temporal sequence/causal ordering of his social learning process for both the initiation/onset of behavior as well as its continuation/maintenance:

> As a result of differential association with family and friends, initiation of the behavior takes places through imitation, acquisition of a balance of definitions favorable to the behavior, and anticipation of positive reinforcement. Whether or not the behavior continues after the initiation . . . is a function of these same variables—except that imitation is less influential and the actual consequences of the behavior (social and non-social) serve to reinforce or punish the behavior. (Krohn et al., 1985, p. 458)

As such, deviant behavior is the product of differential association, imitation, definitions, and differential reinforcement. Differential association is posited to have both a direct effect on deviant behavior and an indirect effect, partially mediated by imitation, definitions, and differential reinforcements

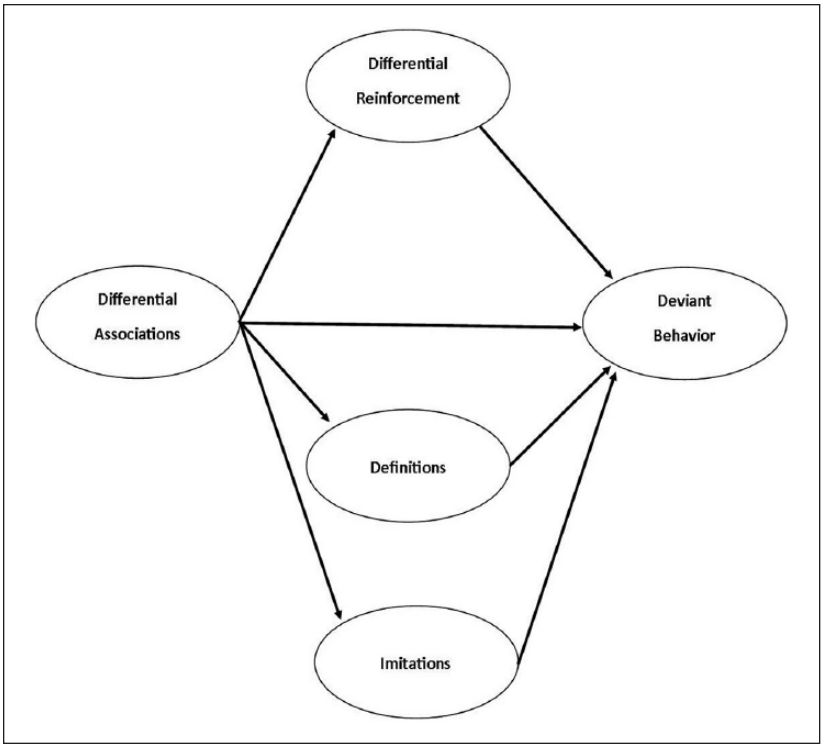

Figure 1. Theoretical model of Akers' SLT.

(see Figure 1). Akers' theory also posits reciprocal and feedback effects from deviant behavior back onto each of the four theoretical constructs (see Akers, 2009 and Krohn et al., 1985).

Akers' SLT has been tested numerous times against self-reported data on delinquency (both minor and serious forms) and substance use/abuse (tobacco, alcohol, and marijuana) and across these tests it has almost always been well supported by the data (Pratt et al., 2010). There are scores of such studies; too numerous to review herein. Fortunately, Akers (1998, 2009) and Akers and Jensen (2006) have provided very thorough reviews of this literature. In addition to these more prosaic forms of crime/deviance, SLT has also been tested and supported with data on gang membership and delinquency (Winfree et al., 1994), adult criminality (Burton et al., 1994), hard drug use (White, Pandina, & LaGrange, 1987), prescription drug misuse (Schroeder & Ford, 2012), rape/sexual assault (Boeringer et al., 1991), intimate partner

violence (IPV), both perpetration (Sellers et al., 2003) and victimization (Cochran et al., 2011), academic dishonesty (Lanza-Kaduce & Klug, 1986), and cyber-piracy (Hinduja & Ingram, 2009). It has been supported cross-culturally (Bruinsma, 1992; Hwang & Akers, 2003; Kim & Koto, 2000; Wang & Jensen, 2003; Winfree et al., 1989; Zhang & Messner, 1995). It has excelled in tests against rival/competing theories (Akers & Cochran, 1985; Akers & Lee, 1999; Benda, 1994; Burton et al., 1994; Conger, 1976; Hwang & Akers, 2003; Kandel & Davies, 1991; Matsueda, 1982; Matsueda & Heimer, 1987; McGee, 1992; Schroeder & Ford, 2012; White et al., 1986). It has played a primary role in numerous attempts at theoretical integration (Catalano et al., 1996; Elliott et al., 1985; Kaplan et al., 1987; Thornberry et al., 1994). It is one of the most frequently tested (Stitt & Giacopassi, 1992), most strongly supported (Pratt et al., 2010), most widely endorsed (Ellis & Walsh, 1999; Ellis et al., 2008), and most frequently cited criminological theories (Cohn & Farrington, 1996). Hence, it is both fair and accurate to describe the theory as a legitimate and leading "general" theory of criminal/deviant behavior with exceptionally broad scope (Akers & Sellers, 2009).

On the downside, however, most tests of the theory have been somewhat incomplete in that one or more of its key theoretical constructs (most often imitation and occasionally differential reinforcement) have been omitted from the tests (Brezina & Piquero, 2004; Chappell & Piquero, 2004; Winfree, Sellers, & Clason, 1993; Winfree, Mays, Vigil-Backstrom, 1994). Where the tests have fully operationalized each of its four key constructs, most have examined only the direct and independent effects of these constructs (Akers & Cochran, 1985; Akers et al., 1979; Akers et al., 1989; Boeringer et al., 1991; Cochran et al., 2011; Hwang & Akers, 2003; Krohn et al., 1982; Krohn et al., 1984; Lanza-Kaduce et al., 1984; Lauer et al., 1982; Sellers et al., 2005; Sellers et al., 2003; Skinner & Fream, 1997) but have ignored the processual nature of these causal constructs as described by Akers such that differential associations have both direct effects on deviant behavior as well as partially mediated or indirect effects operative through imitation, definitions, and differential reinforcements. Likewise, most of these more complete tests of Akers' SLT have also ignored the reciprocal and feedback effects of deviant behavior back onto these four social learning constructs. In the few occasions in which the tests have examined direct, indirect, and reciprocal effects, typically through some version of path or SEM, the dependent variable is almost always a measure of substance use/abuse (Akers & Lee, 1996; Krohn, 1999; Krohn et al., 1985; Lee et al., 2004). As we stated previously, we are aware of no other tests of Akers' SLT in which all four of its key theoretical constructs are operationalized and tested against a form of criminal/deviant behavior other than substance use and modeled in such a way that both their direct and

indirect effects can be observed as well as any reciprocal effects of behavior back onto these social learning variables. The present study is a modest attempt to correct for this limitation.

Method

The data for this study were gathered through a self-administered survey of students attending a large urban university in Florida. The students were surveyed in graduate and undergraduate classes randomly selected from the course offerings of five colleges (Arts and Sciences, Business Administration, Education, Engineering, and Fine Arts) during the first 4 weeks of the spring 1995 semester. Courses were sampled from each college in proportion to the enrollments each college contributed to the university's total enrollment. This sampling strategy targeted a total of 2,500 students; however, absenteeism on the day of the survey and enrollments of students in more than one sampled course produced an overall response rate of 73%. The current study is based on those students who completed the questionnaire, who report being currently involved in an intimate relationship (i.e., married or dating), and who also report having had at least one previous serious relationship (n = 1,124). The sociodemographic profile of the sample was very similar to that of the total enrollment at the university. Importantly, these data, unlike most other self-reported data collections, were specifically designed to examine the efficacy of Akers' SLT on IPV. Finally, although these self-report data are derived from a sample of college students, it is noteworthy that a substantial number of the respondents were married or cohabiting, and as we report below, the prevalence and frequency of IPV among the students sampled was quite substantial.

Dependent Variables

The dependent variables used in this study were latent constructs developed from two sets of measures of self-reported IPV: violence toward current and violence toward past intimate partners. All are drawn from the physical aggression items in Straus' (1979) Conflict Tactics Scale. Specifically, respondents were asked, for both their current and previous marital or dating relationships, how many times they had done any of the following seven acts of IPV: (a) threw something, (b) pushed, grabbed, or shoved; (c) slapped; (d) kicked, bit, or hit with a fist; (e) hit with something; (f) beat up; (g) threatened with a knife or gun; and (h) used a knife or gun. Responses to these items were *never, once or twice, 3 to 5 times, 6 to 10 times, 11 to 20 times*, and *21 or more times*, coded from 0 to 6.

Social Learning Constructs

The independent variables in this study are first- or second-order latent constructs representing each of Akers' four social learning concepts: differential associations, imitation, definitions, and differential reinforcement. We endeavored to measure the constructs using items and scales derived near exactly as they were measured by Akers and his colleagues (1979), although modified to reflect IPV rather than adolescent substance use.

Differential association is a second-order latent construct comprised of a single-item measure of the respondents' estimation of the proportion of their best friends who had used violence against a partner (1 = *none or almost none*, 2 = *less than half*, 3 = *more than half*, and 4 = *all or almost all*), and two first-order latent constructs. The first of these first-order latent constructs is comprised of four items measuring mother's, father's, partner's, and best friend's attitudes toward partner violence. For these items, respondents were asked to indicate to what degree each of these significant others would approve/disapprove of the use of physical violence against a partner (1 = *strongly disapprove*, 4 = *strongly approve*). The second of these two first-order latent constructs used to comprise differential associations is itself comprised of five indicators of physical violence used by significant others. Specifically, respondents were asked to indicate how often their mother, father, siblings, other family members, and best friends had used physical actions against a partner (1 = *never*, 2 = *seldom*, 3 = *usually*, and 4 = *always*).

Imitation is measured by a first-order latent construct comprised of seven different admired role models the respondent had actually seen using physical actions, such as hitting, slapping, kicking, or punching an intimate partner during a disagreement. These admired models included actors on television or in movies, mother, father, siblings, other family members, friends, and other people.

Definitions is another second-order latent construct comprised of a single-item measure of respondents' own approval/disapproval of the use of physical violence against a partner (1 = *strongly disapprove*, 4 = *strongly approve*), and three first-order latent constructs. The first of these three first-order latent constructs is a two-item measure of respondents' attitudes favorable toward the violation of the law in general and indicated by the extent to which respondents agreed/disagreed with the following Likert-type statements (1 = *strongly agree*, 5 = *strongly disagree*): "We all have a moral duty to abide by the law" (reverse coded) and "It is okay to break the law if we do not agree with it." The next of these three second-order latent constructs represents definitions approving of IPV indicated by the following three Likert-type statements: "It is against the law for a man to use violence against a woman even if they are in an intimate relationship," (reverse coded), "Laws against

the use of physical violence, even in intimate relationship, should be obeyed" (reverse coded), and "It is against the law for a woman to use violence against a man even if they are in an intimate relationship" (reverse coded). Finally, the third of these first-order latent constructs measures neutralizing definitions and is comprised of responses to the following three Likert-type statements: "Physical violence is a part of a normal dating/marital relationship," "I believe victims provoke physical violence," and "In dating/marital relationships, physical abuse is never justified" (reverse coded).

The last social learning construct, *differential reinforcement*, is another second-order latent construct comprised of two first-order constructs and two single-item measures. First, respondents were asked to report the actual or anticipated reaction of four different sets of significant others (i.e., partner, parents, other family members, and best friends) to respondent's use of violence against a partner. Respondents indicated that these significant others would either 1 = *disapprove and report to the authorities*, 2 = *disapprove and try to stop it*, 3 = *disapprove but do nothing*, 4 = *neither approve nor disapprove*, or 5 = *approve and encourage it*. Second, a single 3-point, ordinal measure of the overall balance of reinforcement for partner violence was included. This item measured the respondent's perception of the usual or anticipated net outcome from using violence against a partner (1 = *mostly bad*, 2 = *about as much good as bad*, and 3 = *mostly good*). Third, the net rewards-to-costs of using violence against a partner was measured by asking respondents to indicate which, if any, of eight social and non-social rewards and eight social and non-social costs they associated with using physical aggression against a partner. The eight rewards were as follows: "It gave me a satisfying and rewarding feeling," "It made me feel more masculine and tough," "It ended the argument," "It got my partner off my back," "I felt powerful," "My friends respected me more," "I felt more in control," and "My partner respected me more." The eight costs were as follows: "It made my relationship more stressful," "My friends criticized me," "I got arrested," "It made me feel out of control," "I felt ashamed," "It made the argument worse," "My family criticized me," and "I felt guilty." To compute the net rewards-to-costs, the sum of the identified costs was subtracted from the sum of the identified rewards; this produced a measures with values ranging from −8 (*all costs and no rewards*) to 8 (*no costs and all rewards*). Finally, two items were combined to assess respondent's perceived certainty and severity of formal criminal justice responses to intimacy violence.

Method of Analysis

Due to the current study's interest in testing the direct and indirect effects of various components of the social learning process on IPV, the most appropriate

analytical technique is SEM. Following the two-step process outlined by other researchers (e.g., Kline, 1998; Schumacker & Lomax, 1996), we first develop and test a measurement model using confirmatory factor analysis (CFA). The fit of the measurement model is determined by examining how well the model fits the data. Following the recommendations of Hoyle and Panter (1995), we report several fit indices (i.e., χ^2, standardized root mean square residual [SRMSR], root mean square error of approximation [RMSEA], and comparative fit index [CFI]). General criterion values for these fit statistics have been developed by other researchers (i.e., Hu & Bentler, 1995; Kelloway, 1998) and the recommendations of these researchers will be followed in determining how well the model fits the data. If the measurement model performs well, it is then appropriate to continue to the second analytical stage and test the structural model. Our structural models proceed in three phases examining how SLT predicts (a) the perpetration of IPV against a current partner, (b) the perpetration of IPV against past partners, and (c) the effects of IPV perpetration against prior partners on both the social learning constructs and perpetration of IPV against a current partner.

Results

Measurement Model

Because the results of the measurement model are not of substantive interest, and the model is extremely complex involving factor loadings for both first- and second-order factors, the measurement model has been omitted from this article (it is, however, available from the lead author on request). The substantive importance of this measurement model is that it fits the data well, $\chi^2(669) = 3{,}754.51$, $p < .001$; SRMSR = .0500; RMSEA = .0521; CFI = .9583.

Structural Model

The results from the first model examines the effects of the SLT constructs on perpetration of violence against one's current partner and are presented in Figure 2. As a first step in SEM, it is necessary to ensure that the model fits the data well. The results suggest that the data fit the model well, $\chi^2(672) = 3{,}922.15$ (SRMSR = .0578; RMSEA = .0529; CFI = .9521).

The results presented in Figure 2 indicate that two of the four social learning constructs are significantly associated with IPV perpetration against one's current partner; these are differential associations ($b = .079$, $SE = .04$; $p < .05$) and differential reinforcement ($b = .234$, $SE = .11$; $p < .05$). The effects of imitation and definitions both fail to attain statistical significance. The effect of differential associations is more modest than that for differential reinforcement. The

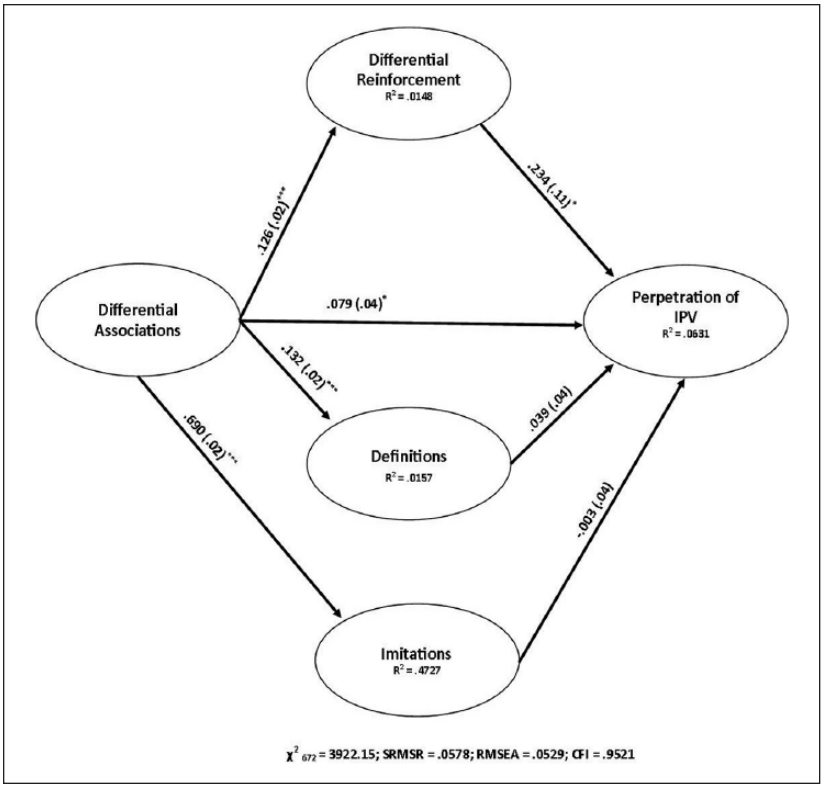

Figure 2. SLT predicting IPV perpetration against current partner.
Note. SLT = social learning theory; IPV = intimate partner violence; SRMSR = standardized root mean square residual; RMSEA = root mean square error of approximation; CFI = comparative fit index. *p < .05, **p < .01, ***p < .001.

attenuated effect of the differential associations construct is largely unexpected given prior research, which suggests that differential association is one of the most robust SLT predictors of deviance (see Pratt et al., 2010), but may be due to the fact that a great deal of its total effect is mediated through the other three social learning constructs. That is, differential associations exert a considerable indirect effect on IPV through each of the other three social learning constructs. The largest indirect effect of differential associations is through differential reinforcement (b = .03, SE = .006, p < .001). The other indirect effects of differential associations, which are smaller in magnitude, are through definitions (b = .005, SE = .0008, p < .001) and imitation

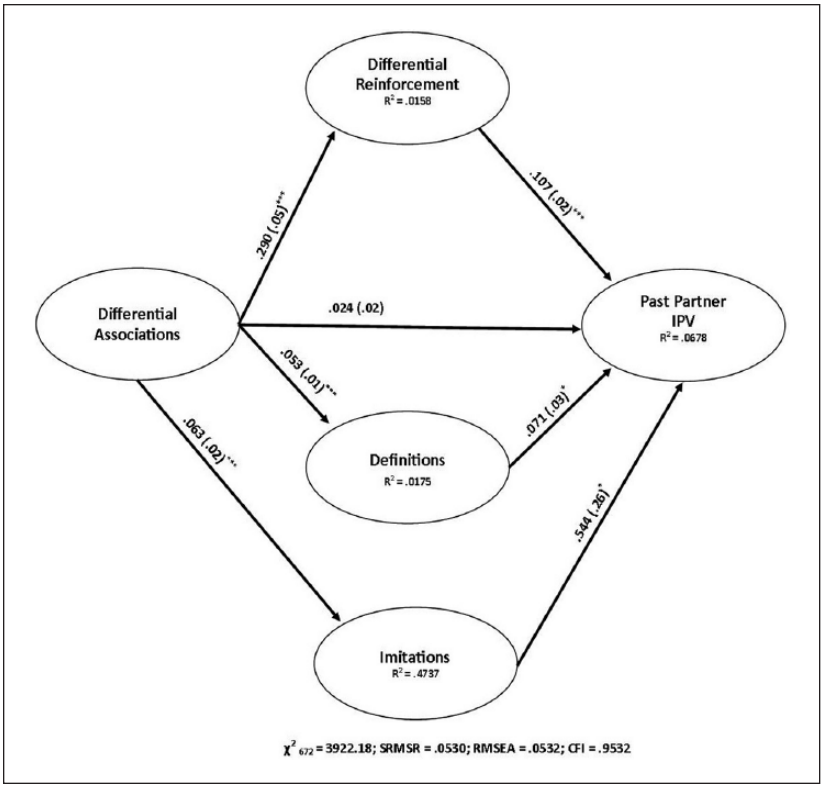

Figure 3. SLT predicting IPV against prior partners.
Note. SLT = social learning theory; IPV = intimate partner violence; SRMSR = standardized root mean square residual; RMSEA = root mean square error of approximation; CFI = comparative fit index. *p < .05, **p < .01, ***p < .001.

($b = -.002$, $SE = .0008$, $p < .001$), neither of which, in turn, has a significant direct effect on IPV.

We also estimate a second model that examines the effects of social learning constructs on the number of incidents of IPV that have been perpetrated against a previous partner. The results from this model are presented in Figure 3. Again, the model fits the data well, $\chi^2(672) = 3{,}922.18$ (SRMSR = .0530; RMSEA = .0532; CFI = .9632). The results from this model indicate that all of the SLT constructs with the exception of differential associations exert a significant effect on the perpetration of IPV. Specifically, imitations ($b = .544$, $SE = .26$, $p < .05$), differential reinforcement ($b = .107$, $SE = .02$, $p < .05$), and definitions

($b = .071$, $SE = .03$, $p < .05$) exert significant, positive, direct effects on the perpetration of IPV against one's previous partner. While Akers' SLT predicts a stronger effect of imitation on the onset of behavior (e.g., IPV against a previous partner) than on the continuation of that behavior (i.e., IPV against a current partner), it is not at all clear why the effect of definitions should vary across these two types of IPV perpetration and why, especially, its effect would be significant for previous partner IPV perpetration but not current partner IPV. Conversely, and unlike in the model with IPV against one's current partner, there is no significant direct effect of differential associations ($b = .024$, $SE = .02$, $p < .05$). However, as in the previous model, differential associations exerts a significant indirect effect through imitations ($b = .035$, $SE = .002$, $p < .05$), differential reinforcement ($b = .03$, $SE = .001$, $p < .05$), and definitions ($b = .004$, $SE = .0003$, $p < .05$). Moreover, the total effect of differential associations is smaller in this model than in the IPV against current partner model (.068 vs. .112).

Finally, we turn our attention to our third model that examines the effect of the perpetration of IPV against a past partner on both the SLT variables and the perpetration of IPV against current partner. In so doing, we provide a surrogate form of modeling the non-recursive or feedback effect of behavior on the social learning process. In essence, we are estimating the first model with the addition of path estimates from past partner IPV to each of the SLT constructs and to current partner IPV (see Figure 4). The results suggest that the model fits the data well, $\chi^2(1015) = 8{,}759.22$ (SRMSR = .0650; RMSEA = .0670; CFI = .9515).

Not surprisingly, there is a strong positive and statistically significant relationship between the perpetration of IPV against a prior partner and the perpetration of IPV against the current partner ($b = 2.42$, $SE = .12$, $p < .05$). More importantly, and as predicted by Akers' SLT, violence against a prior partner has a positive and significant effect on all of the SLT variables except for imitation. Furthermore, several of the SLT variables exert a significant, positive effect on IPV against a current partner. Specifically, differential associations ($b = .04$, $SE = .02$, $p < .05$) and differential reinforcement ($b = .043$, $SE = .008$, $p < .05$), once again, continue to exert a positive effect. As was observed in Figure 2, neither imitation nor definitions exert significant direct effects.

With regard to the indirect effects of the social learning constructs, we observe once again significant indirect effects of differential associations on the perpetration of IPV through differential reinforcement ($b = .009$, $SE = .00032$, $p < .05$), and non-significant indirect effects through definitions ($b = .002$, $SE = .0004$, $p < .05$) and imitations ($b = -.01$, $SE = .0046$, $p < .05$). Furthermore, we see that perpetration of IPV against a prior partner exerts

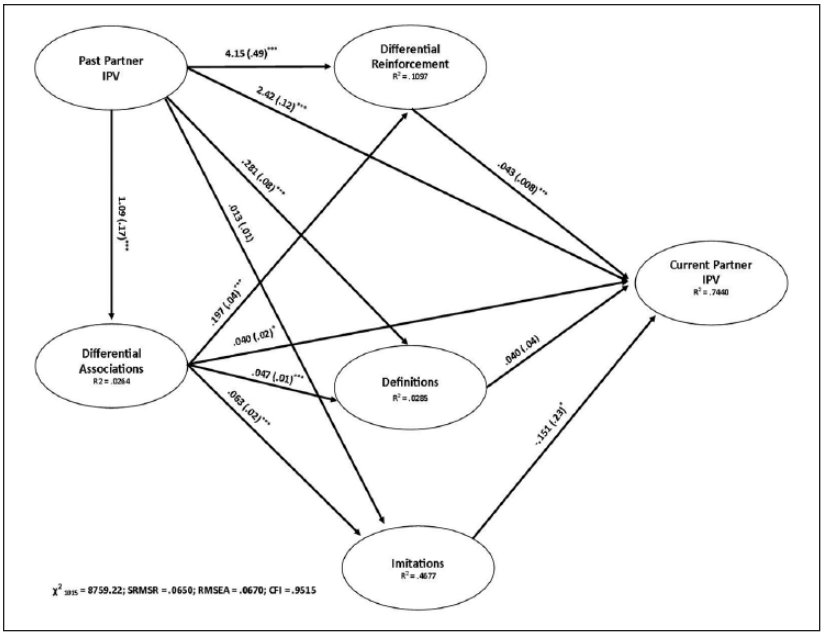

Figure 4. Prior perpetration of violence and SLT predicting current partner violence.

Note. SLT = social learning theory; IPV = intimate partner violence; SRMSR = standardized root mean square residual; RMSEA = root mean square error of approximation; CFI = comparative fit index. *p < .05, **p < .01, ***p < .001.

indirect effects on the perpetration of IPV against the current partner through several of the SLT constructs. Specifically, through differential associations ($b = .044$, $SE = .004$, $p < .05$), differential reinforcement ($b = .178$, $SE = .004$, $p < .05$), and through definitions ($b = .011$, $SE = .0032$, $p < .05$). In addition to these indirect effects, there are also more complex indirect effects of past partner IPV on current partner IPV. Specifically, the indirect effect of IPV against one's prior partner to differential associations through both differential reinforcement ($b = .0004$, $SE = .00001$, $p < .05$) and definitions ($b = .0005$, $SE = .000002$, $p < .05$).

Discussion

Despite being one of the predominate theories of crime and deviance—frequently tested, strongly supported, widely endorsed, and frequently cited—Akers' SLT, as an inherently processual theory, has rarely been subjected to

empirical tests that have explicitly examined its processual nature. Moreover, of the very small number of studies that have tested its processual natures, all have been restricted to examinations of the theory's ability to predict and explain substance use/abuse in one form or another (Akers & Lee, 1996; Krohn, 1999; Krohn et al., 1985; Lee et al., 2004). The purpose of the present study was to provide a modest attempt at addressing these limitations in the extant research literature. Specifically, this study makes use of a data set intentionally designed to test Akers' SLT. As such, it includes multiple indicators of each of the four key social learning constructs: differential associations, imitation, definitions, and differential reinforcement. It also allows for a test of the theory against data on a form of criminal conduct other than substance use/abuse (intimate personal violence) and examines not only the total, direct, and indirect effects of social learning constructs on the frequency of IPV but also, due to an interesting artifact of these data, the reciprocal effects of IPV on the social learning constructs.

To test these total, direct, indirect, and reciprocal effects, a series of three structural equation models were tested: (a) the effects of social learning constructs on the frequency of violence against one's current intimate partner, (b) the effects of social learning on the frequency of violence against one's previous intimate partner, and (c) the effects of violence against one's previous intimate partner on the social learning constructs (the reciprocal effects) and violence against one's current intimate partner as well as the effects of social learning of IPV against one's current partner. Across these three models, we observed that Akers' SLT was supported, though in different ways, for current versus past partner IPV.

Our first structural equation models examined the effects of social learning on IPV against one's current partner (Figure 2). As expected by the theory, the latent variable representing differential associations was directly associated with the frequency of IPV and with each of the other three social learning constructs. Of these, only the latent variable for differential reinforcement was directly and significantly associated with IPV. Hence, two of the four social learning constructs were not significantly associated with IPV (i.e., definitions and imitation), whereas two others were (i.e., differential associations and differential reinforcement). Moreover, the total effect of differential associations decomposes into a direct effect on IPV, an indirect effect mediated through differential reinforcement, and a spurious component due to definitions and imitation.

A rather different set of findings is noted for the structural equations examining the effects for the social learning construct on past partner IPV (Figure 3). Here, once again the latent variable for differential associations is directly associated with the other three social learning constructs. However,

differential associations have no direct effect of IPV; its significant influence on past partner IPV is entirely mediated through the other three social learning processes. Differential reinforcement, once again, has a significant direct effect on past partner IPV; so too do definitions and imitations (neither of which showed significant effects on current partner IPV).

We are not surprised to find the effect of imitation to predict past partner IPV but not current partner IPV; after all, its effects are expected to be stronger for the onset of behavior than for its continuation. Conversely, we are at a loss to account for the variable effects of both the definitions and differential associations constructs. Perhaps emergent effect of differential association for current partner IPV is due to refinements in one's associates following earlier acts of IPV (past partner) but preceding more contemporaneous acts such as those perpetrated against one's current intimate partner.

Most intriguing to us was the opportunity to examine potential feedback or reciprocal effects of IPV back onto the social learning process. By employing past partner IPV as a surrogate for this process, we were able to get a slight peek into its workings. We did so by introducing past partner IPV as an exogenous variable to the structural equation model examined in our initial test of SLT against the frequency of current partner IPV (Figure 4). This model shows, as expected, that past partner IPV is directly and significantly associated with current partner IPV and with each of the four social learning constructs. Some of the total effect of past partner IPV is indirect through differential reinforcement and imitation, and though differential associations to differential reinforcement and imitation to current partner IPV, and some of the effect of past partner IPV on current partner IPV is spurious. With regard to the social learning constructs, differential associations are again significantly and directly associated with the other three social learning constructs—two of which (differential reinforcement and imitation) provide an indirect linkage to current partner IPV. Two of the four latent variables for social learning processes (differential reinforcement and imitation) are themselves significantly and directly associated with current partner IPV while another, definitions, is not related to current partner IPV, and the last, differential associations, had its effects on current partner IPV fully mediated.

Conclusion

As far as we are aware, this is the first study to provide a full test of Akers' SLT with data other than respondents' self-reported substance use. Our structural equation models of the direct, indirect, and feedback effects of social learning constructs on IPV are, when taken as a whole, highly supportive of the theory and show expected direct and indirect effects of social learning

constructs on IPV as well as reciprocal/feedback effects of IPV onto the four SLT constructs. Yet we are perplexed by some of our findings. Why is the effect of differential associations on IPV primarily indirect? Why do definitions fail to have a significant impact on current partner IPV? Why does imitation only have a direct effect on current partner IPV once past partner IPV feedback effects are modeled when in our initial models it did not? These questions are beyond the scope of our data to disentangle; perhaps, future processual tests of Akers' SLT, should they produce similar anomalies, will be better able to address them. Clearly, cross-sectional data derived from a sample of college students constitute two serious limitations to the present study. A processual theory requires panel data to properly test it. Moreover, although a general theory should hold up well against all forms of data—even data from samples of adolescents and college students—tests of SLT with data derived from adult samples is badly needed. Likewise, although we have greatly expanded the range of criminal/deviant behaviors that can be explained by the theory by testing it against data on the frequency of IPV, future scholars should endeavor to test it against other forms of serious criminal conduct.

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