THE APPLICABILITY OF SOCIAL STRUCTURE AND SOCIAL LEARNING THEORY TO EXPLAIN SEVERE INTIMATE PARTNER VIOLENCE PERPETRATION ACROSS NATIONAL CONTEXTS

By

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Criminal Justice – Doctor of Philosophy

2019

ABSTRACT

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Intimate partner violence (IPV) affects men and women worldwide. Previous research on IPV perpetration suggested a number of individual-, interpersonal-, and contextual-level risk factors. Despite this large body of research enhancing our understanding of IPV perpetration, there is still a lack of a comprehensive examination of the etiology of IPV. Researchers have called for a contextual and systematic approach that acknowledges the influence of multilevel forces on IPV perpetration. Therefore, the current study aims to examine the applicability of Aker's Social Structure and Social Learning (SSSL) theory to explain severe IPV perpetration. SSSL theory is a multilevel integrated theory that links structural level factors to IPV perpetration through a social learning process. In other words, the current study tests the mediation effect of the social learning process on the connection between social structural factors and IPV perpetration.

Data on IPV perpetration by both male and female college students in 30 nations were taken from the International Dating Violence Study, which also included social learning variables. Structural level indicators of gender equality for individual nations were taken from Global Gender Gap Index, which provides a multi-faceted indicator of gender equality. Because the students are nested within countries, multilevel regression models were used. Findings suggest that national-level gender equality is partially mediated by definitions favorable to breaking the law; a component of SSSL theory. However, other components of the social

learning process, such as differential association, differential reinforcement, and imitation, were not found to have mediating effects. Therefore, the findings only partially support SSSL theory that social learning variables mediate the effect of gender equality on IPV perpetration. Implications of the findings are discussed.

ACKNOWLEDGEMENTS

I would like to express my deepest appreciation to my committee members. Dr. April Zeoli, thank you for mentoring me. You have offered insightful feedback and have spent a great deal of time helping me throughout the duration of this dissertation. I am truly thankful for your encouragement and patience. I am also deeply indebted to Dr. Merry Morash. Thank you for taking the time to provide me with knowledgeable guidance. The completion of my dissertation would not have been possible without your support. I am also extremely grateful to Dr. Chris Melde. Thank you for your valuable guidance over the years and helpful contributions to my dissertation and my overall professional development. I would also like to thank Dr. Hyunkag Cho for serving on my dissertation committee.

I must also thank my friends, my colleagues, and my therapists. I am very lucky to have such a great support system to back me up. I also would like to extend my deepest gratitude to my parents and Cocoa. Mom and dad, thank you for your love, sacrifice, and patience throughout this long and arduous journey. Cocoa, thank you for keeping me company while I worked on my dissertation. Last but not least, I would like to thank God for giving me the strength during all the challenging moments.

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CHAPTER 1 INTRODUCTION

Statement of the Problem

Intimate partner violence[1] (IPV) is a public health issue that affects men and women worldwide. As defined by the World Health Organization, IPV is "any behavior within an intimate relationship that causes physical, psychological or sexual harm to those in the relationship" (World Health Organization, 2012, p. 1). The World Health Organization (2013) has documented that women experience more IPV victimization than men. Almost one-third of women in samples from 56 countries have experienced physical and/or sexual assault by an intimate male partner during their lifetimes. Another meta-analysis examined 141 studies from 81 countries and concluded that globally, 30% of women aged 15 and above experienced IPV during their lifetimes (Devries et al., 2013). Women of different socioeconomic statuses, sexual orientations, religions and races/ethnicities are affected by IPV (Bograd, 1999; Breiding, Black, & Ryan, 2008; Chavis & Hill, 2009; Heise, Ellsberg, & Gottmoeller, 2002).

Men are also victims of IPV. However, estimates of the prevalence of IPV against males globally are very limited in the literature. Data from the National Intimate Partner and Sexual Violence Survey in the United States showed that men were the targets of IPV by their female intimate partners (S. G. Smith et al., 2017). Specifically, one in three men (30.9%) have been victims of sexual violence, physical abuse, and/or stalking from an intimate partner in their lifetimes. Almost half of men (47.3%) have been targets of psychological aggressive behaviors from their intimate partners in their lifetimes. Additionally, the US National Violence Against Women Survey found that female-perpetrated violence accounted for 40% of all injuries that

[1] In the literature on IPV, the terms dating violence and intimate partner violence are used interchangeably. The term intimate partner violence is used in this paper because it is a more generic term.

resulted from IPV during a 12-month period (Tjaden & Thoennes, 2000). Williams, Ghandour, and Kub (2008) systematically reviewed 62 empirical studies of females' IPV perpetration in the United States published between 1996 and 2006. They found that for adolescents, college students, and adults, victimization by emotional violence was the most prevalent, followed by physical and sexual violence. Because different types of samples and definitions of IPV are used in the existing research, it is difficult to draw conclusions about whether men or women are more likely to perpetrate IPV. However, it is clear that both males and females perpetrate various forms of IPV.

Systematic reviews shed light on the overall patterns of IPV against both males and females. Capaldi, Knoble, Shortt, and Kim (2012) systematically studied 170 articles with adult samples and 58 studies with adolescent samples from the United States, Canada, United Kingdom, New Zealand, and Australia. They found that the peak of IPV perpetration was in late adolescence and young adulthood. Rubio-Garay, Lopez-Gonzalez, Carrasco, and Amor (2017) also conducted a systematic review of 113 studies of dating violence in adolescents and young people and found that verbal and emotional aggression were more prevalent than sexual and physical aggression. In addition, their findings suggested gender differences in the types of IPV perpetration. Their study revealed that women were especially likely to use psychological aggression against intimate partners. Men were more likely to perpetrate sexual violence whereas women were more likely to be victimized by sexual violence. In a similar pattern, men were more likely to use physical violence and women were more likely to suffer from severe physical violence. Therefore, it is clear that although IPV affects both women and men, at least in some samples, IPV affects women disproportionately.

Risk Factors for IPV Perpetration

Research has shown a number of risk factors for IPV perpetration. At the level of the individual, childhood exposure to violence and having deviant peers are the most significant risk factors for later violence perpetration (Jackson, 1999; Kaukinen, 2014).

The prevalence of violence against women perpetrated by an intimate male partner also varies by country (Fleming et al., 2015; García-Moreno, 2005). For example, IPV was more prevalent in South-East Asia (37.7%), the Eastern Mediterranean (37%), and, Africa (36.6%) than in the Americas (29.8%), the European region (25.4%), and the Western Pacific region (24.6%) (García-Moreno, 2005). The literature has provided insights into the type of contextual influences that may contribute to country-level variation in the prevalence of IPV (Jewkes, 2002). In societies that were characterized by higher levels of gender inequality, women were more likely to be abused by their male partners (Chan & Straus, 2008; J. Kim & Emery, 2003; Ozaki & Otis, 2017; Yick & Agbayani-Siewert, 2000; Yoshihama, 2005). However, men were more likely to experience IPV by their female partners in societies that were characterized by greater female emancipation (Archer, 2006; Levinson, 1989; Yllö, 1983). Therefore, consideration of gender equality at the national level in combination with individual level predictors may be helpful for understanding the perpetration of IPV against males and females across nations.

Despite a large body of research enhancing our understanding of IPV, there is still a lack of a comprehensive examination of the etiology of IPV. Researchers have called for a systematic, logical, contextual and comprehensive approach that acknowledges the influence of multilevel forces on IPV (Bell & Naugle, 2008; Chesworth, 2018; Shorey, Cornelius, & Bell, 2008). Within the field of criminology and criminal justice, SSSL theory was developed as a general theory of

crime. SSSL theory is a multilevel (structural-processual) integrated theory which links the structural/macro level to individual involvement in IPV perpetration through a social learning process (Akers, 2011). SSSL theory may provide the needed contextual and comprehensive approach that its proponents have called for. Therefore, the current study examines the applicability of SSSL theory to explaining IPV perpetration. The following section provides a brief introduction to SSSL theory.

Introduction to SSSL Theory

SSSL theory, as a general theory of crime and deviance, assumes that "social learning is the primary process linking social structure to individual behavior" (Akers, 2011, p. 322). SSSL theory builds on Social Learning Theory (SLT) (Akers, 1973), which proposes that all human behavior is learned and modified through the same social psychological mechanism. More specifically, deviant, criminal, and conforming behaviors are all learned through the same four mechanism: 1) differential association, 2) differential reinforcement, 3) imitation, and 4) definitions favorable towards breaking the law. The concept of differential association emphasizes the importance of the primary, secondary, and references groups with which individuals interact. Examples of the primary groups are peers and family. Secondary and reference groups, for example, include teachers, church members, neighbors, authority figures, and other adults in different social contexts. The social learning process begins with differential associations, because those groups provide the settings for social learning processes to operate. SSSL theory, an extension of SLT, includes social structure as an influence on learning, which in turn influences behavior.

> The social structural variables are indicators of the primary distal macro-level and meso-level causes of crime, while the social learning variables reflect the primary proximate

> causes of criminal behavior that mediate the relationships between social structure and crime rates. Some structural variables are not related to crime and do not explain the crime rate because they do not have a crime relevant effect on the social learning variables (Akers, 2011, p. 322).

Akers (2011) proposed that the social psychological process is influenced by cultural traditions, norms, social organization, and social control systems. Social structure provides the context where the social learning process occurs. Therefore, SSSL theory provides a contextual and multilevel approach to explaining crime.

Purpose and Contribution

SLT, as a general theory of deviant and non-deviant behaviors, has strong empirical support. It gained a substantial amount of support from studies on deviant behaviors (e.g. meta-analysis (Pratt et al., 2010); cyber deviance (Holt, Burruss, & Bossler, 2010), marijuana use (Akers & Lee, 1999), and alcohol use (Akers, La Greca, Cochran, & Sellers, 1989)). SLT has been tested against other theories of crime and still has empirical support (Akers & Cochran, 1985; Akers & Lee, 1999; Li, Holt, Bossler, & May, 2016; Matsueda, 1982; Matsueda & Heimer, 1987). SLT has also been tested in multiple cultures, including Korea (Hwang & Akers, 2003), Taiwan (Wang & Jensen, 2003), and China (Zhang & Messner, 1995). However, only a few studies have empirically tested the ability of SLT to explain variation in IPV perpetration (Boeringer, Shehan, & Akers, 1991; Cochran, Maskaly, Jones, & Sellers, 2017; Sellers, Cochran, & Branch, 2005; Sellers, Cochran, & Winfree Jr, 2003; Wareham, Boots, & Chavez, 2009; Zavala, 2017).

Compared to SLT, SSSL theory has only been tested as an explanation of a small number of problematic behaviors in a limited number of empirical studies (e.g. alcohol use (E. Kim,

Akers, & Yun, 2013), deviant drinking (Orcutt & Schwabe, 2012), and deviance (Tolle, 2017)). More research is needed to test the empirical validity of SSSL theory. Therefore, the research question posed here is *"Can SSSL theory explain the perpetration of IPV?"* To the best of my knowledge, no empirical study has tested the applicability of SSSL theory as an explanation of IPV perpetration.

The primary purpose of the present research, and one of the main contributions to the literature, is to address this gap by examining the applicability of SSSL theory, with a full model of the social learning process, to explaining the perpetration of three types of severe IPV, i.e. severe physical assault, severe psychological aggression, and severe sexual coercion. Only severe IPV is examined because a greater level of harm results from severe abuse (Straus & Mickey, 2012). A full model that is derived from SSSL theory includes all four social learning variables (i.e., differential association, differential reinforcement, imitation, and definitions favorable towards breaking the law) and all four contextual variables (cultural traditions, norms, social organization, and social control systems). One feature of social organization, gender equality, is measured directly, and other social organization indicators, cultural traditions, norms, and social control systems are taken into account by considering the variance due to the country where study participants live. The present research is designed to advance understanding of SSSL theory as an explanation of IPV perpetration by testing SSSL theory's theoretical scope as an explanation of IPV perpetration and assessing how the social structural concept, gender equality, and indicators of the social learning process explain IPV perpetration. By taking into account country-level effects, the research can examine the individual level association of social learning on IPV perpetration net of the effects of gender equality and other national-level differences.

This research also will examine the cross-cultural applicability of SSSL theory. Since SSSL theory was developed as a "general" theory of crime, national differences in social structure and culture should explain social learning, which in turn should explain IPV perpetration. Therefore, another contribution of this research is to focus on the cross-cultural contexts. Testing the theory with individuals in multiple countries makes it possible to assess social-structural factors across nations. Previous studies have explored the possibility that patriarchal social structure (an element of gender inequality) predicts IPV (Jewkes, 2002; Ozaki & Otis, 2017). However, no empirical study has examined the influence of patriarchal social structure or its manifestation in gender inequality on IPV as a result of the effects of gender inequality on social learning. Therefore, the current study will test for the mediation effect of the social learning process on the association between gender equality and IPV perpetration (see figure 1 for a conceptual model).

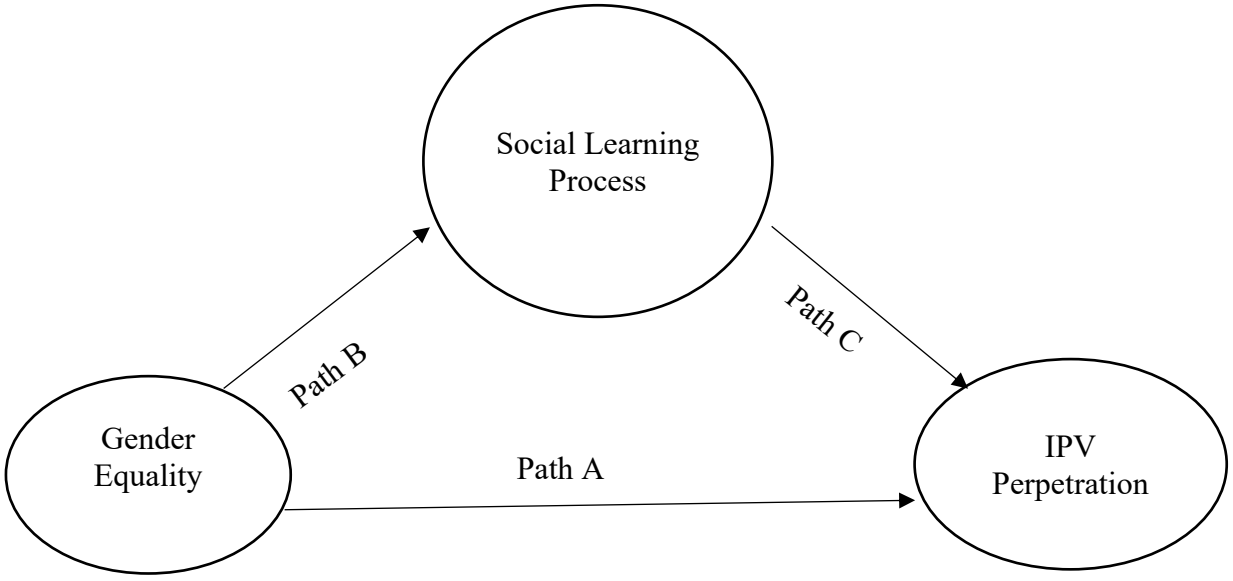

Figure 1. Conceptual model of the social learning process as a mediator of the connection between gender equality and intimate partner violence perpetration

Previous studies of SLT as an explanation of IPV have not taken a multilevel approach to explain IPV perpetration. Akers stated in his book, "Multilevel data collection and analyses are needed to test the model adequately, from aggregate, system-level data to individual-level data." (Akers, 2011, pp. 371). The test of a multilevel explanation of IPV is relevant to criticisms of the assumption in SSSL theory that structural influences such as gender equality have effects on behavior only through their influence on social learning (Morash, 1999).

To address the research questions, the current study will join data from two available datasets. One is from a cross-national study, the International Dating Violence Study (IDVS; Straus, 2011), that examined the applicability of the social learning process specified in SSSL theory to explaining IPV. The self-reported data were collected from more than 17,000 college students from 68 universities in 32 nations. Students responded to questions about their experiences of IPV and factors related to IPV. In the available data set, IPV perpetration was measured by the Revised Conflict Tactic Scales, which assesses the three dimensions of IPV -- severe physical assault, severe psychological aggression, and severe sexual assault. Social learning variables include positive parenting, association with deviant peers, pro-violence advise, imitation, pro-violence definitions, and beliefs about dominance of one person over the other in a relationship (hereafter referred to as domination beliefs). The other data are from the Global Gender Gap Index (GGGI; Hausmann & Tyson, 2006). These data provide multiple country-level indicators of gender equality that include economic participation and opportunity, educational attainment, health and survival, and political empowerment. Thus, they provide a multi-faceted indicator of gender equality in the country. This measure can fill gaps in the literature because Akers stated that "the macro-level structural variables should be measured not

only at the social area or community level but also at the societal level in cross-cultural studies" (Aker, 2011, p. 371).

The current study will use the most widely used scale in IPV research – the Revised Conflict Tactics Scale (CTS2; Straus, Hamby, BoneyMcCoy, & Sugarman, 1996). It is a more comprehensive instrument than the Conflict Tactic Scale (CTS; Straus, 1979). Both the CTS and the CTS2 have been important measurement tools in helping us understand the problem of IPV. However, past studies of IPV mainly focused on physical violence as indicated by the CTS (see Jackson (1999) for a review). The CTS only has 18 items measuring verbal aggression, minor violence, and severe violence. On the other hand, the CTS2 is a more comprehensive instrument, because it includes 39 items that include a greater variety of indicators of aggressive behaviors, specifically negotiation, psychological aggression, physical assault, sexual coercion, and injury.

CHAPTER 2 LITERATURE REVIEW

SSSL theory is built upon SLT (Akers, 2011), which proposes that all human behavior is learned and modified through the same social psychological mechanisms. SSSL theory was developed as a general theory of crime. Akers proposed that this social learning process is influenced by cultural traditions, norms, social organization, and social control systems. The theory should be able to explain IPV perpetration against men and women in different cultural settings. The following sections will provide an in-depth explanation of each of the concepts in SSSL theory and an assessment of its applicability to IPV.

Key Concepts in SSSL Theory

Social Learning Process Concepts. The social learning process begins with differential associations which provide the settings for association with deviant peers, prosocial peers, parents, and other adults in different social contexts. These associations provide "the individual's major sources of reinforcement, most salient behavioral models, and most effective definitions and other discriminative stimuli for committing and repeating behavior" (Akers, 2011, pp. 52-53). Specifically, the theory proposes that criminal behavior is learned through a dynamic social learning process reflected by four key concepts: 1) differential association, 2) differential reinforcement, 3) imitation, and 4) definitions favorable to breaking the law. The social learning process starts when a person differentially associates with others who commit and model criminal behavior, and who support violations of legal and social norms. These groups not only provide the social context and exposure to definitions which are favorable or unfavorable to committing criminal or deviant behaviors. They also act as observable behavioral models. In

addition, a person's associates provide reinforcement for criminal or conforming behaviors through rewards and punishments.

1) Differential association: This concept is borrowed from differential association theory (Sutherland, 1947). Sutherland defined differential association as the learning that takes place when people interact with others. Direct and indirect interaction through verbal and non-verbal communication most often happens in intimate personal groups, such as close friends, peers, and family members. Sutherland further identified four modalities of this association – frequency, duration, priority, and intensity. Frequency is how often a person interacts with a group. Duration has two dimensions: the length of the relationship and the absolute and relative amount of time spent together. Priority indicates that behaviors developed early in life may persist throughout life, for instance, engaging in delinquency in early childhood may increase the odds of developing deviant behavior later in life (Akers, 2011). Intensity, which indicates closeness, depends on the prestige and importance of the individual one has a relationship with. Overall, the relative frequency, duration, priority, and intensity of the association affect the probability of the reinforcement of a behavior and the influence of exposure to definitions and behavioral models. In the context of IPV perpetration, the theory predicts that the probability of IPV perpetration is greater when one associates more frequently with persons or groups that engage in IPV perpetration, hold definitions favorable to IPV perpetration, or provide differential reinforcement for IPV perpetration.

SSSL theory suggests that early in life, family is the primary group. Literature shows that having parental support and monitoring are protective against IPV perpetration (Foshee et al., 2011; Gorman-Smith, Tolan, Sheidow, & Henry, 2001). In a longitudinal study, African American and Latino adolescent boys who perpetrated IPV reported poorer functioning families,

which were characterized by a lack of support, involvement, communication, monitoring, positive awards, and effective discipline (Gorman-Smith et al., 2001).

SSSL theory also suggests that during adolescence, peer groups and school influences become more important. Previous studies, largely conducted with adolescent samples, identified peer contexts as the most significant risk factor in predicting IPV perpetration (Arriaga & Foshee, 2004; DeKeseredy & Kelly, 1995; Kinsfogel & Grych, 2004). A meta-analysis of 27 articles examining IPV perpetration by adolescents identified three main peer-related predictors: peers' IPV perpetrating behaviors, peers' aggressive behavior, and victimization by peers (Garthe, Sullivan, & McDaniel, 2017). The authors explained that an individual may imitate peers' behaviors within a romantic relationship and hence may experience positive reinforcement from peers. Therefore, associating with deviant peers may increase opportunities for imitation of IPV.

The social learning process through association with deviant peers may be related to a specific behavior or to more general aggression. In a sample of male and female adolescents in the United States, Foshee et al. (2011) found that having friends who perpetrate IPV only increased the odds of IPV perpetration but not the odds of other types of violence against peers. They also found that having friends who perpetrate peer violence increased the odds of using both violence types. This suggested that having friends who perpetrate IPV or peer violence are risk factors for IPV perpetration.

The influence from peers may even be more powerful than the influence from the family. Having guidance from male friends about the use of IPV, attachment to abusive male peers, and peer pressure are more predictive of IPV perpetration than exposure to family violence (DeKeseredy & Kelly, 1995). Similarly, a longitudinal study conducted as part of the Safe Dates

Study in the United States found that after controlling for inter-parental violence, study participants who had friends who were perpetrators or victims of IPV were more likely to become perpetrators or victims of IPV (Arriaga & Foshee, 2004). These empirical studies add to the evidence that associating with deviant peers has an important influence on IPV perpetration.

2) Differential reinforcement: This concept is also adopted from differential association theory (Sutherland, 1947). It refers to "the balance of anticipated or actual rewards and punishments that follow or are consequences of behavior" (Akers, 2011, pp. 66-67). A behavior can be increased through the presentation of a positive stimulus (positive reinforcement) or the removal of a negative stimulus (negative reinforcement). Examples of a positive stimulus include obtaining approval, money, food, and positive feelings. Examples of a negative stimulus are a legal or social sanction. Conversely, a behavior can be decreased through the presentation of a negative stimulus or a removal of a positive stimulus that is valued.

Reinforcement can vary in amount, frequency, and probability. A reward is more likely to reinforce a behavior when the reward for a person's behavior is large, more frequent, or more probable. The source of reinforcement does not necessarily come from one's primary social groups. It might also come from a person portrayed through media or people encountered in school or the criminal justice system. Usually, reinforcement provided by the primary groups has the greatest influence on a person's behavior. In addition, reinforcement can be social and non-social. Reinforcement does not only take place through communication with others, but also when tangible and intangible rewards are involved. Examples of tangible rewards are money and material possessions. Intangible rewards can be symbolic, e.g. increasing social status among peers. Non-social reinforcement can also take place when individuals experience unconditioned internal physiological feedback, such as a feeling of excitement associated with a behavior. But

whether or not this experience is interpreted by the individual as positive or negative is based on previous experience. In other words, this reinforcement process includes a consideration of punishments and rewards that have been received in the past, as well as present and future rewards and punishments.

When applied to IPV perpetration, the theory suggests that IPV perpetrators are likely to anticipate IPV perpetration as rewarding. Such perceived rewards could be gaining power over partners when the IPV perpetrators feel their social status is challenged. It could also be an actual change in behavior of the partner that the IPV perpetrators believe is rewarding. The IPV perpetrators may also receive endorsement and support from their peers. In contrast, people who view IPV perpetration as costly would be less likely to engage in such an act. For example, using IPV may be disapproved of by an individual's peers or parents. Additional costs could include legal or social sanctions.

3) Imitation: Imitation refers to behavior that is modeled by observing others. Imitation is more important in an initiation of behavior than in the persistence or cessation of a behavior. By providing opportunities for imitation, mass media –television, movies, and video games – also has an impact on individuals, and therefore it can be conceptualized as a reference group and a source of behavioral models. When applied to IPV perpetration, the probability of IPV perpetration is greater for those who observe IPV behavior of other people or in mass media.

Consistent with these ideas about imitation, several systematic reviews find that childhood exposure to IPV is a risk factor for IPV perpetration (Abramsky et al., 2011; Capaldi et al., 2012; Gil-González, Vives-Cases, Ruiz, Carrasco-Portiño, & Álvarez-Dardet, 2008; Gover, Jennings, Tomsich, Park, & Rennison, 2011; Kaukinen, 2014). Witnessing parental violence was found to be the strongest risk factor for physical IPV perpetrated by men in eight

low- and middle-income countries. It was a stronger predictor than attitudes towards violence against women and having inequitable gender attitudes (Fleming et al., 2015). Gil-González et al. (2008) reported on a systematic review of 10 cross-sectional and retrospective studies published between 1995 and 2004. They found a consistent association between a perpetrator's experiences of violence during childhood and IPV. Specifically, those studies revealed that both witnessing parental IPV as a child and experiencing child abuse are risk factors for IPV perpetration. A possible explanation is that children who have violent parents may not be exposed to non-violent ways of solving conflicts, effective communication, and negotiation (Foshee, Bauman, & Linder, 1999). Therefore, children who are exposed to inter-parental violence learn that using violence is appropriate.

However, this learning process may be specific to the type of violence. A particular type of IPV between parents was significantly associated with the same type of IPV used in a sample of undergraduate students (Black, Sussman, & Unger, 2010). To be specific, students' frequency of psychological IPV in the last 12 months was positively related to their parents' use of psychological IPV in the last 12 months, but not their parents' use of physical IPV perpetration. The same pattern was found for physical IPV.

In contrast, researchers have found that many people who grow up witnessing their fathers' physically assault their mothers or who have been abused by their parents do not physically assault their partners or children (Barnett, Miller-Perrin, & Perrin, 2005). A meta-analysis of 39 studies conducted by Stith et al. (2000) found a weak-to-moderate relationship between childhood exposure to violence and physical IPV. This could be due to the types of samples used. Stith et al. (2000) showed that the effect size for this relationship was stronger in clinical samples than in community samples. Mediators, such as aggressive conflict-response

style and acceptance of the use of IPV, may explain away this relationship for both middle school males and females (Foshee et al., 1999). Particularly, this relationship of childhood exposure to violence and to IPV with perpetration of IPV was mediated by the expectation of a positive outcome from the use of IPV and beliefs in conventional rules among male students (Foshee et al., 1999). Alternatively, there may be factors that moderate the relationship between exposure to family violence and perpetration of IPV. Children may be exposed to alternative, and perhaps more powerful, definitions of the situation that lead them away from engaging in IPV (DeKeseredy, 1997; R. E. Dobash & Dobash, 1979). These findings establish the need to include multiple indicators of the social learning process in a test of the SSSL theory as an explanation of IPV.

4) Definitions favorable and unfavorable and other discriminative stimuli for crime: Simply knowing how to commit crimes is not sufficient reason to break the law. According to SSSL theory, a person is more likely to commit crime due to an excess of definitions favorable to or neutralizing the criminal or deviant behaviors over the definitions unfavorable to the criminal or deviant behaviors. According to Akers (2011), definitions are the motives, drives, rationalizations, and attitudes that a person attaches to a certain behavior. Definitions can be general or specific. General definitions can be rationalizations and attitudes that are unfavorable to committing any deviant behaviors. Specific definitions can be the attitudes that are unfavorable to a specific act. An example of a specific definition is that a person may think it is morally wrong to steal but it is not against one's moral value system to smoke.

Definitions are developed through imitation and differential reinforcement. They are not direct motivators but act as internal discriminative stimuli that drive a person's willingness to engage in criminal or deviant behaviors. Definitions function as the cues signaling that certain

behavior is acceptable or unacceptable and is more likely to be rewarded or punished. Moreover, definitions favorable to criminal behavior are also neutralizing in nature. Akers (2011) linked "techniques of neutralization" with SSSL theory (Sykes & Matza, 1957). This theory of offending argued that these techniques can reduce or neutralize the feelings associated with the wrongfulness of crime. In other words, it is when someone realizes the criminal or deviant behaviors are wrong that they need to justify or excuse their participation in the behaviors under certain conditions. Neutralization techniques include five dimensions. First, deviants may deny responsibility for their deviant behaviors. They may blame the behavior on external influences, such as a high-crime neighborhood or bad parents. Second, deviants may deny any resulting injury by claiming that no one was hurt by their behaviors. Third, deviants may rationalize the act of harming the victim because they see their behaviors as a form of punishment or retaliation, e.g. assault on homosexuals. Fourth, deviants may condemn the condemners. They may blame/attack people who disapprove of their behaviors. For example, perpetrators may think that people who condemn their behaviors have done worse things. Fifth and last, deviants may also neutralize their behaviors by appealing to higher loyalties, such as their friends and gangs. For example, if deviants choose between the demands of the larger society or smaller reference groups that support violations of the law, they would choose to sacrifice the demands of the larger society. Overall, when applied to IPV perpetration, the theory predicts that the probability of IPV perpetration is greater among people who hold definitions favorable to or neutralizing IPV more than definitions unfavorable to IPV.

The literature suggests that holding attitudes justifying the use of IPV is strongly related to IPV perpetration. A meta-analysis synthesized 85 studies and found a large effect size for the association between attitudes condoning marital violence and men's use of physical IPV (Stith,

Smith, Penn, Ward, & Tritt, 2004). In contrast, some studies found that attitudes condoning the use of IPV were not an important predictor of IPV (Eriksson & Mazerolle, 2015; Nabors, Dietz, & Jasinski, 2006). For example, a longitudinal study found that acceptability of male-perpetrated violence and attitudes supportive of gender-role ideology were not strong predictors of the subsequent perpetration of physical IPV among college students (Nabors et al., 2006). These contradictory findings show the need for additional research in the predictors of IPV perpetration.

Social Structure and Social Location Concepts. As a multilevel (structural-processual) integrated theory which links the social structural/macro level to individual involvement in IPV perpetration through the social learning process, the SSSL model also includes four main elements of social structure, namely 1) differential social organization, 2) differential location in the social structure, 3) social disorganization and conflict, and 4) differential social location in primary, secondary, and reference groups. Note that Akers conceptualized all of these as social structure, although some of them are individual-level characteristics that indicate a person's social location within the social structure. These structural and social location effects are hypothesized to be predictive of the social learning process. That is, "the general culture and structure of society and the particular communities, groups, and other contexts of social interaction provide learning environments in which the norms define what is approved and disapproved, behavioral models are present, and the reactions of other people (for example, in applying social sanctions) and the existence of other stimuli attach different reinforcing or punishing consequences to individuals' behavior." (Akers, 2011, p. 321). In SSSL theory, the social learning process has a greater effect than social structural (and social location) variables on behavior. Akers argued that the "social learning process…mediate[s] a substantial portion of

the relationship between most of the structural variables" and behavior (Akers, 2011, p. 340). In statistical terms, the effect of social structure on behaviors should be "substantially" reduced when social learning variables are entered into the model. Akers did not define "substantial mediation" specifically. He only stated that "If substantial portions of the variations (by normally accepted standards in social science) are accounted for by the variables in the theory, then it is confirmed" (Akers, 2011, p. 341). The following section will explain the four main components of social structure identified by SSSL theory.

1) Differential social organization: This concept is defined as the known variations in cultural, social, and demographic characteristics of societies, groups, regions, communities, and institutions (Akers, 2011, p. 332). The cultural justification for IPV against women has been found in more patriarchal societies, such as Bangladesh, Cambodia, India, Mexico, Nigeria, Pakistan, Papua New Guinea, the United Republic of Tanzania, and Zimbabwe (Krug, Mercy, Dahlberg, & Zwi, 2002). In those traditional societies, men are seen as the owners of their wives and women are expected to be respectful to their husbands, stay home, and take care of children (Krug et al., 2002). If their wives failed to fulfill their roles, men feel entitled to use violence to punish their wives (Krug et al., 2002). Several studies in other cultures also showed that societies that value patriarchal cultural norms are more likely to have a high rate of IPV against women (Bui & Morash, 1999; Chan & Straus, 2008; J. Kim & Emery, 2003; Ozaki & Otis, 2017; M. D. Smith, 1990; Yick & Agbayani-Siewert, 2000; Yoshihama, 2005). Using the same dataset as my current study, Chan and Straus (2008) compared college students from Hong Kong and the United States and found that Hong Kong students were more likely to accept IPV. In addition, Ozaki and Otis (2017) also used the same dataset as my current study and compared male Asian students from traditional societies, for instance, China, Japan, and South Korea with European

students from less traditional societies, such as, Belgium, Germany, Netherlands, and Sweden, on the prevalence of the use of IPV against women. Asian students were more likely to endorse patriarchal cultural norms. They reported a higher level of violence approval and a belief in male dominance. Asian students were also more likely to use severe physical assault against their partners. In contrast, European students reported significantly higher perpetration of minor psychological aggression. However, no differences were found on minor physical assault, minor sexual coercion, and severe sexual coercion.

In SSSL theory, the cultural norms of societies influence IPV perpetration through the social learning variables – association, reinforcement, imitation, and definitions supportive of IPV. Men living in patriarchal societies where the domination of men over women is accepted are more likely to associate with people who use IPV; they are more likely to observe people in their social circles using IPV; they are more likely to anticipate a greater balance of rewards than costs from using IPV; and they are more likely to hold attitudes supportive of the use of IPV.

2) Differential location in the social structure: These are sociodemographic and socioeconomic variables. Race/ethnicity, class, gender, age, marital status, religion, occupation, and other elements of social differentiation that exist in a society indicate the relative position of individuals in the social structure. As explained by Akers (2011),

> At one level these are descriptive characteristics of individuals and may be measured as sources of variation in individual behavior. At the structural level, however, I conceptualize them as direct indicators of the differential location of groups or categories of individuals in the social structure. (p.333).

Akers also stated, “The gender structure of society produces crime-related differences in male and female socialization, associations, rewards, definitions, and models” (Akers, 2011:337).

When applied to IPV perpetration, in many countries males are more likely to perpetrate IPV than females (World Health Organization, 2013). The gender structure may be related to higher levels of males' use of IPV.

3) Social disorganization and conflict: These are theoretically defined structural variables, such as anomie, patriarchy, inequality, and class oppression (Akers, 2011, p. 333). These variables are derived primarily from other structural theories of crime, for example, anomie, social disorganization, and conflict theories. SSSL theory views social order, stability, and integration as influences on conforming behaviors whereas social disorder, instability, and mal-integration influence deviant and criminal behaviors. If a social system, such as a society, a community, or a family, is more organized and cohesive, the crime rate is lower. When applied to IPV perpetration, in a country characterized by conflict and change related to increased gender equality, men's and women's perpetration of IPV may increase.

Although they are not incorporated into SSSL theory, feminist perspectives are helpful for understanding the potential effect of gender equality on IPV perpetration. Feminist criminologists describe IPV against women as rooted in one partner's abuse of power and control over the other partner due to patriarchal social structure (R. E. Dobash & Dobash, 1979). Patriarchy has two components, patriarchal cultural norms (which were described above) and a social structure that rationalizes and encourages male dominance (M. D. Smith, 1990). In this social context, men have control over resources. In the public sphere, patriarchal social structure manifests itself in different dimensions, such as women's social status being inferior to men's, females having less access to the political system, a lower survival rate for female infants, a gender wage gap that disadvantages women, females having less physical mobility, less economic opportunities for women, and a culture that accepts the above arrangements (Connell,

2005). Several of the components of patriarchal social structure are relevant to gender equality. Therefore, patriarchal social structure is highly related to gender equality and to how people view the use of IPV against women.

When gender equality is studied as a predictor of IPV against women, findings are contradictory about the nature of the relationship. In a study of 16 countries, Archer (2006) found a linear relationship, with higher gender equality related to lower IPV. Other research has found that as gender equality increases, IPV against women increases (Cools & Kotsadam, 2017; Stark, 2009). Therefore, gender equality may create a backlash effect and may not have a protective role in IPV against women. Finally, research in the United States (Yllö, 1983, 1984) and South Africa (Jewkes, 2002) documented a curvilinear relationship in which IPV against women is higher in places with either the lowest or the highest gender equality. The explanation for this distribution is that when the level of gender equality is low, men feel the need to keep women in their place. When women's status is high, men feel threatened by the change in traditional sex roles.

The findings from research on the relationship between gender equality and IPV against male partners is more consistent than findings for women. The research shows that there is a linear and positive relationship (Archer, 2006; Levinson, 1989; Yllö, 1983). Societies that are characterized by greater female emancipation have higher levels of men's victimization by female partners. Additionally, the higher the level of gender equality, the smaller the sex differences in IPV perpetration (Archer, 2006).

4) Differential social location in primary, secondary, and reference groups: Examples of primary groups are peers and family. Secondary and reference groups, for example, teachers, church members, neighbors, and authority figures, constitute additional groups with whom

people may associate. These groups provide the intermediate or immediate social contexts and networks that allow differential social organization, differential social location, and social disorganization and conflict to have an effect on individuals and their social learning. Through interacting, participating, and identifying with these groups, the individual is exposed to the differential social organization, conflicts of the larger society, and the operation of social statuses and roles indicated by different social locations.

5) Concluding comments about SSSL theory and social structure and social location: In the literature, the prevalence of IPV varies across countries; for example, IPV against women is more prevalent in South-East Asia (37.7%), the Eastern Mediterranean (37%), and, Africa (36.6%) than in the Americas (29.8%), the European region (25.4%), and the Western Pacific region (24.6%) (García-Moreno, 2005). The perpetration of IPV against women is fostered by economic and socio-cultural factors, such as social norms that encourage male's use of authority and acceptance of violence against women, childhood exposure to violence, women's economic rights, gender inequality in wages, employment, and access to education (World Health Organization, 2013). Therefore, considering gender equality as a country-level structural factor may be helpful for understanding the tendency of individuals to perpetrate IPV.

Gender and SSSL Theory

Akers conceptualized the effect of gender as an individual indicator of a person's social location. He wrote, "[the] gender structure of society produces crime-related differences in male and female socialization, associations, rewards, definitions, and models" (Akers, 2011:337). Thus, SSSL theory suggested that gender equality is a social structural level variable that should be "substantially" mediated by social learning process. However, Akers did not recognize the possibility that gender does not always have its influence on crime and deviance primarily

though social learning. Morash (1999) suggested that gender differences are not produced solely through how boys and girls are taught and socialized, but also through systematic differences in power, opportunities, and resources within a country and a family. For example, some women are influenced to commit crime because of the constraints they experienced in their lives. Specifically, girls who are abused in their families may run away from home and then engage in prostitution in order to survive (Chesney-Lind, 1986). In these situations, girls and women do not learn that illegal behaviors are desirable and acceptable. Therefore, when applied to IPV, gender may not have an influence on the perpetration of crime and deviance principally through social learning.

Empirical studies testing SLT and SSSL theory shed some light on the gender effect. Findings about the mediation effect of the social learning process on the relationship between an individual's gender and behaviors have been mixed. A number of studies found that the effect of gender on behavior was substantially or even completely mediated by social learning process variables (Durkin, Wolfe, & Clark, 2005; Holt et al., 2010; Lee, Akers, & Borg, 2004; Morris & Higgins, 2010; Tolle, 2017; Whaley, Smith, & Hayes-Smith, 2011). In a test of a full model of the social learning process, Lee et al. (2004) examined the effect of gender on adolescents' alcohol and marijuana use. They showed that substantial amounts of the effects of gender and other demographic variables, such as class, age, family structure, and community size, were mediated by the social learning variables. Durkin et al. (2005) suggested that the effect of gender on binge drinking was fully mediated by differential peer association, differential reinforcement from their peers, and definitions (general, specific, and neutralized). Holt et al. (2010) also found that a full model of the social learning process completely mediated the effect of gender on cyber-deviance, suggesting that the social learning process was able to explain the gender gap for

cyber-deviance. Furthermore, in a test that included just one social learning variable, Whaley et al. (2011) also found strong mediation effects of differential peer association on the relationship between gender and adolescent substance use. Although these studies considered individuals' gender, they did not include structural measures of gender arrangements, including gender inequality (also see (Capece & Lanza-Kaduce, 2013; Hoffmann, 2003; Holland-Davis, 2006; Lanza-Kaduce, Capece, & Alden, 2006)).

In a test of SSSL theory in a sample of South Korean adolescents. E. Kim et al. (2013) did consider the effects of context. They tested the full model of the effect of the social learning process on alcohol use. Social structural variables included residential mobility, percentage of residents on public welfare, and type of school (liberal arts vs. industrial). Using hierarchical linear modeling, they found that the social learning variables substantially mediated the effect of social structure on alcohol use. This study provided support for the mediation effect of social learning variables on the relationship between contextual variables and behavior, and it supported the generalizability of the theory to a non-Western society.

The Applicability of SLT to IPV

To my knowledge, no empirical study has tested the applicability of SSSL theory, including the mediating role of social learning variables in the prediction of IPV from any structural variable, to understanding IPV. Therefore, in the following sections, I will synthesize the findings from existing empirical studies on SLT's application to explaining IPV perpetration. Particularly, the following paragraphs will illustrate existing gaps in the literature and will show how they inform the design of the current study.

Boeringer et al. (1991) were the first to test for the association of social learning variables (i.e. peer association, differential reinforcement, reinforcement balance, definitions, and

imitation) as an explanation of sexual coercion and aggression in dating relationships. A purposive sample of 262 male college students enrolled in a large state university in the Southeast of the United States participated in the study. The measure of peer associations assessed the extent to which respondents' friends engage in sexual coercion and aggression in dating relationships. The measure of differential reinforcement captured the respondents' anticipated pleasure and their friends anticipated approval or disapproval of the use of sexual coercion and aggression. The reinforcement balance measure captured the perpetrator's anticipated pleasure of using sexual coercion and aggression. The variable, definition, was operationalized as the extent to which respondents supported rape myths and the use of IPV. The variable, imitation, measured the extent to which respondents have been exposed to violent sexual depictions in magazines, videos, movies, and books. When the dependent variable was the likelihood of using force to gain sexual access and committing rape, reinforcement balance (the perceived rewards and costs) was the strongest predictor. Other social learning variables, such as differential reinforcement, definitions, and modeling were also significant predictors, but the coefficients were smaller. Differential association was not statistically significant. When examining the actual use of drugs or alcohol to obtain sex and the actual use of nonphysical coercion to obtain sex, differential association was the strongest predictor. Differential reinforcement and definitions were not significant predictors. Reinforcement balance and imitation were both statistically significant as predictors of actual use of coercion, but the coefficients were small, so they indicated weak relationships. Differential association, differential reinforcement, definitions, and imitation had no effect on the actual use of physical force to obtain sex. Reinforcement balance was the only significant predictor.

Sellers et al. (2003) studied the applicability of a full model of SLT to explain the perpetration of physical aggression, measured by the CTS, among college students in the US who are or were recently dating, engaged, and/or cohabitating. The students were randomly selected from a large university in Florida. Peer association was operationalized as the number of close friends who perpetrate IPV. Definitions were attitudes towards IPV and the law. Differential reinforcement was operationalized as the anticipated benefits and costs of IPV. Questions to measure imitation asked about whether the respondents have seen their admired role models using IPV, for example mother/stepmother, father/stepfather, siblings, other relatives, friends, actors on TV/movies, and others. The findings were that control variables, such as age, income, being White, and involvement in Greek life on campus explained 10% of the variation in physical aggression. When SLT variables were added to the model, 33% of the variation was explained, with peer association being the strongest predictor. Definitions and rewards were not significant predictors. The authors also tested for a gender effect. The effect of gender was both significant before and after inclusion of social learning variables. The coefficient was reduced from -1.054 to -0.667. In other words, social learning variables only partially mediated the effect of gender. The researchers further explored the gender effect by comparing separate models for males and females. The effect of peer association was still the strongest of other social learning variables, and its effect was stronger for males. Other than peer association, costs associated with the perpetration of IPV was negatively associated with physical aggression in both male and female models. In addition, imitation was found to be significant only in the model for females. Definitions and rewards were not statistically significant in either model. Therefore, men and women may learn differently through social learning mechanisms.

In the same study, Sellers et al. (2005) later included college students who were married in the analysis and compared them with the dating, engaged, and/or cohabitating couples. The findings showed that only two elements of SLT, i.e. differential association and differential reinforcement, were significant and consistent predictors of physical IPV across samples. Differential association was operationalized as the mother's, father's, and the student's best friend's attitudes toward IPV. Differential reinforcement was operationalized as the actual or anticipated reaction of four different kind of significant others (i.e., friends, parents, partners, and other significant persons) to the student's use of IPV. Definitions, measured as the attitudes toward law and the use of IPV, was not significant. Imitation was the number of models that were seen using physical IPV. Imitation was also not significantly related to physical IPV. Therefore, the study partially supported SLT.

Wareham et al. (2009) tested the full model of SLT in a study of the perpetration of physical and verbal violence measured with items in the CTS2. The sample was 204 males attending court-mandated domestic violence intervention programs in the United States. In the study, differential association was positively associated with IPV and it was the strongest predictor. It was defined as the extent to which respondents witnessed physical IPV committed by significant others (i.e. family, friends, neighbors, and others) and the respondents' perception that these significant others held attitudes and beliefs that are favorable to the use of violence in an intimate relationship. The SLT variables, differential reinforcement and imitation were negatively associated with IPV. Differential reinforcement was measured by three indicators. First, the respondents were asked to anticipate the reactions of their family and friends towards the respondents' use of physical IPV in an intimate relationship. Second, respondents were asked to report the extent to which the use of physical IPV would interrupt other activities in their daily

life, e.g. going to work, hanging out with friends. Third, respondents indicated the anticipated rewards and costs of the use of physical IPV. The items to measure imitation asked the respondents whether or not their behaviors were influenced by their significant others. Consistent with Sellers (2003; 2005), definitions were also not significantly related to either physical or verbal IPV. Definitions measured the extent to which the respondents hold definitions favorable to the use of physical IPV. Overall, the findings show mixed support for SLT.

Cochran et al. (2017) used structural equation modelling to test total, direct, indirect, and reciprocal/feedback effects of a full model of SLT on physical aggression as indicated by the CTS. The study used cross-sectional self-reported data from college students at a large urban university in Florida. Gender effects were not included in this study. Differential association was comprised of the degree to which significant others would approve the use of physical IPV and the frequency of the use of physical IPV by the significant others. Imitation was measured by the extent to which the respondents had seen significant others using physical IPV. Definitions was indicated by the respondents' attitudes toward the use of physical IPV. Differential reinforcement was operationalized by the actual or anticipated reactions of significant others to the respondents' use of physical IPV. It was also measured by the overall rewards and costs of the use of physical IPV. SLT was supported differently for current and previous intimate partners. For the use of IPV against the current partners, the effects of differential association and differential reinforcement were statistically significant, but definitions and imitation were not significant. Different findings were shown for the IPV against a past partner. Differential association was not significantly associated with previous intimate partners. In other words, only differential reinforcement, imitation, and definitions were significant in the models. As for the reciprocal effect, differential association, differential reinforcement, and imitation significantly

explain the variations in the relationship between IPV against previous intimate partners and IPV against current partners. Only definition was not significant. Therefore, SLT was supported in general.

The studies described above partially supported SLT. Most of them showed that definitions were not significantly related to IPV perpetration. This finding was inconsistent with a meta-analysis study which examined the empirical status of SLT. The meta-analysis study demonstrated that definitions were the most powerful predictors among other social learning variables (Pratt et al., 2010). This inconsistency could be due to several reasons. Perhaps norms against IPV are also very strong, so definitions, which were operationalized as the attitudes towards the use of IPV in the above studies, are less predictive. Therefore, the measurement of definitions in the above studies did not yield a significant association with IPV perpetration. The inconsistent findings about the social learning variables may also be affected by different operationalizations. For example, in Wareham et al. (2009), imitation was indicated by whether or not the behaviors were influenced by other people, and differential association was operationalized as whether the respondents observed others using IPV. This operationalization was different from that of Cochran et al. (2017), who measured imitation as whether the respondents observed others using IPV. Social desirability bias could also affect the findings because it was found that university students tend to disapprove of the use of violence (Sellers et al., 2005; Stets & Pirog-Good, 1987), and several of the studies had samples of university students.

The empirical studies above illustrated two existing gaps in the literature. First, only sexual and physical IPV were studied. No psychological IPV was measured in the empirical studies. Second, no empirical study tested SSSL theory as an explanation of IPV. In other words,

no study used multilevel modeling to test for effects at the structural and cultural levels. Therefore, an empirical study testing the applicability of SSSL theory to explaining IPV perpetration is needed.

The Current Study and Hypotheses

The overall intent of the study is to test the ability of SSSL theory to explain IPV perpetration across national contexts. This is the first study to test the applicability of SSSL theory as an explanation of IPV perpetration. In SSSL theory, IPV perpetration is more likely among people who associate with others who engage in IPV perpetration; who have witnessed others abuse an intimate partner; who hold definitions favorable to IPV perpetration; and who are likely to anticipate IPV perpetration as rewarding.

Since SSSL theory was developed to be a "general" theory of crime, the social learning process was expected to account for the country differences. However, the previous studies of IPV did not give enough attention to the applicability of SSSL theory to other nations and cultures. Therefore, the current study will examine the cross-cultural applicability of SSSL theory. As noted above, some scholars have identified patriarchal social structure to be a risk factor for IPV across cultural contexts. No empirical studies were designed to test for how fully social learning process variables mediate the relationship between patriarchal social structure and IPV. As predicted by SSSL theory, social learning variables should substantially mediate the effect of patriarchal social structure on IPV. Therefore, the current study will test for the mediation effect of social learning variables on the relationship between an indicator of patriarchy, gender equality, and IPV.

In order to test for the mediation effect, the current study will test multilevel models that predict IPV perpetration from both social learning variables and gender equality in the country.

Previous studies have not taken a multilevel approach to study IPV perpetration. Therefore, the current study can avoid model misspecification and allow us to understand how well the theory works in explaining IPV perpetration.

As noted in the introductory chapter, my main research question is *"Can SSSL theory explain the perpetration of IPV?"*. Based on the theoretical perspective and literature presented, the current study will test for mediation effects of social learning variables on the relationship between a) a country's level of gender equality and individual-level IPV perpetration (Path A in Figure 1); b) a country's level of gender equality and individual-level social learning processes (Path B); and c) individual-level social learning processes and IPV perpetration (Path C). The following hypotheses followed Baron and Kenny's literature on conducting mediation analysis (Baron & Kenny, 1986). For support for a mediation effect to be found, Path A, B, and C must exist.

1: Path A – The effects of gender equality on IPV perpetration.

Hypothesis 1. Individuals living in countries with higher levels of gender equality will be less likely to use IPV perpetration than individuals living in countries with lower levels of gender equality.

2. Path B – The effects of gender equality on the social learning process.

Hypothesis 2a (differential association). Individuals living in countries with higher levels of gender equality will be less likely to associate with others who perpetrate IPV.

Hypothesis 2b (differential reinforcement). Individuals living in countries with higher levels of gender equality will be less likely to anticipate a greater balance of rewards than costs from perpetrating IPV.

Hypothesis 2c (imitation). Individuals living in countries with higher levels of gender equality will be less likely to be exposed to IPV.

Hypothesis 2d (definition). Individuals living in countries with higher levels of gender equality will be less likely to hold attitudes supportive of the use of IPV.

3. Path C – To examine the effects of social learning processes on IPV perpetration.

Hypothesis 3a (differential association). Individuals who associate more with social groups who commit IPV, model IPV perpetration, and hold attitudes supportive of the use of IPV will be more likely to perpetrate IPV.

Hypothesis 3b (differential reinforcement). Individuals who anticipate a greater balance of rewards than costs from using IPV will be more likely to perpetrate IPV.

Hypothesis 3c (imitation). Individuals who are exposed to more IPV will be more likely to perpetrate IPV.

Hypothesis 3d (definition). Individuals who approve of the use of IPV will be more likely to perpetrate IPV.

4. The Mediation effect – The social learning variables as mediators of the connection of social structure with IPV perpetration.

Hypothesis 4. The direct effect of gender equality on IPV will be mediated by social learning processes. In other words, the effect of gender equality on IPV will be reduced when social learning variables are included in the statistical model.

CHAPTER 3 METHODS

Data

To test my hypotheses, I am joining two available datasets. One is the International Dating Violence Study (IDVS) which was a survey of 17,404 college students in 32 nations regarding their experiences with dating violence and risk factors for dating violence. It was conducted by an international consortium of researchers at 68 universities from 32 nations (Straus, 2011). The data collection was carried out between 2001 and 2006. The researchers translated the survey and followed IRB procedures at the participating universities. The sampling method was convenience sampling. Participants were college students attending psychology, sociology, criminology, and family studies classes at the universities. The questionnaires were administered during regular class periods. The students were told the purpose of the study. Their participation was entirely voluntary and responses were anonymous. Response rates ranged from 42% to 100%. The majority of response rates in classrooms ranged between 85% and 95%. The administration of questionnaires after one class resulted in the lowest response rate (42%). The original study did not provide any information on whether response rates differed by nation. Although the sample only includes college students and may not be representative of the universities or of youth in each nation, Straus (2009) found that the sample still provided valid nation-to-nation comparisons for theory testing about differences between nations.

The second dataset used is the Global Gender Gap Index (GGGI), created by the World Economic Forum (Hausmann & Tyson, 2006). Data from 2006 were matched with Straus' IDVS data, which was collected from 2001 to 2006. The GGGI has been used in a number of studies as an operationalization of the variable, gender equality (Fryer Jr & Levitt, 2010; Yeganeh & May,

2011). The GGGI contains 14 gender-related indicators. Thirteen of them are from publicly available data from the International Labor Organization, the United Nations Development Program, and the World Health Organization (see Table 1).

Students who had been in a heterosexual[2] relationship lasting more than one month are included in this research. A subsample of 13,586 students from the IDVS sample fulfilled these criteria. A total of 30 nations were selected for the study due to the availability of the GGGI score; the scores for Hong Kong and Taiwan were not available. Therefore, 12,910 students from 30 nations were included in the analyses.

[2] Although research on non-heterosexual couples is warranted, it is beyond the scope of this dissertation.

Table 1. The GGGI's four dimensions and the 14 corresponding indicators

GGGI dimensions	Indicators	Sources
(1) Economic participation and opportunity	(a) Ratio: female labor force participation over male value	International Labor Organization, Key Indicators of the labor Market, 2005
	(b) Wage equality between women and men for similar work	World Economic Forum, Executive Opinion Survey 2006
	(c) Ratio: female legislators, senior officials, and managers over male value	United Nations Development Program, Human Development Report 2005, 2003 or latest available data
	(d) Ratio: estimated female earned income over male value	International Labor Organization, *LABORSTA* online database, 2005 or latest year available
	(e) Ratio: female professional and technical workers over male value	International Labor Organization, *LABORSTA* online database, 2005 or latest year available
(2) Educational attainment	(a) Ratio: female literacy rate over male value	United Nations Development Program, Human Development Report 2005, Survey data between 2000 and 2004; World Bank, World Development Indicators 2005
	(b) Ratio: female net primary level enrolment over male value	United Nations Development Program, Human Development Report 2005, 2002/3
	(c) Ratio: female net secondary level enrolment over male value	United Nations Development Program, Human Development Report 2005, 2002/3
	(d) Ratio: female gross tertiary level enrolment over male value	United Nations Development Program, Human Development Report 2005, 2002/3
(3) Health and survival	(a) Ratio: female healthy life expectancy over male value	World Health Organization, World Health Statistics 2006 online database, 2005 or latest data available
	(b) Sex ratio at birth (converted to female-over-male ratio)	World Health Organization, World Health Statistics 2006 online database, 2005 or latest data available; Central Intelligence Agency World Factbook, September 2006
(4) Political empowerment	(a) Ratio: females with seats in parliament over male value	International Parliamentary Union, October 2006

Table 1 (cont'd)

	(b) Ratio: females at ministerial level over male value	United Nations Development Program, Human Development Report 2005, as of 1 January 2005
	(c) Ratio: number of years of a female head of state (last 50 years) over male value	Calculated by World Economic Forum, June 2006

Source: Hausmann & Tyson, 2006

Measurements

Dependent Variables. The revised Conflict Tactics Scale (CTS2) was used to collect information about the dependent variable, IPV perpetration. Students were asked to report whether they perpetrated each of 15 IPV behaviors in the past 12 months. Each item was recoded into 0= Never happened before or not in the past year; 1= Happened in the past year. Using a subsample of the IDVS dataset, Straus (2004a) examined the cross-cultural reliability and validity of physical assault, psychological aggression, and sexual coercion items in 17 nations. He found that for both male and female students, the Cronbach's alpha coefficients for the items reflecting different types of violence perpetration ranged from .74 to .93. The high reliability could be due to the tendency in avoiding reporting socially undesirable behaviors. In other words, students may report no IPV perpetration or less variety in the types of IPV perpetration because they do not want to report socially unacceptable behavior. Therefore, the effect of social desirability will be controlled for in the tests of the statistical models.

Two dependent variables that indicate serious IPV for a one-year period were used in the dissertation analyses. One is the annual variety score (Sweeten, 2012), which is a count of the number of different types of serious violence perpetration reported for a one year period. Variety scores have high concurrent validity because they are highly correlated with both frequency and seriousness of a behavior (Sweeten, 2012).

The 15 types of serious violence are listed in Table 2. For each one, study participants indicated yes or no, and a count of yes responses was calculated for each of three subtypes (i.e. severe physical assault, severe psychological aggression, and severe sexual assault) and for the total. Means, standard deviations, and ranges are presented in Table 2. Severe psychological

aggression was the most often reported type of perpetration, whereas severe sexual assault was the least often reported type.

The other dependent variable is a dichotomous variable. It indicates the perpetration of any form of serious violence in a year, with 0 = no perpetration reported and 1 = some perpetration reported.

Table 2. Descriptive statistics for the revised Conflict Tactics Scales

Question items		Mean	SD	Min	Max
Types of Severe Physical Assault	1. I used a knife or gun on my partner 2. I punched or hit my partner with something that could hurt 3. I choked my partner 4. I slammed my partner against a wall 5. I beat up my partner 6. I burned or scaled my partner on purpose 7. I kicked my partner	0.158	0.571	0	7
Types of Severe Psychological Aggression	1. I called my partner fat or ugly 2. I destroyed something belonged to my partner 3. I accused my partner of being a lousy lover 4. I threatened to hit or throw something at my partner	0.322	0.680	0	4
Types of Severe Sexual Assault	1. I used forced (like hitting, holding down, or using a weapon) to make my partner have oral or anal sex 2. I used forced (like hitting, holding down, or using a weapon) to make my partner have sex with me 3. I used threats to make my partner have oral or anal sex 4. I used threats to make my partner have sex	0.044	0.268	0	4
Annual Variety Score for IPV		0.520	1.190	0	15
Annual Presence of IPV		0.271	0.445	0	1

SD= Standard Deviation; Min= Minimum value; Max= Maximum value

Independent Variables

Gender Equality. Gender equality is the only structural-level independent variable in the current study. According to Social Structure and Social Learning theory, gender inequality is an indicator of Social Disorganization and Conflict, which is a structural variable. It is operationalized by the World Economic Forum's Global Gender Gap Index (GGGI; Hausmann & Tyson, 2006). Table 3 shows the number of participants in the IDVS from each nation and the GGGI in each country. The GGGI values are in rank order, from Sweden, with the highest gender equality level, to Iran, with the lowest.

Table 3. GGGI and the number of people who participated in the IDVS study for each country

Countries	GGGI	N	Female N	Female %
Sweden	0.8133	662	502	75.83
Germany	0.7524	469	329	70.15
New Zealand	0.7509	125	99	79.20
Great Britain	0.7364	397	342	86.15
Netherlands	0.725	370	327	88.38
Canada	0.7165	1096	806	73.54
Australia	0.7163	220	186	84.55
South Africa	0.7125	103	99	96.12
Belgium	0.7078	685	537	78.39
Lithuania	0.7077	350	238	68.00
United States	0.7042	3,949	2,716	69.92
Tanzania	0.7038	164	80	48.78
Switzerland	0.6997	302	235	77.81
Portugal	0.6922	353	241	68.27
Israel	0.6889	309	255	82.52
Romania	0.6797	236	214	90.58
Russia	0.677	393	237	60.31
Hungary	0.6698	153	104	67.97
Venezuela	0.6664	239	158	66.11
China	0.656	727	452	62.17
Singapore	0.655	208	145	69.71
Brazil	0.6543	239	165	69.04
Greece	0.654	218	169	77.52
Malta	0.6518	96	77	80.21
Mexico	0.6462	187	163	87.17
Japan	0.6447	128	66	51.56
South Korea	0.6157	183	110	60.11
Guatemala	0.6066	163	78	47.85
India	0.601	90	71	78.89
Iran	0.5802	96	74	77.08

GGGI= Global Gender Gap Index; N= Number; IDVS= International Dating Violence Study

The GGGI measures the gender-based gaps between males and females for four dimensions, namely Economic Participation and Opportunity, Educational Attainment, Health and Survival, and Political Empowerment. The index ranges from zero to one, with one being maximum gender equality. Indexes for Taiwan and Hong Kong are not available. Therefore, only 30 nations are included in all of the analyses. Table 1 shows these four GGGI dimensions and the corresponding 14 gender-related indicators. The GGGI was constructed in the following way. First, all data were in female to male ratios. For example, if a country has 20% women in parliament, the variable is assigned 0.25 (a ratio of 20 women:80 men). Second, the data were truncated between zero and one. For each variable, countries that had gender parity and countries where women surpassed men were assigned the same scores. Third, the sub-index scores were calculated by considering the standard deviation of each variable. Fourth, the final index is the average of the four sub-indexes.

The GGGI is a valid measure of gender equality for several reasons. Firstly, the GGGI measures gender-based gaps between males and females rather than the actual level of the available resources and opportunities. Therefore, the scale is not dependent on the levels of resources in each country. Secondly, the GGGI provides outcome variables rather than input variables. For example, culture is considered an input and is not included in the index. Instead, the indicator reflecting the gap between genders in professional and technical workers is included. Thirdly, a relative weight of each dimension is calculated by considering the standard deviation. A variable with a small standard deviation would be given a larger weight. For example, if a country has a large gender gap in primary education enrollment when most countries have a small gender gap, the country that has a larger gap for this indicator is penalized more. Fourthly, the GGGI focuses on whether the gender-based gaps between women and men

disadvantage women, and not on whether women have advantages over men. This is called a "one-sided" approach according to which the GGGI does not penalize or reward countries where women have surpassed men on particular indicators. For example, if a country has a higher tertiary education enrollment rate for girls than for boys, it will score the same as a country which has an equal tertiary education enrollment rate. Therefore, with the above methodological strengths, the GGGI seems to be a suitable measure of gender-based gaps in which women are less advantaged than men.

Social learning variables. The available data included measures of the four social learning variables in a part of the IDVS survey, the Personal Relationships Profile (Straus, Hamby, Boney-McCoy, & Sugarman, 1999). For all of these measures, response options were on a Likert scale with 1 = Strongly Disagree, 2 = Disagree; 3 = Agree; 4 = Strongly Agree.

See Table 4 for the operationalization of each social learning variable. The scores on each scale were computed by taking the average response for the items. Cronbach's alpha for each scale was calculated for the sample used in the present analyses.

Table 4. Independent variables from the current sample

Variable	Cronbach's Alpha	Scale and Items
Differential Association (2 scales)	0.679	Scale 1: Positive Parenting 1. My parents helped me when I had trouble understanding something 2. My parents did not help me to do my best in school (Reversed) 3. My parents did not care if I did things like shoplifting (Reversed) 4. My parents did not care if I got into trouble in school (Reversed) 5. My parents did not comfort me when I was upset (Reversed) 6. My parents helped me when I had problems
	0.734	Scale 2: Deviant Peers Association 1. I spend time with friends who have been in trouble with the law 2. I have friends who have committed crimes
Differential Reinforcement (1 scale)	0.667	Scale 1: Pro-violence advice 1. My father or mother told me to hit back if someone hit me or insulted me 2. When I was a kid, people (adults or kids) who were not part of my family told me to hit back if someone hit me or insulted me.
Imitation (1 scale)	0.663	Scale 1: Being exposed to violence 1. When I was a kid, I saw an adult in my family who was not my mother or father, push, shove, slap, or throw something at someone 2. When I was a kid, I saw my mother or father kick, punch, or beat up their partner 3. When I was a kid, I often saw kids who were not in my family get into fights and hit each other 4. When I was less than 12 years old, I was spanked or hit a lot by my mother or father 5. When I was a teenager, I was hit a lot by my mother or father. 6. When I was a kid, people (adults or kids) who were not part of my family pushed, shoved or slapped me, or threw things at me
Definitions (2 scales)	0.650	Scale 1: Pro-violence definition 1. It is sometimes necessary to discipline a child with a good, hard spanking 2. I can think of a situation when I would approve of a wife slapping a husband's face 3. I can think of a situation when I would approve of a husband slapping a wife's face 4. It is sometimes necessary for parents to slap a teen who talks back or is getting into trouble

Table 4 (cont'd)

		5. A woman who has been raped probably asked for it 6. If a wife refuses to have sex, there are times when it may be okay to make her do it 7. Once sex gets past a certain point, a man can't stop himself until he is satisfied 8. It's all right to break the law as long as you don't get hurt (Reversed)
	0.673	Scale 2: Domination beliefs 1. Sometimes I have to remind my partner of who's boss 2. I generally have the final say when my partner and I disagree 3. My partner needs to remember that I am in charge 4. I have a right to know everything my partner does 5. I insist on knowing where my partner is at all times 6. I have a right to be involved with anything my partner does
Self-control	0.622	1. There is nothing I can do to control my feelings when my partner hassles me (Reversed) 2. I don't think about how what I do will affect other people (Reversed) 3. I often do things that other people think are dangerous (Reversed) 4. I have trouble following the rules at work or in school (Reversed) 5. I often get hurt by things that I do (Reversed) 6. I have goals in life that I try to reach
Social Desirability	0.686	1. I sometimes try to get even rather than forgive and forget (Reversed) 2. There have been occasions when I took advantage of someone (Reversed) 3. There have been times when I was quite jealous of the good fortune of others (Reversed) 4. I sometimes feel resentful when I don't get my way (Reversed) 5. I am sometimes irritated by people who ask favors of me (Reversed) 6. There have been times when I have felt like rebelling against people in authority even though I knew they were right (Reversed) 7. I have never deliberately said something that hurt someone's feelings 8. No matter who I am talking to I am always a good listener 9. On a few occasions, I have given up doing something because I have thought too little of my ability (Reversed) 10. I have never been irked when people expressed ideas very different from my own 11. It is sometimes hard for me to go on with my work if I am not encouraged (Reversed) 12. I am always courteous, even to people who are disagreeable 13. I'm always willing to admit it when I make a mistake

Differential association. Differential association is operationalized by two scales called "positive parenting" and "having deviant peers." Positive parenting measures the degree to which parents were loving and supportive and did not support illegal behavior. The higher the level of positive parenting, the more likely the respondents have supportive parents, and thus they are spending time with adults who do not support criminality. Using data for 17 nations from the IDVS, Straus (2006) found that the scale has good cross-cultural reliability and validity.

The deviant peers scale in the IDVS is adopted from Ross and Straus (1997). It is comprised of two items that capture the amount of association with deviant peers. The higher the level, the more likely the respondents associate with peers who approve of illegal behavior.

Differential reinforcement. Differential reinforcement is operationalized as a measure of pro-violence advice. Pro-violence advice has two items that reflect the extent of receiving pro-violence advice from family and non-family members. The two items are adapted from the violent socialization measures in the PRP (Straus et al., 1999). The higher the score, the more likely the respondents feel that family and non-family members would positively reinforce them if they used violence.

Imitation. Imitation is operationalized as being exposed to violence. It is a six-item scale that measures the extent of witnessing and experiencing violence from family and non-family members. These six items are adapted from the violent socialization scale in the PRP (Straus et al., 1999). The higher the score, the more likely the respondents experienced and witnessed violence from family and non-family members (Cronbach's Alpha= 0.662).

Definitions. The construct, definitions favorable to breaking the law, is operationalized by two scales, pro-violence definitions and domination beliefs. Pro-violence definitions is an eight-item scale that measures supportive attitudes towards family violence, sexual aggression,

and breaking the law. The scale is adapted from the measures of violence approval and criminal belief in the PRP (Straus et al., 1999). The higher the score, the more likely the respondents find the use of family violence, sexual aggression, and breaking the law to be acceptable. Domination beliefs is a six-item scale which assesses the extent to which the respondents agree with the use of authority and restrictiveness in an interpersonal relationship (Hamby, 1996). The higher the level, the more likely the respondents are to believe in the exertion of authority and use of restrictiveness in a relationship.

Control Variables

Self-control. The first control variable is self-control. Apart from social learning theory, another theory that has been frequently applied to explain IPV perpetration is the General Theory of Crime (Gottfredson & Hirschi, 1990). The theory proposes that low self-control is a stable predictor and primary motivator of criminal behavior across the life course. A number of studies found that low self-control is related to the perpetration of IPV (Avakame, 1998; Finkel, DeWall, Slotter, Oaten, & Foshee, 2009; Gover et al., 2011; Gover, Kaukinen, & Fox, 2008). In the General Theory of Crime, the association of self-control with IPV perpetration may differ between males and females. One study found that female college students with low self-control were more likely to engage in physical violence against their intimate partners (Finkel et al., 2009). For psychological abuse perpetration, low self-control was a significant predictor only for males, but not females. Self-control was also found to have a mediating effect on the relationship between witnessing parental violence and perpetration of both physical and psychological abuse among males and females (Avakame, 1998). The above studies utilized samples from the United States, so our understanding of how low self-control influences IPV in other cultural settings is limited. As an exception, in Thailand, low self-control was related to both perpetration of

physical and psychological violence by married women (Kerley, Xu, & Sirisunyaluck, 2008). Another study compared college students from the United States and South Korea and found that low self-control was associated with psychological and physical abuse perpetration in both samples (Gover et al., 2011). Therefore, low self-control is a risk factor for IPV perpetration and may explain the connection between social learning variables and IPV.

Six items in the self-control scale of the PRP correspond to the components of self-control specified by Gottfredson and Hirschi (1990). A high score for this scale indicates high self-control. Rebellon, Straus, and Medeiros (2008) tested the reliability of the scale by using data from the college students in the 32 national settings that participated in the IDVS. The study employed confirmatory factor analyses and found the scale is reliable across 32 settings. Moreover, comparable to the self-control scales used in previous studies, scale items had an average factor loading of 0.50. The factor loadings in the most commonly used self-control scale ranged from 0.25 to 0.63 in US samples of adults (Grasmick, Tittle, Bursik, & Arneklev, 1993). The average factor loading in research conducted by Arneklev, Grasmick, and Bursik (1999) was 0.40 among US samples of adults and 0.42 among college students.

Social desirability. A second control variable is social desirability. Because the questions in the current study ask respondents to self-report personal experiences and attitudes, social desirability bias should be controlled for. Straus (2004b) calculated correlations between the social desirability scale, physical assault, sexual coercion, and injury. The findings showed that the higher the social desirability score, the lower the level of physical assault, sexual coercion, and injury. Although the effect of social desirability was present, the correlation coefficients were low (physical assault= -0.17; sexual coercion= -0.11; injury= -0.09). Straus (2004b) concluded that the CTS2 scales show low confounding with social desirability bias and

are suitable instruments for measuring IPV in different cultural settings. However, his study only included 17 nations, whereas there are 30 nations in the current study. In addition, other research suggests that individuals tend to report in a socially desirable way and underreport their violence (Gover et al., 2011; Próspero & Vohra-Gupta, 2007). A systematic review found that women are more likely to report IPV perpetration that men (Jackson, 1999). A possible reason for this pattern is that male-to-female IPV is less socially acceptable. Therefore, social desirability bias was controlled for in tests of models for the present dissertation.

The social desirability scale has 13 items, and was adapted from Reynolds (1982). It is a short form of the Crowne-Marlowe Social Desirability Scale (Crowne & Marlowe, 1960). It measures the tendency of respondents to minimize the disclosure of socially undesirable behavior. A high score indicates a strong tendency to avoid disclosing socially undesirable behavior.

Length and type of relationship. A third control variable is the length of the relationship. The relationship duration must be included as a control variable in the current research because the occurrence of IPV perpetration and the greater variety in the types of IPV perpetration may be affected by the length of the relationship. Self-reported relationship duration is a categorical variable with 5 categories (1= about one month; 2= about two months; 3= three to five months; 4= six to eleven months; 5= one year or more). A fourth control variable that may account for IPV is the nature of the relationship. Because most of the students were in a dating relationship, relationship status was recoded into a dichotomous variable as dating= 1 and other (engaged, married, and cohabitating) = 0.

Socio-demographic variables. Age, socioeconomic status (SES), relationship status, and relationship duration will also be controlled for. Race/ethnicity was not measured by the questionnaire, so it cannot be included as a control variable.

SES is a scale created by using the three variables that indicate father's education, mother's education, and family income. Each of the variables was transformed into to a z-score. The three z-scores were summed to create the SES measure. In the analyses, the composite SES measure was again transformed into another z-score. Therefore, the final z-score for the composite SES variable can account for the variation in socio-economic status within students' families.

Analytic Plan

Overview. In the current study, all analyses are carried out by using STATA 14.2 (StataCorp, 2015). The significance level is set at $p \leq 0.05$. Firstly, for all variables, I examined descriptive statistics, such as frequencies, percentages, means, standard deviations, minimum values, and maximum values. Secondly, I computed Pearson correlations to provide a preliminary assessment of the relationship between the variables. Thirdly, I calculated variance inflation factors (VIF) to see if there were multicollinearity problems before conducting the multivariate analyses. Finally, I conducted multivariate analyses to test the hypotheses.

Dependent Variables for Multivariate Regression Analyses. Whether or not IPV occurred in the prior year is a dichotomous variable, so when it is the dependent variable, logistic regression was used. The number of participants who reported yes was 3,505. They comprised 27.15 percent of the participants. The number of participants who reported no was 9,405. They were 72.85 percent of the participants. Table 5 shows that the annual variety score for IPV perpetration is a count variable that is highly skewed to the right and has a high number of zeros.

Therefore, negative binomial regression models were used when the variety score is the dependent variable (Osgood, 2000).

Table 5. Frequencies of the annual variety score for IPV perpetration

	Total Number	Female	Male
0	9,405	6,670	2,735
1	2,036	1,515	521
2	700	545	155
3	340	259	81
4	184	151	33
5	106	83	23
6	57	43	14
7	33	20	13
8	18	16	2
9	13	9	4
10	5	3	2
11	3	2	1
12	4	1	3
13	2	1	1
14	2	1	1
15	2	1	1

All continuous independent variables were grand mean-centered in the multivariate analyses. Centering changes the value and the meaning of the intercept, so that the intercept is the expected value of the dependent variable when the value of the independent variable equals its original mean. Centering does not, however, change the value or the meaning of the slope. In other words, the coefficients do not change.

Multilevel Models. The participants in IDVS are nested within 66 universities and 30 countries. The data do not indicate which participants attended the same university. Due to the nesting in countries, multilevel modeling was considered. Multilevel models are suitable because they can model data that have a nested structure (Bryk & Raudenbush, 1992). Because the participants are nested within countries, the assumption of independence of observations might be violated, and using OLS regression may lead to model misspecification where the OLS model may provide biased standard errors. To be specific, when independence of observations is

incorrectly assumed, the computation of the standard errors of the estimates are underestimated. Smaller standard errors result in a higher probability of detecting statistical significance, and thus a higher chance of a Type I error. Therefore, multilevel models are suitable because they allow for the examination of variations between and within countries. When the nesting of observations is taken into account in multilevel models, standard errors are typically larger. To be specific, the estimates are not based on an average across observations. The intercept and slope of the within-countries regression equations can differ between countries. Therefore, multilevel modeling allows both the intercept and slope to vary between countries to produce random effects estimates.

To confirm the need to test multilevel models instead of single-level regression models, unconditional models were tested. An unconditional model includes only the nesting variable, in this case the country. It tests whether the variation due to the country significantly improves the model fit over a model that only includes the intercept. To understand the proportion of the variation in IPV perpetration that is between counties, intraclass correlations (ICCs) were used. To compare the goodness-of-fit of multilevel models, Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) were used (Burnham & Anderson, 2004). The use of the AIC and BIC adds a penalty for adding additional variables to the models. Models with smaller AIC and BIC reflect a better fit to the data.

To test the effect of the country on IPV perpetration, when the dependent variable was the presence of IPV perpetration, the reported likelihood-ratio test comparing the multilevel with single-level logistic regression was significant (χ^2= 224.52, $p \leq 0.001$). The AIC and BIC were 14877.47 and 14892.4. ICC was 0.047 (SE= 0.023, 95% CI= 0.027, 0.081), which indicates an estimate that just 4.7% of the variation in whether IPV occurred is explained by the country.

When the dependent variable was the annual variety score, the reported likelihood-ratio test was also significant (χ^2= 222.45, $p \leq 0.001$). The AIC and BIC were 24155.81 and 24178.21. The ICC was 0.168, (SE= 0.049, 95% CI= 0.095, 1.08), which estimates that 16.8% of the variation in the variety score of violence perpetrated was due to the country. These findings indicated that when examining the annual presence of IPV perpetration or the annual variety score for IPV perpetration, using multilevel models are necessary instead of using standard, single-level regression models.

To test the effects of country on social learning process, six unconditional models were conducted for the six social learning dependent variables in the current study. When the dependent variable was the level of positive parenting (differential association), the reported likelihood-ratio tests was significant (χ^2= 772.20, $p \leq 0.001$). The AIC and BIC were 15204.54 and 15226.93. The ICC was 0.072 (SE= 0.018, 95% CI= 0.043, 0.116), which estimates that 7.2% of the variation in the positive parenting was due to the country. When the dependent variable was the amount of association with deviant peers (differential association), the reported likelihood-ratio tests comparing multilevel with single-level linear regression was significant (χ^2= 1663.04, $p \leq 0.001$). The AIC and BIC were 30703.06 and 30725.46. The ICC was 0.105 (SE= 0.025, 95% CI= 0.065, 0.165), which estimates that the country accounted for 10.5% of the variation in the association with deviant peers. When the dependent variable was pro-violence advice (differential reinforcement), the likelihood-ratio test was significant (χ^2= 1175.72, $p \leq 0.001$). The AIC and BIC were 29387.74 and 29410.14. The ICC was 0.084 (SE= 0.021, 95% CI= 0.051, 0.134), which indicates an estimate that 8.4% of the variation in the extent of receiving pro-violence advice is explained by the country. When the dependent variable was imitation, the likelihood-ration test was significant (χ^2= 765.77, $p \leq 0.001$). The AIC and BIC

were 18901.94 and 18924.34. The ICC was 0.095 (SE= 0.023, 95% CI= 0.058, 0.152), which estimates that 9.5% of the variation in the extent of being exposed to violence was due to the country. When the dependent variable was pro-violence definitions (definitions), the likelihood-ratio test was (χ^2= 2507.43, $p \leq 0.001$). The AIC and BIC were 11231.87 and 11254.27. The ICC was 0.237 (SE= .047, 95% CI= 0.156, 0.341), which estimates that the country accounted for 23.7% of the variation in the pro-violence definitions. When the dependent variable was domination beliefs (definition), the likelihood-ratio test was (χ^2=1654.45, $p \leq 0.001$). The AIC and BIC were 14731.64 and 14754.04. The ICC was 0.187 (SE= 0.040, 95% CI= 0.121, 0.279), which indicates an estimate that 18.7% of the variation in holding the domination beliefs is explained by the country. These findings indicated that when examining social learning variables as predictors of IPV, it is necessary to use multilevel models instead of using standard, single-level regression models.

Testing for Mediation. According to Baron and Kenny (1986), for there to be a mediation effect of a social learning process variable on the relationship between gender equality and IPV perpetration (hypothesis 4), the following three pre-conditions must be met: a) gender equality has an influence on IPV perpetration (Path A); b) gender equality has an influence on the social learning process variable (Path B); and c) the social learning process variable has an influence on IPV perpetration (Path C). These paths are considered in the mediation tests. See Figure 1 for a diagram of this conceptual mediation model.

Path A: hypothesis 1. To test the effect of gender equality on IPV perpetration, multilevel models were used. Control variables, including self-control, social desirability, SES, age, gender, relationship duration, and relationship status, were accounted for. Multilevel mixed effects negative binomial regression models were employed to examine the association of

country-level gender equality with the annual variety score for IPV perpetration. The incident rate ratios (IRRs) is reported in tables when the dependent variable is the annual variety score for IPV perpetration. Also, multilevel mixed effects logistic regression models were used to test models with the dichotomous dependent variable of annual presence of IPV perpetration. Odds ratios (ORs) are reported in tables when the dependent variable is whether the annual presence of the annual prevalence of IPV perpetration.

The equations that guided the analysis are presented next:

Path A model.

$$IPV_{ij} = (\gamma_{00} + \gamma_{01}GGGI_j + \gamma_{10}SelfControl_{ij} + \gamma_{20}SocialDesirability_{ij} + \gamma_{30}RelationshipDuration_{ij} + \gamma_{40}Dating_{ij} + \gamma_{50}Male_{ij} + \gamma_{60}SES_{ij} + \gamma_{70}Age_{ij}) + (\upsilon_{0j} + \varepsilon_{ij})$$

where *ij* is the i-th student in j country,

$\gamma_{01}GGGI$ is main effect of gender equality at country-level,

$\gamma_{10}SelfControl_{ij}$ + ... are control variables at individual-level,

the second parenthesis, $(\upsilon_{0j} + \varepsilon_{ij})$, represents the random effects in the model.

Path B: hypotheses 2a to 2d. To test for the effect of gender equality on social learning processes, multilevel models will also be used. The six social learning variables are normally distributed continuous variables. The skewness and kurtosis indicators are within normal range. Therefore, six multilevel mixed effects linear regression models will be tested, one for each social learning variable.

Path B model.

$$SL_{ij} = (\gamma_{00} + \gamma_{01}GGGI_j + \gamma_{10}SelfControl_{ij} + \gamma_{20}SocialDesirability_{ij} + \gamma_{30}RelationshipDuration_{ij} + \gamma_{40}Dating_{ij} + \gamma_{50}Male_{ij} + \gamma_{60}SES_{ij} + \gamma_{70}Age_{ij}) + (\upsilon_{0j} + \varepsilon_{ij})$$

where *ij* is the i-th student in j country,

$\gamma_{01}GGGI$ is main effect of gender equality at country-level,

$\gamma_{10}SelfControl_{ij}$ + ... are control variables at individual-level,

the second parenthesis, $(\upsilon_{0j} + \varepsilon_{ij})$, represents the random effects in the model.

Path C: hypotheses 3a to 3d. To test for the effect of social learning variables on IPV perpetration, a multilevel logistic regression model and ORs will be reported when the dependent variable is the annual presence of IPV perpetration. Also, when the dependent variable is the annual variety score for IPV perpetration, a multilevel negative binomial regression model will be tested, and and IRRs will be reported.

Path C model.

$$IPV_{ij} = (\gamma_{00} + \gamma_{10}PositiveParenting_{ij} + \gamma_{20}DeviantPeer_{ij} + \gamma_{30}ProviolenceAdvice_{ij} + \gamma_{40}Imitation_{ij} + \gamma_{50}ProviolenceApproval_{ij} + \gamma_{60}DominationBeliefs_{ij} + \gamma_{70}SelfControl_{ij} + \gamma_{80}SocialDesirability_{ij} + \gamma_{90}RelationshipDuration_{ij} + \gamma_{100}Dating_{ij} + \gamma_{110}Male_{ij} + \gamma_{120}SES_{ij} + \gamma_{130}Age_{ij}) + (\upsilon_{1j}PositiveParenting_{ij} + \gamma_{2j}DeviantPeer_{ij} + \gamma_{3j}ProviolenceAdvice_{ij} + \gamma_{4j}Imitation_{ij} + \gamma_{5j}ProviolenceApproval_{ij} + \gamma_{6j}DominationBeliefs_{ij} + \varepsilon_{ij})$$

where *ij* is the i-th student in j country,

the second parenthesis, $(\upsilon_{1j}PositiveParenting_{ij\ ...} + \varepsilon_{ij})$, represents the random effects in the model.

The Path C equation shows that six social learning variables are the main independent variables. Other independent variables are control variables.

If the above three pre-conditions for considering mediation effects were met, I conducted analysis to test for the mediation effects of social learning process variables. When the conditions were met, I tested three multilevel logistic regression models in which the dependent

variable was the annual presence of IPV perpetration. Also, I tested three multilevel negative binomial regression models in which the annual variety score for IPV perpetration was the dependent variable. Firstly, included control variables in the first models for both dependent variables. Secondly, I added gender equality in model for both dependent variables. Lastly, I included the social learning variables that had a statistically significant effect in both Path B and Path C. Following these steps allowed tests for the mediation effects of social learning processes on the relationship between gender equality and IPV perpetration. Statistically, to conclude that there is mediation, the coefficient of gender equality should be reduced in magnitude or the relationship should no longer be significant in the final models that include the social learning variables.

CHAPTER 4 RESULTS

Sample Characteristics

In the current study, 12,910 students from 30 nations were included in the analyses. Table 6 displays the sample's demographic characteristics. More than 70% of respondents were female, because the questionnaire was usually administered in psychology, sociology, and criminology classes, where female students predominate (Straus, 2004b). More than 60% of the students were in relationships that had lasted for one year or more. Nearly 80% of the students were dating at the time they responded to the survey, 4.83% were cohabitating, 8.54% were engaged, and 8.2% were married. Annual family income ranged from zero to sixty million US dollars with a median of 44,200 US dollars.

Table 6. Demographic characteristics of 12,910 students from the IDVS

	N	**%**
Sex		
Male	3,590	27.81
Female	9,320	72.19
Relationship Length		
About 2 months	1,652	12.79
3 to 5 months	1,722	13.34
6 to 11 months	1,650	12.78
1 year or more	7,886	61.08
Relationship Types		
Dating	10,126	78.44
Cohabitating	623	4.83
Engaged	1,102	8.54
Married	1,059	8.20
	Mean (SD)	**Min – Max**
Age	23.11 (6.32)	18 – 55
	Median	**Min – Max**
Family Income	44,200	0 – 60,000,000

SD= Standard Deviation; Min= Minimum value; Max= Maximum value; N= Number

Descriptive Statistics

Descriptive statistics for each social learning variable are presented in Table 7. The skewness measures the extent to which a distribution of values deviates from symmetry around the mean. A value of zero means the distribution is symmetric, whereas a positive skewness indicates a greater number of smaller values, and a negative value indicates a greater number of larger values. The values that indicate skewness in Table 7 are close to zero (from -0.624 to 0.799), which show that the social learning variables are distributed within acceptable ranges.

Students, on average, agreed that they received positive parenting. They tended to disagree that they associated with deviant peers, and they reported a tendency to receiving low to moderate levels of pro-violence advice (differential reinforcement). They reported that they were seldom exposed to violent situations (imitation). Furthermore, they hold low to moderate levels of pro-violence definitions and beliefs about domination in a relationship. In general, their level of social desirability bias and self-control were moderate.

Table 7. Descriptive statistics for each social learning variables

Variables	Mean	SD	Min	Max	Skewness	Kurtosis
Positive Parenting	3.040	0.449	1	4	-0.624	3.283
Deviant Peer Association	2.101	0.847	1	4	0.286	2.177
Pro-violence Advice	1.965	0.790	1	4	0.445	2.400
Imitation	1.732	0.518	1	4	0.799	3.562
Pro-violence Definitions	1.638	0.412	0.875	3.375	0.240	2.717
Domination Beliefs	2.078	0.456	1	4	0.284	3.337

SD= Standard Deviation; Min= Minimum value; Max= Maximum value

Bivariate Correlations

Table 8 shows the correlations between the two IPV dependent variables (the annual variety score for IPV perpetration and the annual presence of IPV perpetration), the GGGI index, and 13 independent variables. Bivariate correlation analyses were conducted to explore the strength and magnitude of the relationships between variables. All independent variables, except SES, are significantly correlated with both the variety score and the presence of IPV perpetration. When the dependent variable was the annual presence of IPV perpetration, domination beliefs (definition) was the social learning variable with the largest correlation (r= 0.222), followed by self-control (r= -0.195) and social desirability (r= -0.187). When the dependent variable was the annual variety score for IPV perpetration, domination beliefs (definition) was the variable with the largest correlation (r= 0.234), followed by self-control (r= -0.214) and being exposed to violence (imitation) (r= 0.182).

Table 8. Correlations between two IPV dependent variables, GGGI, and other independent variables

	Presence of IPV	Variety Score for IPV	GGGI
Presence of IPV	--		
Variety Score for IPV	0.719***	--	
GGGI	-0.112***	-0.092***	--
Positive Parenting	-0.105***	-0.113***	0.118***
Deviant Peer	0.057***	0.078***	0.115***
Pro-violence Advice	0.111***	0.124***	-0.105***
Imitation	0.164***	0.182***	-0.106***
Pro-violence Definitions	0.168***	0.181***	-0.275***
Domination Beliefs	0.222***	0.240***	-0.204***
Self-control	-0.195***	-0.214***	0.241***
Social Desirability	-0.187***	-0.175***	-0.006
SES	-0.008	0.000	-0.026**
Age	-0.028**	-0.025**	0.165***
Relationship Duration	0.078***	0.097***	0.113***
Relationship Status	-0.024**	-0.032***	-0.184***
Male	-0.033***	-0.047***	-0.063***

$p \leq .05$*, $p \leq .01$**, $p \leq .001$***

IPV= Intimate Partner Violence; GGGI= Global Gender Gap Index; SES= Socio-economic Status

The Relationship between Gender Equality and Perpetration of IPV

The literature presented in Chapter 2 showed mixed findings about the relationship between gender equality and perpetration of IPV. Figure 2 shows a linear and negative relationship between gender equality and the annual variety score for IPV perpetration. The higher the level of gender equality, the lower the variety score for IPV perpetration. Regardless of the GGGI value, females report using a greater variety of IPV tactics than do males, but the difference narrows as gender equality increases.

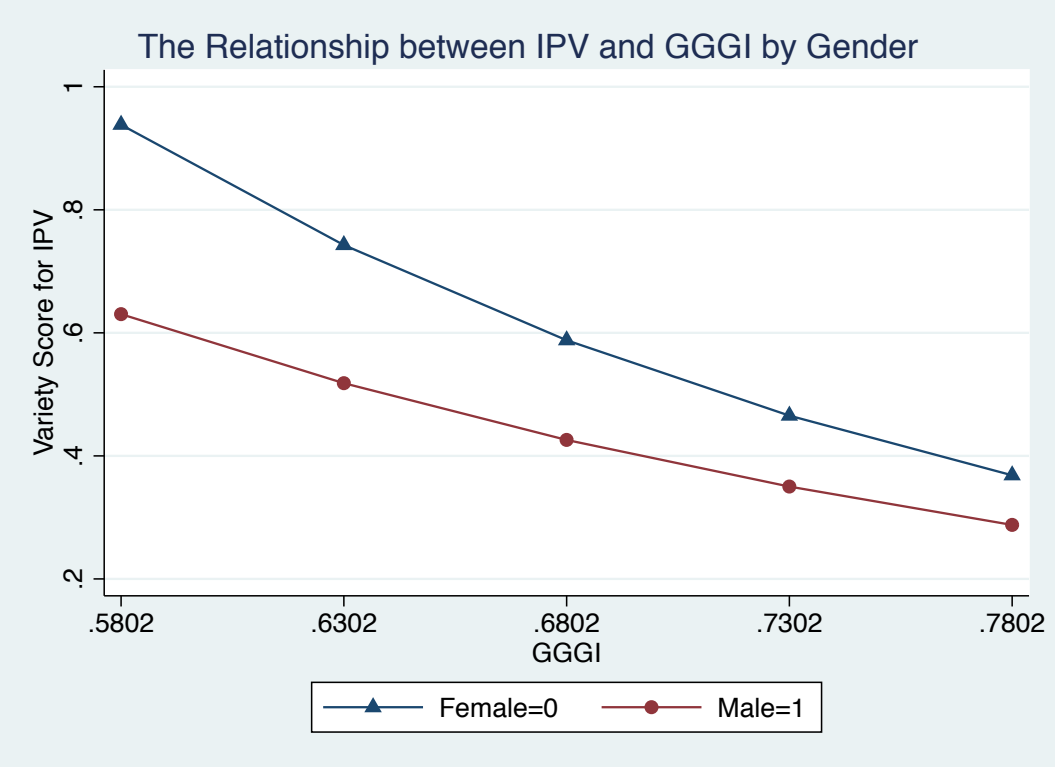

Figure 2. The relationship between gender equality and annual variety score for intimate partner violence perpetration

Multivariate Analyses

Before conducting multivariate analyses, the VIFs were checked. The VIFs are low (VIFs < 1.78), indicating that multicollinearity is not a problem among independent variables (see Table 9).

Table 9. Variance Inflation Factors

	Annual Presence of IPV	Annual Variety Score for IPV
GGGI	1.25	1.25
Positive Parenting	1.30	1.30
Deviant Peer	1.22	1.22
Pro-violence Advice	1.31	1.31
Imitation	1.47	1.47
Pro-violence Definitions	1.47	1.47
Domination Beliefs	1.32	1.32
Self-control	1.78	1.78
Social Desirability	1.36	1.36
SES	1.05	1.05
Age	1.18	1.18
Relationship Duration	1.12	1.12
Relationship Status	1.23	1.23
Male	1.13	1.13

IPV= Intimate Partner Violence; GGGI= Global Gender Gap Index; SES= Socio-economic Status

The main purpose of the current study is to examine whether social learning processes mediate the relationship between gender equality and IPV perpetration (hypothesis 4). As noted above, for there to be a mediation effect of social learning processes on the relationship between gender equality and IPV perpetration, according to the Baron and Kenny (1986) approach, three pre-conditions must exist (hypotheses 1 to 3). The results of tests to determine whether each of the three preconditions is met are presented next.

Path A: hypothesis 1. Path A is the association of gender equality with IPV perpetration after accounting for control variables (see Tables 10 and 11). In Table 10, the dependent variable is the annual presence of IPV perpetration. The main independent variable, gender equality, is statistically significantly associated with the annual presence of IPV (OR= 0.005, $p \leq 0.001$). A one unit increase in gender equality is associated with a 99.5% reduction in the annual presence of IPV perpetration. The findings suggest that gender equality is negatively associated with the risk that individuals will commit IPV. Because the GGGI is a continuous variable ranging from

zero to one, a one unit increase in gender equality compares countries with the lowest possible GGGI to those with the highest GGGI.

In Table 11, the dependent variable is the annual variety score for IPV tactics that an individual uses. As indicated by the statistics, as the GGGI increases, the annual variety score for IPV tactics that an individual uses decreases (IRR= 0.012, $p \leq 0.001$). A one unit increase in gender equality corresponds to an 88% reduction in the annual IPV perpetration variety score. Gender equality is negatively associated with the number of different tactics that an individual uses. The findings from Tables 10 and 11 support hypothesis 1 and fulfills one of the pre-conditions for mediation analysis. They show that students living in countries with a higher level of gender equality are less likely to perpetrate IPV.

The overall patterns of Tables 10 and 11 show that lower gender equality, lower self-control, lower social desirability bias, longer length of relationship, being a female, and younger age are statistically significantly related to increased presence and variety score for IPV perpetration. In terms of relationship status, being engaged, being married, and cohabitating are more likely than being in a dating relationship to be associated with IPV perpetration. SES is not statistically significantly related to IPV perpetration.

In Table 10, the model statistics show that the AIC and BIC were 13337.80 and 13434.27. They were smaller than the values for the unconditional model. In Table 11, the model statistics were an AIC of 22186.48 and a BIC of 22290.36. They were also smaller than these values for the unconditional model. Therefore, the findings show that the model fit improved when independent variables were included to the models.

Table 10. Path A: The association of gender equality with the annual presence of IPV perpetration

		Coef.	SE	OR
Gender Equality	GGGI	-5.363***	1.451	0.005
Control Variables	Self-control	-0.778***	0.060	0.459
	Social Desirability	-1.032***	0.071	0.356
Relationship Variables	Relationship Duration			
	About 2 months	-0.0165	0.134	0.984
	3 to 5 months	0.220	0.121	1.245
	6 to 11 months	0.383***	0.121	1.467
	1 year or more	0.796***	0.109	2.216
	Dating	-0.172**	0.057	0.842
Demographics	Male	-0.386***	0.050	0.680
	SES	-0.046	0.023	0.955
	Age	-0.009*	0.004	0.991
	Constant	-1.467***	0.137	0.231
Model Fit	Log Likelihood	-6655.902		
	Chi-square	101.64***		
	AIC	13337.80		
	BIC	13434.27		
	ICC	0.035	0.011	

$p \leq .05$*, $p \leq .01$**, $p \leq .001$***

Coef.= Coefficient; SE= Standard Error; OR= Odds Ratio; IPV= Intimate Partner Violence; GGGI= Global Gender Gap Index; SES= Socio-economic Status; AIC= Akaike Information Criterion; BIC= Bayesian information criterion; ICC= Intraclass Correlation

Table 11. Path A: The association of gender equality with the annual variety score for IPV perpetration

		Coef.	SE	IRR
Gender Equality	GGGI	-4.454***	1.367	0.012
Control Variables	Self-control	-0.841***	0.052	0.431
	Social Desirability	-0.823***	0.062	0.439
Relationship Variables	Relationship Duration			
	About 2 months	-0.120	0.116	0.887
	3 to 5 months	0.054	0.104	1.056
	6 to 11 months	0.115	0.104	1.122
	1 year or more	0.552***	0.093	1.737
	Dating	-0.174***	0.050	0.840
Demographics	Male	-0.312***	0.044	0.732
	SES	-0.035	0.021	0.966
	Age	-0.009*	0.004	0.991
	Constant	-1.080***	0.120	0.340
Model Fit	Log Likelihood	-11079.24		
	Chi-square	138.41***		
	AIC	22186.48		
	BIC	22290.36		

$p \leq .05$*, $p \leq .01$**, $p \leq .001$***
Coef.= Coefficient; SE= Standard Error; IRR= Incidence Rate Ratio; IPV= Intimate Partner Violence; GGGI= Global Gender Gap Index; SES= Socio-economic Status; AIC= Akaike Information Criterion; BIC= Bayesian information criterion; ICC= Intraclass Correlation

Path B: hypotheses 2a to 2d. The estimated effects of gender equality on social learning variables are presented in Tables 12 through 17.

The association of gender equality with differential association. In Table 12 the effect of gender equality on positive parenting (differential association) is non-significant ($p = 0.161$). Thus hypothesis 2a is not supported.

Table 12. Path B: The association of gender equality with positive parenting (differential association)

		Coef.	SE
Gender Equality	GGGI	0.560	0.399
Control Variables	Self-control	0.319***	0.010
	Social Desirability	0.089***	0.012
Relationship Variables	Relationship Duration		
	About 2 months	0.014	0.021
	3 to 5 months	0.012	0.019
	6 to 11 months	0.019	0.019
	1 year or more	0.011	0.017
	Dating	0.054***	0.010
Demographics	Male	-0.034***	0.008
	SES	0.064***	0.004
	Age	-0.008***	0.0007
	Constant	3.010***	0.028
Model Fit	Log Likelihood	-6323.563	
	Chi-square	481.64***	
	AIC	12675.13	
	BIC	12779.01	
	ICC	0.061	0.016

$p \leq .05$*, $p \leq .01$**, $p \leq .001$***
Coef.= Coefficient; SE= Standard Error; IPV= Intimate Partner Violence; GGGI= Global Gender Gap Index; SES= Socio-economic Status; AIC= Akaike Information Criterion; BIC= Bayesian information criterion; ICC= Intraclass Correlation

In Table 13, the estimated effect of gender equality on deviant peer association (differential association) is positive and significant (γ= 3.435, $p \leq 0.001$). Students living in countries with higher gender equality are more likely to associate with deviant peers. However, hypothesis 2a is not supported because it was hypothesized that students living in countries with higher levels of gender equality will be less likely to associate with deviant peers.

Table 13. Path B: The association of gender equality with deviant peer association (differential association)

		Coef.	SE
Gender Equality	GGGI	3.435***	0.852
Control Variables	Self-control	-0.480***	0.019
	Social Desirability	-0.253***	0.021
Relationship Variables	Relationship Duration		
	About 2 months	-0.014	0.038
	3 to 5 months	-0.003	0.034
	6 to 11 months	0.045	0.035
	1 year or more	-0.008	0.031
	Dating	0.067***	0.018
Demographics	Male	0.271***	0.015
	SES	-0.003	0.008
	Age	-0.003**	0.001
	Constant	1.858***	0.055
Model Fit	Log Likelihood	-13735.06	
	Chi-square	1407.65***	
	AIC	27498.12	
	BIC	27602	
	ICC	0.083	0.021

$p \leq .05$*, $p \leq .01$**, $p \leq .001$***
Coef.= Coefficient; SE= Standard Error; IPV= Intimate Partner Violence; GGGI= Global Gender Gap Index; SES= Socio-economic Status; AIC= Akaike Information Criterion; BIC= Bayesian information criterion; ICC= Intraclass Correlation

The association of gender equality with differential reinforcement. In Table 14, the estimated effect of gender equality on pro-violence advice (differential reinforcement) is not significant (p= 0.517), and therefore hypothesis 2b is not supported.

Table 14. Path B: The association of gender equality with pro-violence advice (differential reinforcement)

		Coef.	SE
Gender Equality	GGGI	-0.564	0.870
Control Variables	Self-control	-0.311***	0.018
	Social Desirability	-0.277***	0.020
Relationship Variables	Relationship Duration		
	About 2 months	0.028	0.036
	3 to 5 months	0.033	0.033
	6 to 11 months	0.080*	0.034
	1 year or more	0.048	0.030
	Dating	-0.054**	0.018
Demographics	Male	0.305***	0.015
	SES	-0.100***	0.007
	Age	0.003*	0.001
	Constant	1.770	
Model Fit	Log Likelihood	-13274.986	
	Chi-square	995.04***	
	AIC	26577.97	
	BIC	26681.85	
	ICC	0.093	0.023

$p \leq .05$*, $p \leq .01$**, $p \leq .001$***
Coef.= Coefficient; SE= Standard Error; IPV= Intimate Partner Violence; GGGI= Global Gender Gap Index; SES= Socio-economic Status; AIC= Akaike Information Criterion; BIC= Bayesian information criterion; ICC= Intraclass Correlation

The association of gender equality with imitation. In Table 15, the estimated effect of gender equality on being exposed to violence (imitation) is not statistically significant (p= 0.797), so hypothesis 2c is not supported.

Table 15. Path B: The association of gender equality with imitation

		Coef.	SE
Gender Equality	GGGI	-0.147	0.572
Control Variables	Self-control	-0.329***	0.012
	Social Desirability	-0.188***	0.013
Relationship Variables	Relationship Duration		
	About 2 months	0.007	0.024
	3 to 5 months	0.006	0.022
	6 to 11 months	0.009	0.022
	1 year or more	-0.002	0.019
	Dating	-0.038***	0.012
Demographics	Male	0.135***	0.036
	SES	-0.064***	0.005
	Age	0.006***	0.0008
	Constant	1.718***	0.036
Model Fit	Log Likelihood	-7963.242	
	Chi-square	602.44***	
	AIC	15954.48	
	BIC	16058.37	
	ICC	0.095	0.024

$p \leq .05$*, $p \leq .01$**, $p \leq .001$***
Coef.= Coefficient; SE= Standard Error; IPV= Intimate Partner Violence; GGGI= Global Gender Gap Index; SES= Socio-economic Status; AIC= Akaike Information Criterion; BIC= Bayesian information criterion; ICC= Intraclass Correlation

The association of gender equality with definitions. In Table 16, the effect of gender equality on pro-violence definitions (definition) is negative and significant (γ= -1.763, p= 0.001). Consistent with hypothesis 2d, students living in countries with higher gender equality are less likely to approve of the use of violence.

In Table 17, the effect of gender equality on domination beliefs (definition) is significant and negative (γ= -1.560, p= 0.008). Providing support for Hypothesis 2d, students living in countries with higher gender equality are significantly less likely to hold beliefs about domination in relationships between partners.

Table 16. Path B: The association of gender equality with pro-violence definitions (definition)

		Coef.	SE
Gender Equality	GGGI	-1.763***	0.539
Control Variables	Self-control	-0.236***	0.009
	Social Desirability	-0.166***	0.010
Relationship Variables	Relationship Duration		
	About 2 months	-0.017	0.018
	3 to 5 months	0.013	0.016
	6 to 11 months	0.008	0.016
	1 year or more	0.017	0.015
	Dating	0.013	0.009
Demographics	Male	0.091***	0.007
	SES	-0.023***	0.004
	Age	0.001	0.001
	Constant	1.601***	0.032
Model Fit	Log Likelihood	-4360.331	
	Chi-square	946.39***	
	AIC	8748.662	
	BIC	8852.543	
	ICC	0.146	0.033

$p \leq .05$*, $p \leq .01$**, $p \leq .001$***

Coef.= Coefficient; SE= Standard Error; IPV= Intimate Partner Violence; GGGI= Global Gender Gap Index; SES= Socio-economic Status; AIC= Akaike Information Criterion; BIC= Bayesian information criterion; ICC= Intraclass Correlation

Table 17. Path B: The association of gender equality with holding domination beliefs against intimate partners (definition)

		Coef.	SE
Gender Equality	GGGI	-1.560**	0.592
Control Variables	Self-control	-0.268***	0.010
	Social Desirability	-0.175***	0.011
Relationship Variables	Relationship Duration		
	About 2 months	0.004	0.020
	3 to 5 months	0.037*	0.019
	6 to 11 months	0.097***	0.019
	1 year or more	0.128***	0.017
	Dating	-0.050***	0.010
Demographics	Male	-0.068***	0.008
	SES	-0.017***	0.004
	Age	-0.004***	0.001
	Constant	2.047***	0.036
Model Fit	Log Likelihood	-6142.121	
	Chi-square	791.93***	
	AIC	12312.24	
	BIC	12416.12	
	ICC	0.134	0.031

$p \leq .05$*, $p \leq .01$**, $p \leq .001$***
Coef.= Coefficient; SE= Standard Error; IPV= Intimate Partner Violence; GGGI= Global Gender Gap Index; SES= Socio-economic Status; AIC= Akaike Information Criterion; BIC= Bayesian information criterion; ICC= Intraclass Correlation

Tables 12 through 17 show that the AIC and BIC were smaller when independent variables of interest were added to the models than they were for the unconditional models. Thus, the models fit better when the social learning independent variables were included. Gender equality was not associated with positive parenting (differential association), pro-violence advice (differential reinforcement), and being exposed to violence (imitation). Gender equality was positively related to deviant peer association (differential association), however, the direction of the relationship was not as hypothesized. Gender equality had negative relationships with pro-violence definitions (definition) and domination beliefs (definition). Therefore, the findings support hypothesis 2d, and the findings meet one of the pre-conditions for mediation analysis.

Path C: hypotheses 3a to 3d. The following analyses tested the effect of social learning variables on the annual presence of IPV perpetration (Table 18) and the annual variety score for IPV perpetration (Table 19). Before conducting tests of the models presented in Table 18 and Table 19, I added each of the random effects (i.e., the slopes) for each social learning variable one at a time to determine whether some coefficients were too small to allow for calculation. When the dependent variable was the annual presence of IPV perpetration, the results showed that the coefficients for the random slopes for positive parenting and pro-violence advice were so small that they could not be handled in the computations. Therefore, the random slopes for positive parenting and pro-violence advice were omitted in Table 18.

Table 18 shows that positive parenting and deviant peers are not significantly related to the annual presence of IPV perpetration (p= 0.710 and p= 0.555). There is no evidence that having positive parenting and associating with deviant peers are significantly related to the risk that the students' will commit IPV. Thus, hypothesis 3a is not supported.

Four social learning variables are significantly related to the dichotomous indicator of the annual presence of IPV perpetration. Pro-violence advice is statistically significantly associated with the annual presence of IPV (OR= 1.066). A one unit increase in receiving pro-violence advice corresponds to a 6.6% increase in the annual presence of IPV perpetration. Imitation is also statistically significantly associated with the annual presence of IPV (OR= 1.410). A one unit increase in being exposed to violence corresponds to a 41% increase in the annual presence of IPV perpetration. The third variable that is statistically significantly associated with the annual presence of IPV is pro-violence definitions (OR= 1.368). A one unit increase in holding pro-violence definitions corresponds to a 36.8% increase in the annual presence of IPV perpetration. Finally, domination beliefs is statistically significantly associated with the annual presence of

IPV (OR= 1.692). A one unit increase in holding beliefs favorable to the domination of partners corresponds to a 69.2% increase in annual presence of IPV perpetration. Thus, hypotheses 3b, 3c, and 3d are supported.

The findings also show that the random slopes coefficients for deviant peers, imitation, pro-violence definitions, and domination beliefs did improve the model fit. However, the coefficients and standard deviations were very small, which means that countries did not markedly differ from each other in the variation in annual presence of IPV that was explained by these social learning variables.

Table 18. Path C: The association of social learning variables with the annual presence of IPV perpetration

		Coef.	SE	OR
Fixed Effects				
Social Learning Variables	Positive Parenting	-0.021	0.055	0.980
	Deviant Peers	0.025	0.042	1.025
	Pro-violence Advice	0.064*	0.032	1.066
	Imitation	0.344***	0.068	1.410
	Pro-violence Definition	0.313***	0.093	1.368
	Domination Beliefs	0.526***	0.090	1.692
Control Variables	Self-control	-0.400***	0.068	0.670
	Social Desirability	-0.810***	0.074	0.445
Relationship Variables	Relationship Duration			
	About 2 months	-0.013	0.136	0.987
	3 to 5 months	0.190	0.122	1.209
	6 to 11 months	0.318**	0.122	1.374
	1 year or more	0.720***	0.110	2.054
	Dating	-0.132*	0.059	0.876
Demographics	Male	-0.459***	0.053	0.632
	SES	0.004	0.025	1.004
	Age	-0.010*	0.004	0.990
	Constant	-1.363***	0.141	0.256
Random Effects				
	Deviant Peers	0.013	0.013	
	Imitation	0.005	0.021	
	Pro-violence Definition	0.004	0.027	
	Domination Beliefs	0.092	0.049	
	Constant	0.148	0.046	
Model Fit	Log Likelihood	-6492.205		
	Chi-square	173.20***		
	AIC	13028.41		
	BIC	13191.65		
	ICC	0.043	0.013	

$p \leq .05$*, $p \leq .01$**, $p \leq .001$***
Coef.= Coefficient; SE= Standard Error; OR= Odds Ratio; IPV= Intimate Partner Violence; SES= Socio-economic Status; AIC= Akaike Information Criterion; BIC= Bayesian information criterion; ICC= Intraclass Correlation

When the dependent variable was the annual variety score for IPV perpetration, the coefficients and the standard deviations for positive parenting was too small to allow for calculations in the test of the model. Therefore, the random slope for positive parenting was omitted in Table 19.

As shown in Table 19, positive parenting, deviant peers, and pro-violence advice are not significantly related to the variety of types of IPV perpetrated ($p = 0.679$, $p = 0.075$, and $p = 0.648$). Thus, hypotheses 3a and 3b are not supported. Imitation, pro-violence definitions, and holding domination beliefs are positively and significant related to the annual variety score for IPV perpetration. Imitation is statistically significantly associated with the annual variety score for IPV (IRR= 1.374). A one unit increase in imitation corresponds to a 37.4% increase in annual variety score for IPV perpetration. The second variable that is statistically significantly associated with the annual variety score for IPV is pro-violence definitions (IRR= 1.359). A one unit increase in holding pro-violence definition corresponds to a 35.9% increase in annual variety score for IPV perpetration. Finally, domination beliefs is statistically significantly associated with the annual variety score for IPV (IRR= 1.814). A one unit increase in holding domination beliefs against intimate partners corresponds to an 81.4% increase in the annual variety score for IPV perpetration. Thus, these findings support hypotheses 3c and 3d that students who are exposed to IPV, hold pro-violence definitions, and hold domination beliefs against intimate partners are more likely to use a variety of different types of IPV tactics.

In the model that predicts the variety of types of IPV used, for deviant peers, pro-violence advice, imitation, pro-violence definitions, and domination beliefs, the coefficients for the random slopes were statistically significant, as indicated by a better fit of the model, but were very small. As with the prediction of annual presence of IPV, the prediction of types of IPV perpetrated did not vary greatly between countries.

Table 19. Path C: The association of social learning variables with the annual variety score for IPV perpetration

		Coef.	SE	IRR
Fixed Effects				
Social Learning Variables	Positive Parenting	-0.019	0.046	0.981
	Deviant Peers	0.066	0.037	1.068
	Pro-violence Advice	0.018	0.039	1.018
	Imitation	0.317***	0.063	1.374
	Pro-violence Definition	0.307***	0.076	1.359
	Domination Beliefs	0.596***	0.065	1.814
Control Variables	Self-control	-0.456***	0.056	0.634
	Social Desirability	-0.589***	0.062	0.555
Relationship Variables	Relationship Duration			
	About 2 months	-0.091	0.113	0.913
	3 to 5 months	0.037	0.102	1.038
	6 to 11 months	0.085	0.102	1.088
	1 year or more	0.482***	0.091	1.619
	Dating	-0.128**	0.049	0.880
Demographics	Male	-0.402***	0.045	0.669
	SES	0.014	0.021	1.015
	Age	-0.009*	0.004	0.991
	Constant	-1.045***	0.118	0.352
Random Effects				
	Deviant Peers	0.010	0.009	
	Pro-violence Advice	0.008	0.007	
	Imitation	0.039	0.026	
	Pro-violence Definition	0.037	0.038	
	Domination Beliefs	0.016	0.025	
	Constant	0.110	0.035	
Model Fit	Log Likelihood	-10843.074		
	Chi-square	172.18***		
	AIC	21734.15		
	BIC	21912.23		

$p \leq .05$*, $p \leq .01$**, $p \leq .001$***
Coef.= Coefficient; SE= Standard Error; IRR= Incidence Rate Ratio; IPV= Intimate Partner Violence; SES= Socio-economic Status; AIC= Akaike Information Criterion; BIC= Bayesian information criterion

To summarize, firstly, the effects of country-level gender equality on IPV perpetration (Path A) are statistically significant in Tables 10 and 11. This suggests that individuals living in countries with higher gender equality are less likely to commit IPV and are less likely to use multiple types of IPV tactics. Secondly, when looking at the effect of gender equality on social

learning variables (Path B), gender equality was associated with deviant peer associations (differential association) in Table 13, pro-violence definitions (definition) in Table 16, and domination beliefs (definition) in Table 17. However, the direction of the relationship between gender equality and deviant peer association was not as hypothesized. Thirdly, when examining the effects of social learning variables on IPV perpetration (Path C), pro-violence advice (differential reinforcement), being exposed to violence (imitation), pro-violence definitions (definition), and domination beliefs (definition) are statistically significantly related to the annual presence of IPV perpetration in Table 18. In Table 19, being exposed to violence (imitation), pro-violence definitions (definition), and domination beliefs (definition) are statistically significantly associated with the annual variety score for IPV perpetration.

To conclude, the above findings show that the association of gender equality with IPV (Path A) is statistically significant. Of all of the social learning variables, pro-violence definitions (definition) and domination beliefs (definition) fulfill the Path B and Path C pre-conditions for mediation analyses. That is, pro-violence definitions and beliefs in domination are positively related to IPV perpetration and negatively associated with gender equality. Therefore, other social learning variables, such as differential association, differential reinforcement, and imitation, are treated as control variables in the following mediation analyses. Additionally, in Table 18 and Table 19, the random effects were not substantial. Therefore, to provide ease of calculation, they are omitted from the mediation models.

Mediation analyses: hypothesis 4. The annual presence of IPV perpetration is the dependent variable in Table 20, and the annual variety score for IPV perpetration is the dependent variable in Table 21. In model A of Tables 20 and 21, only control variables were included. In Table 20, for model A the AIC was 13240.25 and the BIC was 13358.97. In Table

21, for model A the AIC was 22032.82 and the BIC was. 22158.96. The gender equality variable (GGGI) was added to model B in both tables. Finally, pro-violence definitions (definition) and domination beliefs (definition) were added to model C in both tables.

The effect of gender equality is negative and significant in Table 20 (OR= 0.005, $p \leq$ 0.001) and Table 21 (IRR= 0.009, $p \leq 0.001$). The statistics for model B in Table 20 show that a one unit increase in gender equality is associated with a 99.5% reduction in the annual presence of IPV perpetration. Similarly, the statistics for model B in Table 21 show that a one unit increase in gender equality corresponds to a 99.1% reduction in individuals' annual variety score for IPV perpetration. Students living in countries with higher gender equality are less likely to commit IPV and less likely to use a greater variety of IPV tactics. The AIC and BIC for model B in both tables were smaller than in the tests of model A, meaning that the models fit improved in model B. The AIC was 13229.67 and the BIC was 13355.82 in Table 20. The AIC was 22022.56 and the BIC was 22156.12 in Table 21.

In Model C, pro-violence definitions (definition) and domination beliefs (definition) were added. When the dependent variable is the annual presence of IPV perpetration (Table 20), the effects of pro-violence definitions (definition) and domination beliefs (definition) are positive and significant (OR= 1.369, $p \leq 0.001$ and OR= 1.937 $p \leq 0.001$). A one unit increase in pro-violence definitions and domination beliefs corresponds to a 36.9% and 93.7% increase in individuals' likelihood of committing IPV annually, respectively. When the dependent variable is the annual variety score for IPV perpetration in Table 21, the effects of pro-violence definitions (definition) and domination beliefs (definition) are also positive and significant in Table 21 (IRR= 1.429, $p \leq 0.001$ and IRR= 1.858, $p \leq 0.001$). A one unit increase in pro-violence definitions and in domination beliefs corresponds to a 42.9% and 85.8% increase in

annual variety score for IPV perpetration, respectively. The findings in Tables 20 and 21 suggest that individuals who approve of the use of violence and hold domination beliefs towards their partners are more likely to commit IPV and more likely to use a variety of types of IPV.

When examining the mediation effects of definitions favorable to IPV, pro-violence definitions and domination beliefs did not fully mediate the effect of gender equality on IPV perpetration. In model C of Tables 20 and 21, the odds ratios for gender equality are still statistically significant (OR= 0.022, $p \leq 0.01$ and IRR= 0.046, $p \leq 0.05$). A one unit increase in gender equality is associated with a 97.8% reduction in the annual presence of IPV perpetration and a 95.4% of reduction in the annual variety score for IPV perpetration. The AIC and BIC for model C in both tables were smaller than for model B, meaning that the model fit improved in model C. The AIC was 13031.92 and the BIC was 13172.91 in Table 20. The AIC was 21746.71 and the BIC was 21895.12 in Table 21.

Overall, Tables 20 and 21 show consistent results. The coefficients for GGGI are reduced in model C after adding pro-violence definitions and domination beliefs to the models. In Table 20, the coefficient for GGGI is reduced from -5.367 in model B to -3.800 in model C. In Table 21, the coefficient for GGGI decreased from -4.702 in model B to -3.080 in model C. In both tables, GGGI is the strongest predictor and is negatively related to IPV perpetration. Positive parenting (differential association) and deviant peers association (differential association) are not significantly associated with IPV perpetration. Pro-violence advice (differential reinforcement) and being exposed to violence (imitation) are positively related to IPV perpetration. In other words, receiving more pro-violence advice from family and non-family members was estimated to increase both the presence and variety score for IPV perpetration. Also, individuals who are exposed to IPV are more likely to commit IPV and more likely to use different types of IPV. In

addition, lower self-control, lower social desirability bias, younger age, longer length of relationship, and being a female are statistically significantly related to an increased presence and variety score for IPV perpetration. In terms of relationship status, being engaged, being married, and cohabitating are more likely than being in a dating relationship to be associated with IPV perpetration. SES is not statistically significantly related to IPV perpetration.

To conclude, the estimated impact of gender equality on IPV perpetration is partially mediated by pro-violence definitions (definition) and domination beliefs (definition). Hypothesis 4 is partially supported. Only one of the four types of social learning process partially mediates the effect of gender equality on IPV perpetration. Therefore, there is limited support for SSSL theory.

Table 20. Mediation analyses on the annual presence of IPV perpetration

		Model A			Model B			Model C		
		Coef.	SE	OR	Coef.	SE	OR	Coef.	SE	OR
Gender Eq.	GGGI				-5.367***	1.351	0.005	-3.800**	1.483	0.022
Social	Pro-vio. Def.							0.314***	0.065	1.369
Learning	Dom. Bel.							0.661***	0.056	1.937
Variables	Pos. Par.	-0.035	0.054	0.966	-0.031	0.054	0.969	-0.240	0.055	0.976
	Deviant Peers	0.017	0.030	1.017	0.023	0.030	1.023	0.027	0.030	1.027
	Pro-vio. Advice	0.114***	0.031	1.121	0.113***	0.031	1.120	0.067*	0.032	1.069
	Imitation	0.388***	0.049	1.474	0.391***	0.049	1.479	0.355***	0.050	1.426
Control	Self-control	-0.616***	0.065	0.540	-0.599***	0.065	0.549	-0.390***	0.067	0.677
Variables	Social Des.	-0.929***	0.072	0.395	-0.930***	0.072	0.394	-0.810***	0.073	0.445
	Rel. Duration									
	About 2 months	-0.017	0.135	0.983	-0.017	0.135	0.983	-0.012	0.135	0.988
	3 to 5 months	0.214	0.121	1.239	0.215	0.121	1.240	0.192	0.122	1.212
	6 to 11 months	0.377**	0.121	1.458	0.377**	0.121	1.458	0.323**	0.122	1.381
	1 year or more	0.798***	0.109	2.221	0.798***	0.109	2.222	0.723***	0.110	2.061
	Dating	-0.147*	0.058	0.864	-0.149**	0.058	0.861	-0.467***	0.053	0.883
	Male	-0.484***	0.052	0.616	-0.487***	0.052	0.614	-0.467***	0.053	0.627
	SES	-0.010	0.024	0.990	-0.008	0.024	0.992	0.001	0.024	1.001
	Age	-0.013**	0.004	0.987	-0.012**	0.004	0.988	-0.009*	0.004	0.991
	Constant	-1.370***	0.141	0.254	-1.448***	0.135	0.235	-1.451***	0.139	
Model Fit	Log Likelihood	-6604.125			-6597.837			-6496.962		
	Chi-square	168.74***			79.23***			108.25***		
	AIC	13240.25			13229.67			13031.92		
	BIC	13358.97			13355.82			13172.91		
	ICC	0.048			0.029			0.036		

$p \leq .05$*, $p \leq .01$**, $p \leq .001$***

Coef.= Coefficient; SE= Standard Error; OR= Odds Ratio; IPV= Intimate Partner Violence; Pro-vio. Def.= Pro-violence Definitions; Dom. Bel.= Domination Beliefs; Pos. Par.= Positive Parenting; Pro-vio. Advice= Pro-violence Advice; Social Des.= Social Desirability; Rel. Duration= Relationship Duration; SES= Socio-economic Status; AIC= Akaike Information Criterion; BIC= Bayesian information criterion; ICC= Intraclass Correlation

Table 21. Mediation analyses on the annual variety score for IPV perpetration

		Model A			Model B			Model C		
		Coef.	SE	IRR	Coef.	SE	IRR	Coef.	SE	IRR
Gender Eq.	GGGI				-4.702***	1.202	0.009	-3.080*	1.237	0.046
Social	Pro-vio. Def.							0.357***	0.055	1.429
Learning	Dom. Bel.							0.619***	0.045	1.858
Variables	Pos. Par.	-0.034	0.047	0.966	-0.031	0.047	0.970	-0.019	0.046	0.981
	Deviant Peers	0.029	0.025	1.030	0.034	0.025	1.034	0.038	0.025	1.038
	Pro-vio. Advice	0.121***	0.027	1.129	0.121***	0.027	1.129	0.073**	0.027	1.075
	Imitation	0.395***	0.042	1.485	0.400***	0.042	1.492	0.341***	0.042	1.406
Control	Self-control	-0.657***	0.055	0.518	-0.646***	0.055	0.524	-0.450***	0.056	0.637
Variables	Social Des.	-0.716***	0.062	0.489	-0.715***	0.062	0.489	-0.583***	0.062	0.558
	Rel. Duration									
	About 2 months	-0.103	0.115	0.902	-0.106	0.115	0.900	-0.096	0.114	0.909
	3 to 5 months	0.074	0.103	1.077	0.073	0.103	1.076	0.046	0.102	1.047
	6 to 11 months	0.128	0.104	1.136	0.124	0.104	1.132	0.087	0.102	1.090
	1 year or more	0.564***	0.092	1.757	0.562***	0.092	1.753	0.484***	0.091	1.623
	Dating	-0.158***	0.049	0.854	-0.162***	0.049	0.850	-0.131**	0.049	0.877
	Male	-0.419***	0.045	0.658	-0.422***	0.045	0.656	-0.404***	0.045	0.668
	SES	0.001	0.021	1.001	0.004	0.021	1.004	0.012	0.021	1.012
	Age	-0.012**	0.004	0.988	-0.011**	0.004	0.989	-0.009*	0.004	0.991
	Constant	-1.005***	0.121	0.366	-1.072***	0.115	0.342	-1.097***	0.115	0.334
Model Fit	Log Likelihood	-10999.41			-10993.279			-10853.356		
	Chi-square	167.37***			86.01***			107.93***		
	AIC	22032.82			22022.56			21746.71		
	BIC	22158.96			22156.12			21895.12		

$p \leq .05$*, $p \leq .01$**, $p \leq .001$***

Coef.= Coefficient; SE= Standard Error; IRR= Incidence Rate Ratio; IPV= Intimate Partner Violence; Pro-vio. Def.= Pro-violence Definitions; Dom. Bel.= Domination Beliefs; Pos. Par.= Positive Parenting; Pro-vio. Advice= Pro-violence Advice; Social Des.= Social Desirability; Rel. Duration= Relationship Duration; SES= Socio-economic Status; AIC= Akaike Information Criterion; BIC= Bayesian information criterion

CHAPTER 5 DISCUSSION AND CONCLUSION

Support for SSSL Theory

The current study aimed to examine the applicability of Aker's SSSL theory as an explanation of IPV perpetration across national contexts. The main finding of the current study is that the concept of definitions favorable to breaking the law partially mediates the effect of gender equality on IPV perpetration. In other words, gender equality was estimated to have a direct effect on IPV perpetration and an indirect effect on IPV perpetration through definitions that support the use of IPV. The findings only partially support SSSL theory because only one of the four social learning constructs has a mediating effect. Taken together, the findings suggest that college students in countries with higher gender equality are less likely to learn pro-violence definitions and domination beliefs. Individuals who are less likely to hold pro-violence definitions and domination beliefs are less likely to commit IPV, and they are likely to use fewer IPV tactics. The findings imply that narrowing the gender equality gap may reduce an individual's supportive attitudes towards the use of violence and the use of authority and restrictiveness in an interpersonal relationship. This may, in turn, reduce the likelihood of IPV perpetration and the number of tactics that an individual uses.

The estimated effect of gender equality on definitions that support IPV is consistent with the research suggesting the cultural justification for IPV against women was found in more traditional societies, such as Bangladesh, Cambodia, India, Mexico, Nigeria, Pakistan, Papua New Guinea, the United Republic of Tanzania, and Zimbabwe (Krug et al., 2002). The estimated effect of gender equality on definitions also suggests that supportive attitudes towards the use of IPV by women against men is more likely to be found in traditional societies. The above finding

is also consistent with a meta-analysis study that demonstrated that definitions regarding violence was the most powerful predictor among other social learning variables (Pratt et al., 2010).

Findings about social learning variables were mixed in their consistency with prior research and SLT. Although the statistical analyses did not show that pro-violence advice (differential reinforcement) and being exposed to violence (imitation) were mediators in the mediational analyses, they were positively associated with both the annual presence of IPV perpetration and the annual variety score for IPV perpetration. The predictive power of the social learning variable, imitation, was even stronger than the predictive power of pro-violence definitions (definition). This finding is consistent with previous meta-analysis studies that showed that, of the social learning variables, childhood exposure to violence is the most predictive of IPV perpetration (Jackson, 1999; Kaukinen, 2014).

The current study found that association with deviant peers was not significantly related to either annual presence of IPV perpetration or the annual variety score for IPV perpetration. The finding contradicts previous studies that found that having deviant peers is the most significant risk factor for IPV perpetration (Boeringer et al., 1991; Cochran et al., 2017; DeKeseredy & Kelly, 1995; Jackson, 1999; Kaukinen, 2014; Sellers et al., 2005; Sellers et al., 2003; Wareham et al., 2009). Perhaps this is due to the different operationalizations of deviant peer association. According to SSSL theory, the concept of differential association has four dimensions – frequency, duration, priority, and intensity. The current study measured agreement with statements about currently spending time with deviant peers and having friends who committed crimes. Ratings on these scales do not fully reflect the nature of association with deviant peers. Prior studies of SLT can also be criticized for the measures of differential

association. For example, studies have measured differential association with indicators of significant others' attitudes towards IPV (Cochran et al., 2017; Sellers et al., 2005; Wareham et al., 2009). This seems to measure differential reinforcement rather than differential association. In the current study, pro-violence advice (differential reinforcement) was related to both the annual presence of IPV perpetration and the annual variety score for IPV perpetration. Inconsistencies in measurement across studies may be the reason why the current study had inconsistent findings with the literature.

Evidence of the Effect of Gender Equality

In the current study, the findings show that in countries with lower levels of gender equality, college students are more likely to report having used IPV. This finding lends support to the literature that suggests that levels of gender equality affect IPV perpetration (Fleming et al., 2015; García-Moreno, 2005; Jewkes, 2002). The finding also supports work by Morash (1999) that presented the argument that gender does not always have its influence on crime and deviance primarily through social learning. Morash (1999) further suggested that gender differences are not produced solely through how boys and girls are taught and socialized, but also through systematic differences in power, opportunities, and resources within a country and a family. Therefore, these findings imply that narrowing the gender-based gaps at the structural level may reduce IPV perpetration. This could be accomplished by allocating more resources to females in different life dimensions, such as economic participation and opportunity, education attainment, health and survival, and political empowerment.

The Form of the Relationship between Gender Equality and IPV Perpetration for Men and Women

In the current study, a linear and negative relationship between gender equality and the annual variety score for IPV perpetration was found for both women and men. The relationship between gender equality and males' IPV perpetration is consistent with research by Archer (2006), who also found a linear and negative relationship, with higher gender equality related to lower IPV. However, the finding does not support research in the United States (Yllö, 1983, 1984) and South Africa (Jewkes, 2002) which documented a curvilinear relationship. The findings also do not support research that found a backlash effect on IPV perpetration, such that increased gender equality was associated with increased IPV by males (Cools & Kotsadam, 2017; Stark, 2009). The inconsistent findings about the relationship between gender equality and IPV perpetration may be due to different samples and different operationalizations of both gender equality and IPV perpetration. It also may result from whether the focus was on IPV perpetrated by a sample that included men and women, or a sample that included one or the other gender group.

Prior research showed that societies with greater female emancipation have higher level of men's victimization (Archer, 2006; Levinson, 1989; Yllö, 1983). Inconsistent with the present research, the findings indicate that society with greater female emancipation, and therefore with more gender equality, have lower level of women's perpetration of IPV against men. The present research also found that women reported using a greater variety of types of IPV than did men regardless of the level of gender equality, but that consistent with Archer (2006), as gender equality increases, the sex differences in IPV perpetration decrease. This finding does not support previous studies that suggest that in societies that were characterized by high gender

inequality, women were more likely than men to be abused by their partners (Bui & Morash, 1999; Chan & Straus, 2008; J. Kim & Emery, 2003; Ozaki & Otis, 2017; M. D. Smith, 1990; Yick & Agbayani-Siewert, 2000; Yoshihama, 2005). This finding also contradicts feminist theories, which highlights the higher levels of violence against women, especially in patriarchal societies. The higher rates of female IPV perpetration may be due to differential reporting behaviors between males and females. Males are less likely to take responsibility for their use of IPV and are more likely to blame their partners (LeJeune & Follette, 1994). Additionally, males are less likely to report their perpetration compared to their partners' reports of victimization (Schluter, Paterson, & Feehan, 2007). Therefore, it is apparent that males tend to underreport IPV perpetration, which may account for findings of women's greater use of IPV.

Limitations and Recommendations for Future Research

Shortcomings of the Data. The IDVS dataset is not without limitations. Firstly, SSSL theory is a structural-processual integrated theory. SSSL theory also proposed a reciprocal (bi-directional) effect between perpetration behaviors and the social learning process. This requires time-ordered longitudinal data to test the reciprocal effects. In the literature, IPV was found to have a bidirectional nature such that both members in the relationship could act as perpetrators and victims (Rubio-Garay et al., 2017). Victims may observe and learn that the use of IPV is rewarding from their past abusive partners. Those victims may be more likely to use IPV towards the current partners. However, the current dataset is cross-sectional. It does not allow researchers to properly test the reciprocal and direct nature of the connection of social learning variables to IPV.

Secondly, although the dataset was not designed to test SSSL theory, it contains variables that had face validity as indicators of SSSL constructs. Future studies should collect better

measures of the concepts that reflects the social learning process. First, the current study only measured agreement with statements about having association with deviant peers. Future research should measure other dimensions of differential association as well. For example, indicators should include the frequency of interacting with deviant peers, the importance of the deviant peers to the individual, and the length of the relationship with the deviant peers. Second, the current study only measured one dimension of differential reinforcement, which was pro-violence advice. Another dimension, pro-violence disapproval, should also be measured in future research. Third, being exposed to violence (imitation) only tapped physical IPV. However, this learning process may be specific to the type of violence. Prior research found that a particular type of IPV between parents was significantly associated with the same type of IPV used in a sample of undergraduate students (Black et al., 2010). Therefore, it is recommended that researchers measure the exposure to psychological and sexual IPV in future research. Fourth, in the current study, pro-violence definitions were measured. This measure only assessed the definitions favorable to IPV perpetration. However, definitions unfavorable to IPV perpetration were not available in the dataset, but should be included in additional study. Fifth, this study only measured a social structural variable at the country level. Future studies should incorporate social structural variables at the familial level, for instance, patriarchal family structure. A patriarchal family structure is characterized as a household where the decision-making power is inequal between women and men (Blood Jr & Wolfe, 1960). Women living in these households are more likely to experience IPV victimization (Yingling, Morash, & Song, 2015). The patriarchy family structure is also related to an individual's definition favorable to IPV (Ahmad, Riaz, Barata, & Stewart, 2004). Therefore, patriarchal family structure could be an indicator of differential social location in primary, secondary, and reference groups at the structural level. Last but not least,

research suggests that school context characteristics, for example lack of school safety, are linked to an increased likelihood of IPV perpetration (Capaldi & Clark, 1998). However, the IDVS dataset has no data on school units and therefore school context characteristics are not controlled for. In future studies of students, school context characteristics should be an operationalization of differential social organization at the structural level.

As another limitation, the sample only includes college students and may not be representative of the universities in the countries or the nations. Given that a meta-analysis found that having a lower education level is a risk factor for IPV perpetration (Stith et al., 2004), less educated men and women may be influenced to perpetrate IPV in a different way than students. Therefore, college students may report less IPV perpetration compared to people who are not obtaining a college education, and they may experience different types of social learning. Also, the current study had data for a sample of college students in classes where females predominate. In the future, to avoid the lack of representativeness of male students, researchers could approach students in places that are utilized by all students, for example libraries, or through email invitations.

Future researchers should also consider using alternative measures of IPV perpetration. The CTS/CTS2 scales have been criticized for a number of reasons. The CTS/CTS2 may give misleading findings because the measurement tool only measures the "quantitative" aspect of IPV and may not tap into the "qualitative" aspects of IPV (Cho, 2012). The measurement tool fails to capture the context, motivations, and intents of IPV (DeKeseredy, Saunders, Schwartz, & Alvi, 1997; R. Dobash, Dobash, Wilson, & Daly, 1992; M. D. Smith, 1994). It is difficult to distinguish between self-defensive and offensive IPV. Therefore, alternative measures would allow the researchers to understand the intent of perpetration and the harms it produces (M. D.

Smith, 1994). Also, the CTS/CTS2 scales fail to screen for false positives (Hamby, 2016b). The false positive problem means that consensual incidents, such as pillow fights, are measured but they are clearly not related to IPV (Hamby, 2017). As a result, CTS/CTS2 may produce a gender parity or gender symmetry in prevalence rates whereas other IPV methodologies, such as arrest rates and victimization surveys, for example, the National Crime Victimization Survey, show gender disparity (Hamby, 2016b). When false positives are controlled for in self-reported survey measures by eliminating joking or horseplay incidents or by focusing on incidents where their partners were angry, higher rates of female than male victimization were found (Hamby, 2016b). Given the criticism of the CTS/CTS2, gender may need to be considered when constructing measurement tools because the meaning of IPV and patterns of violence may be different for males and females (Follingstad & Rogers, 2013). Future research may consider using other IPV measurement tools in addition to CTS2 to better capture male's and female's IPV perpetration. For example, the Partner Victimization Scale has similar construct validity for males and females, as well as community and clinical samples (Hamby, 2016a).

Other Limitations. The dissertation also has several limitations. Baron and Kenny's mediation approach has shortcomings. It is possible to find a significant connection between gender equality and IPV perpetration after adding the mediators (Preacher & Hayes, 2004). This problem is especially common if the sample size is large, as it is in the present research, and thus there is a higher chance of Type II error. Also, it would have been a problem if the direct effect of gender equality with IPV perpetration had not been significant. There could be an effect of social inequality on a mediating variable, which in turn is significantly related to IPV perpetration, even if there is no direct effect of gender equality on perpetration. However, since the association of gender equality with perpetration was significant, this was not a problem in the

present research. Another limitation with Baron and Kenny's approach is that the reduction in the direct effect after adding mediating variables may not be statistically significant. While a Sobel (1986) test answers this, the test may not be used in nonlinear models, such as logistic and count models, as used in the current dissertation (Mustillo, Lizardo, & McVeigh, 2018).

Another important omission in the present study is that gender can moderate each of the three paths in the mediational analyses. Gender can moderate the direct effects of gender equality on IPV perpetration (Path A). As discussed in Chapter 2, some studies found that the influence of gender equality on males and females are in opposition directions. The literature suggests a negative relationship between males' perpetration of IPV against women and gender equality; it suggests a positive relationship between females' perpetration of IPV against men and gender equality (Archer, 2006). Also, gender can moderate the effects of gender equality on social learning process variables (Path B). Although this relationship was not tested empirically, it is speculated that men living in patriarchal societies where the domination of men over women is accepted are more likely to associate with people who use IPV; they are more likely to observe people in their social circles using IPV; they are more likely to anticipate a greater balance of rewards than costs from using IPV; and they are more likely to hold attitudes supportive of the use of IPV. Finally, gender can moderate the effects of social learning process variables on IPV perpetration. Kaukinen (2014) did a systematic review of the risk and protective factors of IPV and showed that the findings relating to childhood exposure to violence showed a differential gender effect, with males being more likely to be influenced by exposure to violence in the family of origin. Peers also provide another social learning environment. Several studies identified peer influence as the most significant risk factor for later violence perpetration (DeKeseredy & Kelly, 1995). They found that having guidance from male friends about the use

of IPV, attachment to abusive male peers, and peer pressure are more predictive of men's IPV perpetration than exposure to family violence. Gender can also play a moderating role in the relationship between parental monitoring and physical IPV as an adolescent. Parental monitoring is a protective factor only for male's IPV perpetration but not female's IPV perpetration (Foshee, Linder, MacDougall, & Bangdiwala, 2001; Miller, Gorman-Smith, Sullivan, Orpinas, & Simon, 2009; Richards, Branch, & Ray, 2014). Therefore, the previous studies suggest that gender may play a moderating role in each of the three paths. However, tests of the moderating effects of gender were beyond the scope of the present research. Therefore, in addition to improvement in measures of the social learning process variables and IPV perpetration, tests of the moderating effects of gender would further advance knowledge.

Contributions to Theory and Literature

Despite the limitations, the current study contributes to the SSSL theory and the literature. The current study examined the cross-cultural applicability of SSSL theory. Although not all four social learning variables mediated the social learning process, the structural level measure of gender equality and the individual level social learning variables are useful in explaining IPV across national contexts. Also, multilevel models are suitable to test the SSSL theory because they allow us to understand how well the theory works in explaining IPV perpetration across national contexts.

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