FEMALE SURVIVORS OF INTIMATE PARTNER VIOLENCE: FINANCIAL STRAIN, DEPRESSION, AND FINANCIAL EDUCATION INTERVENTION

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ABSTRACT OF THE DISSERTATION

Female Survivors of Intimate Partner Violence:
Financial Strain, Depression, and Financial Education Intervention

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This dissertation emphasizes economic consequences of intimate partner violence (IPV) and prioritizes financial education as an effective intervention to enhance mental and financial well-being of female survivors. The dissertation consists of three independent studies to investigate how financial strain interacts with different forms of abuse, depression, and financial education simultaneously. The main focus is financial strain which performs three different roles in each paper based on the Stress Process Model. Financial strain is an outcome variable of IPV in Paper 1; financial strain is a predictor leading to depression in Paper 2, and financial strain is a mediator between financial education and depression in Paper 3. The dissertation provides a comprehensive understanding of interconnections between financial strain with such variables by examining multitudinous stress models using longitudinal data from the randomized controlled trial design of an evaluation research study.
The findings of the three papers give evidence to the significant effects of financial strain on female IPV survivors: Paper 1 finds that economic abuse is related to financial strain more than other forms of IPV; Paper 2 demonstrates that financial strain is the mediator between economic abuse and depression, and Paper 3 confirms that financial education decreases financial strain which, in turn, decreases depression. The implications for social work practice, policy, education, and research are discussed.
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Chapter 1: Introduction

Female survivors of intimate partner violence (IPV) have to endure multiple adversities endangering their physical, psychological, and social well-being. IPV is well documented to be committed against women with over one-third of U.S. women experiencing IPV in their lifetime (Smith et al., 2018). IPV significantly impacts women’s physical and mental health (Oram et al., 2017). Specifically, the IPV experiences are identified as key factors leading to depression among women across different cultures (Beydoun et al., 2012; Gibbs et al., 2018; Ouellet-Morin et al., 2015; White & Satyen, 2015). However, the economic toll of IPV is less recognized as IPV directly and indirectly jeopardizes women’s economic well-being and economic security (Adams et al., 2013; Resko, 2010). More importantly, women’s financial welfare is a crucial element for survival.

Financial strain, regarded as an indicator of economic insecurity (Hacker et al., 2014), is negatively related to financial well-being as well (Sabri & Zakaria, 2015). Compared to men, women have higher levels of financial hardship and prolonged exposure to economic hardship (Tucker & Lowell, 2016). Such economic hardship negatively affects women’s health, causing further gender disparity (Ahnquist et al., 2007; Marshall & Tucker-Seeley, 2018). Researchers are beginning to examine financial strain among IPV survivors for various reasons (Golden et al., 2013; Hetling et al., 2014; Yelland & Brown, 2014). First, financial strain is a main variable that can be used to assess IPV survivors’ economic need (Hetling et al., 2014). Second, financial difficulties are evidenced as critical factors for survivors to leave an abusive relationship (Kim & Gray, 2008). Third, the worldwide economic recessions and downturns
disproportionately affect vulnerable populations as female IPV survivors may experience the worst scenario (King et al., 2017).

As IPV interventions aim for best practice to empower survivors economically, more evidence-based evaluation research is needed (Ellsberg et al., 2015; Stover et al., 2009). To date, two financial education interventions have been empirically validated to assist IPV survivors gain economic independence (Postmus et al., 2015; Sanders et al., 2007). Sanders et al. (2007) examined the financial literacy program entitled “Redevelopment Opportunities for Women’s Economic Action,” and proved the effectiveness to enhance survivors’ financial knowledge and economic self-efficacy. Postmus et al. (2015) evaluated the “Moving Ahead Through Financial Management” focusing on improving personal financial management skills and the results demonstrated a significant decrease of financial strain over time. However, there is a lack of research that examines the impact of financial education intervention on mental health outcomes.

Given that financial strain prevails in women’s daily struggle, overlooking the role of financial strain means that the economic consequence of IPV is not fully understood. The link between IPV and financial toll can be viewed as the phenomenon of multi-faced inequality through a gendered lens. Further, IPV interventions may not be comprehensively effective if it fails to address financial recovery. At this point in time, no study specifically examines the associations between IPV, financial strain, depression, and financial education intervention. This dissertation will fill that research gap to specify the associations among these major variables simultaneously. Given the link between financial well-being and mental health, this dissertation specifically tested whether the financial education intervention is effective to reduce financial strain and depression.
Purpose of the Study

The overarching goal of this 3-paper dissertation was to investigate the association between IPV, financial strain, and depression in a sample of female adult IPV survivors in the U.S. who participated in a randomized controlled study that evaluated the financial education intervention. The specific aim for Paper 1 was (a) to examine the relationship between different forms of IPV (i.e. physical abuse, psychological abuse, sexual abuse, and economic abuse) and financial strain change over 14 months; and (b) to decompose the contributing factors determining change of financial strain over time; in particular, to demonstrate the contribution that could be explained by economic abuse. Paper 2 examined whether financial strain performs as a moderator or mediator between economic abuse and depression. Paper 3 determined whether financial education is a successful intervention that lessens the impact of financial strain on mitigating depressive symptoms over time.

Intimate Partner Violence against Women

Intimate partner violence (IPV) affects millions of American women who make up over three quarters (77%) of adult victims (Puzzanchera et al., 2018). According to the Centers for Disease Control and Prevention (CDC, 2017), the term IPV is defined as physical violence, sexual violence, psychological aggression or stalking by a current or former intimate partner. This CDC definition significantly impacts the language of national statistical reports. For example, the 2010-2012 National Intimate Partner and Sexual Violence Survey (NISVS) indicates that one in three women (37.3%) experienced IPV in their lifetime (Smith et al., 2017). Such prevalence rate is commonly cited for the U.S. IPV studies, but it predominantly focuses on physical and psychological violence.
and fails to include other types of abuse such as economic abuse. Given that the official statistic of IPV prevalence is underestimated, the fact prevails that more American women are suffering safety threats and their human rights are severely jeopardized.

Economic abuse, another form of IPV, involves behaviors aimed at controlling or exploiting individual’s access to finances, assets, or jobs (Adams et al., 2008). International and national studies are growing to establish the lifetime prevalence of economic abuse. Global prevalence data among general populations varies from 3% in Canada (Burczycka & Conroy, 2018), 6.9% in Philippines (Antai, Antai, et al., 2014), 11.5% in Australia (Kutin et al., 2017), to 21% in the U.K (Sharp-Jeffs, 2015). However, the lifetime prevalence of economic abuse against U.S. women remains unknown since economic abuse has not been captured in any national study.

Due to the lack of a consistent definition and validated measures, the prevalence rate of economic abuse becomes more challenging to calculate (Postmus et al., 2020). Recent U.S. research has shown that economic abuse is greatly prevalent in the general population. In a sample of 1,419 employees in the Northwestern region, Blodgett and Lanigan (2018) investigated IPV in or outside the workplace resulting in sabotaging employment or interfering job performance. Their findings show 41% of the sample reporting lifetime victimization and 18% reporting victimization in the past 12 months. Despite that the prevalence rates vary in the global and U.S. non-IPV population, economic abuse is universally experienced among IPV survivors. For instance, Stylianou (2018) found that 93% in a sample of 457 U.S. female IPV survivors reported experiencing economic abuse in the past 12 months.
Women are at higher risk of economic abuse by an intimate partner owing to gendered income inequality, obstacles to wage-earning resources, and gendered-biased culture norms (Christy & Valandra, 2017). Using a large sample of random selected Australian adults (n=17,050), Kutin et al. (2017) reported women have more than double the likelihood to experience economic abuse (15.7%) than men (7.1%). Similarly, Blodgett and Lanigan (2018) noted that women (53%) were significantly more likely than men (23%) to experience lifetime IPV in the workplace. As a significant but “invisible” form of IPV, economic abuse needs more prevalence data and relevant research (Postmus et al., 2020).

IPV against women is not only a human rights violation but also a physical health and mental health concern (Jordan et al., 2010; Oram et al., 2017). The 2010-2012 NISVS specified that nearly three out of four female IPV survivors (73.4%) experienced at least one direct IPV-related impact in their lifetime, such as fear, safety concerns, and symptoms of Post-Traumatic Stress Disorder (Smith et al., 2017). The major aftermath of experiencing nonfatal abuse includes bruises or cuts/severe injuries (Truman & Morgan, 2014), depression (Beydoun et al., 2012), suicidal attempts and behaviors (Devries et al., 2011), and femicide (Brady & Hayes, 2018; Terranova & Zen, 2018).

Depression is the most prevalent mental health consequence among female IPV survivors (Beydoun et al., 2012; Oram et al., 2017; White & Satyen, 2015). In general, women experience depression about twice as often as men at large (Healthy People, 2019, & 2018). A meta-analysis suggested that female IPV survivors are three times more likely to experience major depressive disorders, and 1.5 to twofold increased risk of depressive symptoms compared to non-abused women (Beydoun et al., 2012).
Furthermore, a systematic review of longitudinal studies found that the association between IPV and depression is bidirectional among female survivors (Devries et al., 2013). In other words, IPV survivors have greater risk of depression, and depressed women are at increasing odds of experiencing IPV. Using a longitudinal study, Ouellet-Morin et al. (2015) further provided evidence that IPV can cause increased risk of depression. Their findings show that female IPV survivors have a twofold increase of new-onset depression after controlling all confounders, such as childhood maltreatment, socioeconomic deprivation, antisocial personality, and young motherhood. Given the fact that more and more rigorous studies clarify the causal relationship between IPV and depression, these findings are limited due to lack of other forms of IPV (e.g. economic abuse).

In the treatment of depression among female IPV survivors (Koss et al., 2003), traditional methods focus on individual healing (Reed & Enright, 2006). However, psychosocial interventions often fail to address financial costs of recovery because financial concern is a primary source of stress for individuals and their relationships (King et al., 2017). Outside clinical treatment sessions, there is limited assistance for dealing with daily financial hardship, which in turn, may increase financial stress and worsen depressive symptoms (Fox et al., 2002; Honkalampi et al., 2005). As a result of this cycle, women with depression do not experience the full benefits of treatment. Therefore, researchers suggest tangible assistance and financial education would be effective interventions to deal with financial distress among general depressive women (Starkey et al., 2013). Even though IPV has been significantly associated with increasing financial hardship (Postmus, Plummer, McMahon, & Kim, 2012), research has not yet
examined if interventions, such as financial literacy education, lessen financial strain and in turn, depression. Hence, one aim of this dissertation is to determine whether financial literacy education is an effective intervention for IPV survivors with depressive symptoms.

Financial Strain

Financial strain is one of several stressors that American adults face. Since 2007, the annual survey, “Stress in America,” has shown that most Americans consistently rate financial concerns as the top source of stress such as money, work and the economy (American Psychological Association, 2015, 2017). In the 2015 APA report using a nationwide adult sample (n=3,068), nearly three in four American adults (72%) reported stress about money, with nearly one-quarter of those (22%) reporting extreme stress. The vast majority of Americans reported that their financial strain remained the same (59%) or increased (29%) from 2014 to 2015 (American Psychological Association, 2015). Several factors contributed to the increase of financial strain, such as the worldwide economic recession, low savings, consumerism and high levels of debt (Vosloo et al., 2014; Weller & Logan, 2009). Moreover, some groups including women, younger Americans, low-income households, and parents of children under the age of 18, experience higher money-related stress levels than the general American population (American Psychological Association, 2015). As Thoits (2010) noted, the phenomenon that stress exposure is unequally distributed among different social groups would account for health inequalities in physical and psychological well-being.

Financial strain is composed of cognitive, emotional, and behavioral responses to the experience of financial hardship (Aldana & Liljenquist, 1998). In other words,
financial strain can be defined as a concept that depicts subjective perceptions of economic difficulties (Gutman et al., 2005). The term financial strain is broadly used with various synonyms interchangeably, such as financial hardship (Azzani et al., 2015; Tucker-Seeley et al., 2013), financial stress (Åslund et al., 2014; Ryan, 2012; Valentino et al., 2014), financial distress (Barbaret et al., 2017; Starkey et al., 2013), economic strain (Pearlin et al., 1981; Reeb et al., 2013), economic stress (Kinnunen & Pulkkinen, 1998; Probst et al., 2018), economic hardship (Drentea & Reynolds, 2014; Lucero et al., 2016; Pulgar et al., 2016), economic distress (Benson et al., 2003; Fox et al., 2002), economic pressure (Dennis et al., 2003), and perceived income adequacy (Dziak et al., 2010; Fahmy et al., 2016).

In research, the concept of financial strain is operationalized by objective and subjective measures, and questions can vary from merely one item (Dziak et al., 2010) to a Financial Strain Survey with 5 subscales of 18 items (Aldana & Liljenquist, 1998). Objective measures use the debt-to-income ratio or income-to-needs ratio (Benson et al., 2003; Zimmerman & Katon, 2005). Subjective measures obtain self-reported perceptions of financial difficulties, such as income, paying the bills, making ends meet or levels of difficulties. For example, “How much difficulty do you have paying you bills over the past year?” (Conger et al., 1994; Gutman et al., 2005; Valentino et al., 2014). "How do the household finances stand at the end of the month?” (Tucker-Seeley et al., 2013).

Aldana and Liljenquist (1998) developed a Financial Strain Survey (FSS) that comprehensively consists of five subscales: inability to meet obligations, relationship problems, physical stress, financial education, and credit card debt. Furthermore, Hetling et al. (2014) validated Aldana and Lijenquist’s (1988) survey among IPV survivors and
suggested the FSS to be used as a screening tool that assists practitioners to empower women economically.

Financial strain is highly linked to socioeconomic status, including employment status, education, and income (Fatimah et al., 2012; Szanton et al., 2010; Zimmerman & Katon, 2005). For example, low-income families persistently report high levels of financial strain over time (Ribar, 2005). Likewise, researchers consistently find that financial strain mediates the relationship between socioeconomic variables (income, employment) and different outcomes, such as individual psychological distress (Fox & Chancey, 1998; Valentino et al., 2014; Zimmerman & Katon, 2005), marital quality (Conger & et al., 1990; Lincoln & Chae, 2010), or child development (Conger et al., 1994; Masarik & Conger, 2017).

Financial strain has been demonstrated to be a strong and consistent predictor of poor health outcomes (Drentea & Reynolds, 2014; Frank et al., 2014). For example, financial strain is significantly related to poor physical health (Castro et al., 2010; Shaw et al., 2014; Tucker-Seeley et al., 2013; Whitehead & Bergeman, 2017), low quality of life (de Souza & Wong, 2013; Lathan et al., 2016), smoking (Prentice et al., 2017), and depression (Drentea & Reynolds, 2014; Probst et al., 2018). Even if the socioeconomic status is controlled, financial strain remains a robust predictor of health outcomes.

Women are exposed to higher levels of financial strain than men, leading to an increased risk of poor health (Ahnquist et al., 2007; Starrin et al., 2009). Furthermore, prolonged financial strain is evidenced to be a detrimental factor to the well-being of women in an adverse situation, such as, cancer survivors, women with dependent children, single mothers, and African-American mothers (Bridges & Disney, 2010; Dziak
Female IPV survivors are exposed to higher levels of financial strain in addition to experiencing other stressors imposed by the abuser (Hetling et al., 2014).

**Significance of the Study**

The impact of violence against women not only threatens women’s lives but also damages their economic and social security (Resko, 2010); research on the economic consequence of IPV is emerging, particularly how female IPV survivors perceive their financial well-being. There is a breadth of literature providing evidence to the relationship between IPV experiences and a range of socioeconomic factors, such as income and employment (Crowne et al., 2011; Lindhorst et al., 2007). Since financial strain is one of most common stressors in daily life, exposure to chronic financial strain is a potent indicator of psychological distress. However, research has not examined the impact of IPV on financial strain.

The social distribution of stress is not equal for each individual, and it can vary across different social locations including race, gender, age and socioeconomic status (Aneshensel, 1992). For instance, Potter and colleagues (2019) examine the intersections of social identity (i.e. race, gender, age, and socioeconomic status) and discrimination experiences using a diverse community sample of 292 adults. Their findings suggest the importance of intersectionality approach examining more than one sociodemographic characteristics contributing to maltreatment and discrimination. The concept of intersectionality was initially addressed by the fact that women of color face higher risk of being assaulted physically and sexually than white women owing to the intersecting
patterns of racism and sexism (Crenshaw, 1991). Moreover, IPV female survivors disproportionately encountered multiple stressors and social adversities, leading to poor health (Jordan et al., 2010). Thus, Thoits (2010) suggests that using a more comprehensive measurement of stressors advances research knowledge regarding stress and health. The fact that female IPV survivors experience financial strain and depression is understudied. Accordingly, this dissertation explores the associations between financial strain, different forms of abuse and depression among female IPV survivors.

This 3-paper dissertation utilized three separate studies to answer research questions respectively. Paper 1 articulated the association between two major stressors of female IPV survivors: different forms of IPV and financial strain. The longitudinal data was suitable to decompose the contributing factors determining change of financial strain over time with a focus on economic abuse. Paper 2 examined whether financial strain performs as a moderator or mediator between economic abuse and depression. Paper 3 determined whether financial education is an effective intervention to lessen the impact of financial strain on mitigating depressive symptoms.

The overall research hypothesis posits that female survivors of multiple forms of IPV and who experience financial strain will also experience higher levels of depression. Paper 1 posited economic abuse is expected to be more positively related to financial strain than other forms of IPV at the baseline (Hypothesis 1); further, the difference in economic abuse over time contributes to the change in financial strain over time to a larger extent than other forms of abuse (Hypothesis 2). Paper 2 hypothesized that the level of financial strain performs as a moderator of the relationship between economic abuse and depression; it is expected that a higher level of financial strain would affect
such a relationship than the lower level group (Hypothesis 3). Or, financial strain would act as a mediator prior to and after the financial education intervention. IPV survivors who experience economic abuse will report increased financial strain; as a result, they would be more likely to display depressive symptoms (Hypothesis 4). Paper 3 hypothesized that the financial education intervention reduces economic abuse and financial strain, which in turn decreases depression among female IPV survivors (Hypothesis 5). The rationale for this dissertation is that, if financial strain is associated with depression among female survivors, financial education will improve their material security and emotional well-being, contributing to a new approach for the prevention and treatment of depression.

Data

To answer all research questions, this dissertation utilized secondary data analysis of data collected as part of a longitudinal evaluation research (Postmus et al., 2015). The main variable of interest is financial strain across three separate studies. All types of IPV with a focus on economic abuse, and depression are included in the models as they have been found to be associated with financial strain (Butterworth et al., 2012; Copp et al., 2016; Postmus, Huang, et al., 2012; Strenio, 2017). The financial education intervention was included because it decreased financial strain over time (Postmus et al., 2015).

The randomized controlled trial study (hereafter, parent study) evaluated the impact of an economic empowerment curriculum on the lives of IPV survivors that covered a span of 14 months (Postmus et al., 2015). The financial literacy curriculum that specifically addresses women’s economic empowerment, entitled “Moving Ahead through Financial Management,” was created by the Allstate Foundation cooperated with
the National Network to End Domestic Violence (NNEDV). The research team created interview instruments to identify the levels of IPV, financial involvements, and mental health issues. Purposeful sampling strategy was used to recruit female IPV survivors from 14 advocacy agencies from four regions, including Northeast, Midwest, Texas, and Puerto Rico. Participants were randomly assigned into either a control group (regular services) or a treatment group (additional financial education) at the baseline Time 1 (T1) interview. The follow-up interviews took place 2 months after T1 (T2), 8 months (T3) and 14 months (T4). The total sample of 449 female IPV survivors was used for this dissertation. Paper 1 used longitudinal data across T1 and T4; while Paper 2 and Paper 3 used longitudinal data from T1 to T4.

**Importance to Social Work**

As researchers begin to recognize the need to prioritize financial recovery and empowerment within IPV interventions, this dissertation advanced knowledge about the relationships among IPV, financial strain, and depression with a focus on financial education as an intervention. The financial education has shown evidence of effectiveness through outcome evaluation and serves as an evidenced-based intervention for IPV survivors (Hetling et al., 2016). This study examined how a financial education intervention effectively reduces financial strain and depression among high-risk populations such as IPV female survivors. Different from traditional mental health services, this dissertation provided an empirical evidence of the financial education program as an innovative intervention to address depression among IPV survivors. The results serve as evidence for implications for social work practice, policy, and education.
Chapter 2: Conceptual and Theoretical Framework

Violence against women is a complex social problem that afflicts survivors’ well-being tremendously, as they face multiple stresses leading to lack of additional resources to manage their physical, mental, and financial well-being (Yim & Kofman, 2019). Although financial strain is a ubiquitous concern in general (American Psychological Association, 2015, 2017), the additional stress of financial strain has commonly befallen female IPV survivors (Salmi & Danielsson, 2014; Voth Schrag, 2015). Guided by the stress theory, this dissertation aimed to examine the association between the two pivotal psychosocial stresses: financial strain and IPV. Moreover, the study contributed to the knowledge on the effects of psychosocial stress on depressive symptoms among female IPV survivors. The Stress Process Model conceptualized by Pearlin and colleagues (1981) provides a useful framework to understand how stress impacts mental health over time; specifically, the model combines additional stress in the form of financial stress to examine the interaction of different stressors. Therefore, this section begins with a discussion of the term “stress” across different disciplines, followed by an introduction of the Stress Process Model and its three main concepts: stressors, mediators, and outcomes.

Science of stress extensively documents the effect of stress on a human’s brain, body and mind (Fink, 2010). Stress is viewed as changing circumstances that individuals initiate in their “sense-analyze-decide-respond” system: the nerve system receives stimulus, conveys the information to the brain for analyzing, deciding and responding, and connects organs, muscles or glands for action (Fricchione, 2016). Though the word “stress” has negative connotations, good stress can keep us alive and even improve our
performance in sports, academy, or work. However, undue stress can damage an individual’s health and well-being, particularly through stress-related diseases (Fricchione, 2016).

Although the word “stress” is widely used in common language, the term is poorly defined and its definition varies in different disciplines (Fink, 2010). For example, stress is easily confused with similar terms, such as “strain,” or “stressor.” In fact, stress and strain are two separate concepts that were first operationalized in the engineering field with stress defined as an external force against the material, and strain defined as a state of the material under stress. Each material has its elastic limit referring to the strength in resisting stress. When the material goes through catastrophic forces, the strain level may increase from initial elastic limit, and may breakdown once the strain exceeds the limit (Stanton & Bairstow, 1908).

The engineering concept of stress was applied to the study on organisms including animals and human beings amid the 19th century. The French physiologist Claude Bernard (1813-78) was the first to formally explain how organisms protect themselves from stress (Smith, 1987). In 1932, American physiologist Walter Cannon (1871-1945) identified homeostasis as the organic maintenance of stability in response to stress (Fink, 2010). Hans Selye (1907-82), known as the “father of stress,” publicized the General Adaptation Syndrome that was developed as three-stage reactions to the biological stress, including the alarm reaction, the stage of resistance, and the stage of exhaustion (Selye, 1936). Selye (1956) defined the concept of stress as “the nonspecific response of the body to any demand (p.1).” In Selye’s second edition, he first introduced the term “stressor” for the causative agent, for instance, temperature changes, drugs, or muscular
exercises, and “stress” for the reaction to stressor, as parallel to the use of “stress” and “strain” in the engineering correspond, respectively (Selye, 1976).

However, scholars criticized Selye’s definition as overemphasizing biological stress and ignoring psychosocial factors; in turn, the concept of stress is articulated independently based on different disciplines (Fink, 2010; Wheaton, 1996). For sociologists, stress denotes social disequilibrium, which refers to disturbances in the social structure (Smelser, 1963). For psychologists, the cognition of stressful situations should be underscored (Lazarus, 1966). For instance, the psychological term “threat” is used to indicate how individuals appraise the stress stimulus as an endangering condition. Hence, individuals adopt coping behaviors differently according to their cognitive appraisal of the threat. How the researchers interpret stress determines their study designs in different approaches, but not a single model or theory is able to fully unearth the intricate construct of stress.

Kaplan (1983) then combined the concepts of stress from psychology and sociology, and used the term “psychosocial stress,” defined as “the socially deprived, conditioned, and situated psychological process that stimulate any or all of the many manifestations of dysphoric affect falling under the rubric of subjective distress (p.196).” This new definition of stress integrating social structures and individual appraisal echoes the dual focus of social work: the individual well-being in a social context and the well-being of the society (National Association of Social Workers, 2017). In sum, the concept of stress expanded from external forces to a material from engineering principles to biological reactions in physiology, and then became more sophisticated along with psychological appraisals and social conditions.
Stress Process Model

Pearlin and colleagues (1981) outlined the key components in the stress process: the sources (stressors), the mediators, and the outcomes. The Stress Process Model underlines a conceptual framework of multiple complex elements and their interconnections that have been subsequently elaborated (see Figure 1). Using a longitudinal study with 2,300 U.S. adults, Pearlin et al. (1981) empirically validated the stress process by examining how disruptive job events (i.e. being fired, laid off, or downgraded) affect depression; economic strain is evidenced as an outcome of job loss as well as a predictor of depression. In their study, multiple precedents of depression are identified, such as economic strain, mastery, and self-esteem; the findings suggest a better understanding of the stress process as well as interventions. Pearlin et al. (1981) identify different components of stress and their interconnections; therefore, the stress is better understood as a process that consists of multiple elements and dynamic relationships. For this dissertation, the Stress Process Model provides a good fit to illustrate the complicated and changing interconnections among IPV, financial strain, financial education intervention, and depression among female IPV survivors. The following section introduces three elements of the Stress Process Model: stressors, mediators, and outcomes.
Figure 1

The Stress Process

<table>
<thead>
<tr>
<th>Stressors</th>
<th>Mediators</th>
<th>Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life events</td>
<td>Social supports</td>
<td>Individual responses</td>
</tr>
<tr>
<td>Life strains</td>
<td>Coping behaviors</td>
<td>Biochemical, physiological,</td>
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<tr>
<td>Self concepts</td>
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<td>emotional expressions</td>
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<tr>
<td>Mastery</td>
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<tr>
<td>Self-esteem</td>
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Note. Adapted from Pearlin et al., 1981

Stressors

Stressors refer to any social events requiring major social readjustment (Rahe et al., 1964), specifically requiring individuals to change their accustomed patterns (Holmes & Rahe, 1967). While biological stressors referred to heat, cold or noise (Selye, 1956), Holmes and Rahe (1967) define social stressors on life change events related to individual change in the way of life, such as marriage or change in financial status. They developed the Social Readjustment Rating Scale based on a list of 43 life events; they were the first to promulgate the idea that the death of a spouse is the most stressful life event.

In the Stress Process Model, Pearlin and colleagues (1981) adopted “life events” from Holes & Rache’s (1967) life change events as one of stressors. The also specified “life strains” referring to some life events that turn out to be a long-term life strain because not all life events are necessarily stressful; discrete eventful experiences and chronic life strain became two main sources of stressors. Furthermore, the stressors may be determined by self-concepts, referring to how people perceive their mastery level and self-esteem. Mastery means a sense of control and self-esteem involves a sense of self-worth (Pearlin et al., 1981).
Wheaton (1996) expanded the stress continuum to include additional types of stressors such as daily hassles, macro stressors, nonevents, and traumas (See Figure 2). Daily hassles are defined as annoying problems or occurring demands that need behavior readjustment of daily life, for instance, traffic jams or financial concerns (Kanner et al., 1981). Macro stressors are stressors occurring at the macro-level system, i.e. disaster or economic recessions. Non-events stressor refers to lack of change or dissatisfaction; for example, being in a job position without promotion for a long time. Traumas are horrifying life experiences that impact deeply and are needed to be distinguished from regular stressors (Khan, 1963).

**Figure 2**

*The Stress Continuum*

![Stress Continuum Diagram]

*Note. Adapted from Wheaton, 1996, p.48*

Wheaton (1996) noted that the engineering stress model clearly provides definitional guidelines and conceptual distinctions that relate to the human stress model (p.37). Individuals may simultaneously experience different types of stressors, such as life events and chronic stressors, and each elastic limit reaches to the high or excessive level of stress that impedes their functioning.
The stress continuum provides distinct information of the complexity of stressor concepts; the empirical importance of various stressors is beneficial to specify explanatory models. Thoits (1995) suggests that examining multiple stressors and their sequences may help specify the association between stress and health. In this dissertation, IPV can be viewed as sudden traumas or chronic stressors depending on the frequency of being abused. Financial strain is considered as a chronic stressor that exists most continuously in daily life. The relationship between IPV and financial strain needs further examination.

Mediators

Mediators refer to factors that directly or indirectly modify how an individual experiences stressors and what the outcome may be; in particular, social support and coping behaviors are identified as two major mediating resources between the stressors and the outcome (Pearlin et al., 1981). Social supports mean the supports and resources provided by personal social relations, such as individuals, groups or organizations. Coping behaviors are used to modify the stressful problems and to manage stress outcomes. In general, individuals who experience the same stress may respond differently because the relationships between stressors and outcomes may be mediated by different resources and actions (Pearlin et al., 1981).

Taylor and Aspinwall (1996) mapped out the complex, dynamic process of psychosocial stress in Figure 3. They underscore more important moderators, including personal resources (genetic, individual, and familial factors) and external resources. Each factor may be an independent variable or another mediator with each element in the stress process. To present the diagram more succinctly, moderating effects and feedback loops
were omitted, such as the moderator of external resources on the relationship between stressor and appraisals, or the effect of the stressor on personal or external resources.

**Figure 3**

*Mediating and Moderating Process in Psychosocial Stress*

![Diagram](image)

*Note.* Adapted from Taylor & Aspinwall (1996), p.98.

Interestingly, stressors themselves may act as mediators or moderators of the effects of other stressors. For instance, Pearlin et al. (1981) noted that when economic strain is held constant, the direct path from job disruption to changes in depression decreased from .34 to .26. In other words, life strains are both a product of life events and a channel through which life events impact psychological well-being (Pearlin et al., 1981). For IPV survivors, there is need for more research regarding different stressors and their mediating or moderating effects. Accordingly, the second paper of this dissertation applies the life chronic stressor-financial strain-to examine whether financial strain performs a mediator or moderator of the relationship between IPV and depression. Then, the third paper investigates how financial education as an intervention or external resource affects the association between financial strain and depression.
Outcomes of Stress

The manifestations of stress are regarded as a response that the organism reacts to stressors and mediators, even though there are disagreements about the “real” outcome (Pearlin et al., 1981). For example, prolonged exposure to stress is known to result in problems associated with physical, psychological, and social functioning of human beings (Fricchione, 2016). However, which problems led to exact outcomes of stress is unclear due to the complicated stress process. A vast body of literature predominantly focuses on mental health outcomes of stress, in particular emotional distress and maladaptive behaviors (Hammen, 2005; Lincoln & Chae, 2010; Probst et al., 2018; Starkey et al., 2013; Thoits, 2010; Tucker-Seeley et al., 2013). In general, consequences of stress include depression, anxiety, psychological distress, substance abuse, conduct disorder, and antisocial behaviors (Aneshensel, 1996). In this dissertation, depression is viewed as the consequence of multiple stressors that female IPV survivors face.

Different from the typical medical perspective that stress occurs due to individual or family insufficiency, Aneshensel (1992) contributes to the concept of stress from a sociological perspective rather than blaming the individuals. Individuals’ different locations in social systems predispose some social groups to higher levels of stress than others. Research has shown that some structurally disadvantaged groups frequently report multiple stress exposure of negative life events and chronic stress including women, people of color and gender minorities, and individuals of lower socioeconomic status (Grace, 2020; Turner & Avison, 2003; Turner & Lloyd, 1995). This phenomena figures high levels of psychological distress among members of marginalized groups (Thoits, 2010). Moreover, exposure to different types of stressors may contribute to mental health
disparities. Compared to life events or trauma, chronic stress is found to be a robust indicator of mental health such as depression (Turner & Avison, 2003; Turner & Lloyd, 1995). Such relationship also persists to anticipatory stressors that have not occurred but have the potential of occurring; for instance, Grace (2020) found that worries about economic/residential security are highly related to depression among college seniors compared to worries about traumatic events and daily discrimination.

Aneshensel (1996) argued that different consequences of stress other than emotional well-being need to be included to better understand the full process of psychosocial stress. Stress-induced disorders, so called secondary consequences, can be considered as midpoints rather than end points in the Stress Process Model (Aneshensel, 1992). For example, Voth Schrag (2015) utilized the Fragile Family data to examine material hardship as an outcome of economic abuse. Depression was found to partially mediate the association between economic abuse and material hardship, but economic abuse has a strong independent effect as well. Voth Schrag’s research shows that the secondary consequences of economic abuse can spill over to an individual’s financial well-being.

In sum, stress is very common in daily life, which refers to physical or psychological responses to demanding situations (Fink, 2010). More specifically, stress is defined as a state of imbalance within a person whose capacity is unable to cope with the environmental demands (Lazarus, 2000). Stress refers to the discrepancy between existing demand and available response capabilities (Thoits, 2010). Stress theory is a theory that explains how individuals perceive stress and respond to stress (Weber, 2011). Wheaton (1996) specifies multiple roles of stressors that may act in the Stress Process Model, such as mediators, moderators, or deterrents. Aneshensel (1992) suggests that
social stress is a necessary consequence based on individuals’ different social locations, such as race, gender, and class. In this dissertation, the Stress Process Model is used to elucidate the intersection of financial strain, IPV, and depression.

This dissertation also applies stress theory to further understand how stress impacts the wellbeing of female IPV survivors such as financial wellbeing. There are two potential pathways to describe the relationship between IPV and financial strain. On the one hand, IPV serves as the outcome of financial stressors. Research has shown that individuals with financial strain are at higher risk of IPV perpetration (Cunradi et al., 2002; Fox et al., 2002). On the other hand, IPV leads to financial strain. Male partners may abuse women economically with several tactics such as jeopardizing jobs and ruining credit; in turn, women suffer increasing financial strain (Postmus, Plummer, McMahon, Murshid, et al., 2012).

This dissertation examines financial strain through three independent studies among female IPV survivors. Based on stress theory, financial strain as a common stressor can play multiple roles as a mediator, a moderator, or an outcome in the Stress Process Model (Wheaton, 1996). Accordingly, financial strain is viewed as an outcome variable of IPV in Paper 1, as a predictor leading to depression outcome in Paper 2, and as a mediator between financial education and depression at T1 and overtime in Paper 3. Through such meticulous examination of the stress that IPV survivors face, this dissertation provides a comprehensive understanding of financial strain interconnected with other stressors. This dissertation makes the claim that financial education can be an effective intervention that decreases financial strain.
Chapter 3: Paper 1

INTIMATE PARTNER VIOLENCE AND FINANCIAL STRAIN:
INSIGHTS FROM THE BLINDER-OAXACA DECOMPOSITION ANALYSIS

By

HSIU-FEN LIN

Manuscript 1 of 3 of a dissertation entitled:

FEMALE SURVIVORS OF INTIMATE PARTNER VIOLENCE: FINANCIAL STRAIN, DEPRESSION, AND FINANCIAL EDUCATION INTERVENTION

A dissertation submitted to the PhD Program in Social Work Rutgers, The State University of New Jersey in partial fulfillment of the requirements for the degree of Doctor of Philosophy Graduate Program in Social Work

Written under the direction of Judy L. Postmus
Introduction

Intimate partner violence (IPV) against women is an epidemic that affects millions of Americans as one in three U.S. women experience IPV in their lifetime (Smith et al., 2017). IPV is well documented to negatively impact the physical and mental health of survivors (Oram et al., 2017); recently researchers are examining the consequences of IPV on survivors’ economic well-being (Adams et al., 2013; Resko, 2010). Women’s experiences of IPV and financial hardship are intertwined with economic inequality, but often overlooked in studies. The term "financial strain" is a ubiquitous general stress (American Psychological Association, 2015, 2017), but financial strain that commonly befalls female IPV survivors has not been acknowledged and sufficiently researched.

Financial strain is defined as an individual perception of not knowing how to make ends meet (Gutman et al., 2005). Such definition in reality is crucial to the survival of IPV victims. Women, in general, are more likely to experience financial hardship than men, and live with economic hardship for a longer period of time (Tucker & Lowell, 2016). Women also experience higher levels of financial strain resulting in physical complaints and poor psychological well-being (Drentea & Reynolds, 2014; Frank et al., 2014); in turn, causing further gender disparity (Ahnquist et al., 2007). Financial strain serves as an indicator of financial wellbeing (Hacker et al., 2014), but is less likely to be linked to women's economic welfare in IPV studies.

Financial difficulties trap women in relationships because they become economically dependent on their abusive partners (Kim & Gray, 2008). Male perpetrators use different forms of abuse to manipulate and control female survivors; the majority of IPV studies primarily focus on physical, psychological, and sexual abuse (Barrios et al.,
Currently, research on economic abuse is emerging and has established this behavior as another tactic used by abusers to trap women in relationships (Postmus et al., 2020). Research shows that experiencing IPV harms women economically (Adams et al., 2013); however, no study has precisely examined how different types of IPV impacts their financial well-being differently, such as physical, psychological, or economic abuse. Assessing the associations between specific forms of IPV and financial strain is crucial to identify effective intervention and prevention.

Given the significant overlap of IPV and financial strain, this study examines the associations between IPV and financial strain with data collected from a sample of female IPV survivors. The specific aims for this paper are (a) to examine the relationship between financial strain and different types of abuse (i.e., physical abuse, psychological abuse, sexual abuse, and economic abuse); and (b) to analyze contributing factors determining change of financial strain over time. Guided by stress theory, this study tests the impact of four types of abuse on financial strain, and decomposes the components of economic consequences that female IPV survivors face.

**Background**

**Stress Theory**

The term “stress” is widely used in common language; moreover, there is an entire science of stress that documents its effect on the human brain, body and mind (Fink, 2010). Hans Selye (1907-82), known as the “father of stress,” applied stress to biology and publicized the General Adaptation Syndrome (Selye, 1936). He first introduced the term “stressor” for the causative agent and “stress” for the reaction to stressor (Selye,
The term stressor refers to any social event where individuals need to adopt major social readjustment (Rahe et al., 1964), specifically to change their accustomed patterns (Holmes & Rahe, 1967). Kaplan (1983) combined the concepts of stress from psychology and sociology, and used the term “psychosocial stress,” defined as “the socially deprived, conditioned, and situated psychological process that stimulate any or all of the many manifestations of dysphoric affect falling under the rubric of subjective distress (p.196).” This definition of stress integrating social structures and individual appraisal echoes the dual focus of social work: the individual well-being in a social context and the well-being of the society (National Association of Social Workers, 2017). Thus, the concept of stress expanded from biological reactions in physiology, and then became more sophisticated along with psychological appraisals and social conditions.

**Stress Process Model**

Stress is better understood as a process that consists of multiple elements and dynamic relationships. Pearlin and colleagues (1981) proposed the Stress Process Model to outline key components in the stress process: the stressors, the mediators, and the outcomes. The conceptual framework of multiple complex elements and their interconnections has been subsequently elaborated. Pearlin and colleagues (1981) developed two sources of stressors: one is “life events” adopted from Holes & Rache’s (1967) life change events; the other is “life strains” referring to some life event that turns out to be a long-term life strain.

To fully understand various forms of stressors, Wheaton (1996) created the stress continuum by adding daily hassles, macro stressors, nonevents, and traumas. Daily hassles are defined as annoying problems or occurring demands that need behavior
readjustment of daily life, such as traffic jams or financial concerns (Kanner et al., 1981). Macro stressors are stressors occurring at the macro-level system, i.e. disaster or economic recessions. Non-event stressors refer to lack of change or dissatisfaction; for example, being in a job position without promotion for a long time. Traumas are horrifying life experiences that impact deeply and are needed to be distinguished from regular stressors (Wheaton, 1996).

Female IPV survivors simultaneously experience different types of stressors that may affect their wellbeing and health. The stress continuum provides distinct information on intricate stressors and gives a framework for explanatory models. Thoits (1995) suggests that examining multiple stressors and their sequences helps to specify the association between stress and health. In this study, the main variables-IPV and financial strain- are considered as stressors to IPV female survivors. IPV is viewed as sudden traumas or chronic stressors depending on the frequency of being abused. Financial strain is considered as a chronic stressor that exists most continuously in daily life. However, limited studies to date examine the relationship between different forms of IPV and financial strain among female survivors.

Financial Strain

Financial strain is one of several stressors that American adults face. Some groups experience higher money-related stress levels than the general American population, such as women, younger Americans, low-income households, and parents of children under the age of 18 (American Psycological Association, 2015). As Thoits (2010) noted, the phenomenon that stress exposure is unequally distributed among different social groups accounts for health inequalities in physical and psychological well-being. Several factors
contributed to the increase of financial strain, such as the worldwide economic recession, low savings, consumerism and high levels of debt (Vosloo et al., 2014; Weller & Logan, 2009).

The term financial strain is broadly used with various synonyms interchangeably, such as financial hardship (Azzani et al., 2015), financial stress (Åslund et al., 2014; Ryan, 2012), economic strain (Pearlin et al., 1981; Reeb et al., 2013), economic hardship (Pulgar et al., 2016), and perceived income adequacy (Dziak et al., 2010; Fahmy et al., 2016). The concept of financial strain is operationalized by objective and subjective measures, and can vary from single question (Dziak et al., 2010) to scales (Aldana & Liljenquist, 1998). Objective measures include the debt-to-income ratio or income-to-needs ratio (Benson et al., 2003; Zimmerman & Katon, 2005). Subjective measures obtain self-reported perceptions of financial difficulties, such as income, paying bills, making ends meet or perceptions of difficulties (Tucker-Seeley et al., 2013; Valentino et al., 2014).

Financial strain is highly linked to socioeconomic status, including employment status, education, and income (Fatimah et al., 2012; Szanton et al., 2010; Zimmerman & Katon, 2005). In particular, low-income families persistently report high levels of financial strain over time (Ribar, 2005). Financial strain can also serve as a mediator between socioeconomic variables, such as income, employment and different outcomes, such as individual psychological distress (Valentino et al., 2014), marital quality (Lincoln & Chae, 2010), or child development (Masarik & Conger, 2017).

**IPV and Financial Strain**

Despite a substantial body of literature examining the impact of IPV on mental
health (Devries et al., 2013; White & Satyen, 2015), research is only recently emerging that explores the consequence of IPV on financial well-being (Adams et al., 2013; Hartley & Renner, 2018; Sauber & O’Brien, 2020). Most available IPV research has primarily focused on economic self-sufficiency, defined as independence from public assistance and the ability providing basic needs for individuals and families (Gowdy & Pearlmutter, 1993). Using a sample of 147 low-income female IPV survivors, Sauber and O’Brien (2020) pointed out that economic abuse, not financial/work-related resource loss, is significantly associated with their economic well-being. Goodman et al. (2010) have noted the fact that impoverished women tend to lack the choice or resources to fulfill their basic needs. Hence, using economic self-sufficiency as an indicator of economic well-being may fail to capture real-life financial concerns among low-income families (Sauber & O’Brien, 2020).

Financial resources are critical for IPV survivors to obtain financial independence (Postmus, Plummer, McMahon & Zurlo, 2012), but research shows that IPV continues to jeopardize women’s economic well-being after leaving an abusive relationship. Adams and colleagues (2013) randomly selected 503 single mothers who received Temporary Assistance for Needy Families (TANF), and conducted a longitudinal study over 5 years. Their study findings show that women who were recently physically abused in the past two years reported more objective and anticipated material hardship than those who did not experience IPV. Surprisingly, the study participants whose IPV that had ended within the prior three years also confronted significantly objective material hardship (Adams et al., 2013). As such research unfolded the deleterious economic consequences of physical IPV, the question of how other types of IPV affect survivors’ economic well-being still
remains.

More research is needed to explore other indicators of financial well-being among IPV survivors. The concept of economic self-sufficiency may not best fit the financial concerns among low-income populations due to the lack of resources (Goodman et al., 2009; Sauber & O’Brien, 2020). Fox and Chancey (1998) identified financial strain as the strongest predictor of individual and family well-being compared to other measures of economic distress, such as job instability and job insecurity. Adams (2011) suggests that financial stability and subjective financial well-being can be other dimensions to measure the impact of IPV on financial well-being.

Research has shown that financial strain is highly related to the risk of violence against women, predominately on physical abuse (Benson et al., 2003; Copp et al., 2016; Fox et al., 2002; Friedan, 1995; Lucero et al., 2016). Fox et al. (2002) examined the impact of economic distress on the risk of domestic violence, their findings suggested that the partner’s job strain and financial inadequacy predicts a high risk of physical violence. Benson et al. (2003) found that subjective financial strain increased females’ likelihood of physical violence at a later time. Guided by the family stress model, Copp et al. (2016) confirmed that economic and/or career concerns, and material hardship increase the odds of physical IPV; accordingly, they suggested that interventions should target specific content of economic concerns among young adult couples instead of anger management. Using a sample of 941 women from Fragile Families and Child Well-being data, Lucero et al. (2016) found that women who experienced economic hardship had higher odds of experiencing physical and emotional IPV and such relationships persisted over 9 years.
Although less recognized, economic abuse is a unique form of IPV (Postmus et al., 2020). Kutin et al. (2017) were the first researchers to link financial strain with economic abuse. Their findings indicated that women who experienced economic abuse reported high levels of financial stress when controlling for physical IPV and emotional IPV (Kutin et al., 2017). Similar results were shown in a sample of 340 Chinese women who reported financial strain associated with risks of experiencing husband’s financial control (Zheng et al., 2019). Both studies uncovered the link between economic abuse and financial strain in the general population. Economic abuse is extremely high among IPV survivors as 94% and 99% of the IPV survivors have reported economic abuse (Adams, 2011; Postmus, Plummer, McMahon, Murshid, et al., 2012). However, no available study examines the link between economic abuse and financial strain using only IPV survivors. This paper argues that the link is stronger among female IPV survivors.

Notably, financial strain can be viewed as the outcome of IPV as well. Using the National Longitudinal Study of Adolescent to Adult Health data, Strenio (2017) found that IPV victimizations increased the probability of reporting economic hardship and welfare assistance for both females and males in later life. Females who experienced high intensity IPV were more likely to face financial challenges compared to those who never or had low IPV experiences.

Several socio-demographic attributes have been connected to IPV and financial strain among women. Age appears to have mixed impact on IPV experiences as younger female veterans aged younger than 35 years were more likely to report IPV (Dichter et al., 2017) whereas older Kenya women aged between 40 and 49 years reported higher (Memiah et al., 2021). Women of color tend to experience IPV and financial strain
compared to their counterparts (Breiding et al., 2008; Golden et al., 2013; Memiah et al., 2021). Becoming married was associated with increased IPV (Dichter et al., 2017). Employment, high level of education and income are protective factors of IPV for women (Breiding et al., 2008; Stylianou, 2018; Zheng et al., 2019).

Unclear is the association between financial strain and different types of IPV as IPV viewed as patterns of coercive control where abusers manipulate force or threats to control victims (Stark, 2007). Matjasko et al. (2013a) highlight that different types of IPV require different prevention approaches because each type is distinguishable with specific risks and protective factors. Identifying the specific form of IPV is pivotal to provide effective interventions and preventions.

**Present Study and Hypothesis**

According to the Stress Process Model, IPV can lead to financial strain or vice versa. In other words, considering the role of perpetrators and survivors clarifies the direction. For perpetrators, the IPV incidence is an outcome of financial strain because they may actively use violence as a response to the accumulation of financial inadequacies. For survivors, the IPV experience is viewed as a stressor stimulus that affects their financial strain. This paper explores the latter among IPV female survivors using secondary data analysis from a sample of IPV survivors who participated in a randomized controlled study.

This paper addressed the gap by examining the relationship between financial strain and different forms of IPV including physical abuse, psychological abuse, sexual abuse, and economic abuse using the longitudinal data from a sample of female IPV survivors. Economic abuse is considered to account for financial well-being more than other forms
of IPV due to the nature of economic interference (Postmus, Plummer, McMahon, Murshid, et al., 2012). Financial strain of IPV survivors may be impacted by their experience of economic abuse based on similar financial concerns, but the relationship between economic abuse and financial strain has not been tested. Given the common economic nature of economic abuse and financial strain, the expectation is that economic abuse would be more positively related to financial strain than other forms of IPV at the baseline. Further, changing economic abuse contributes to the change in financial strain over time to a larger extent than other forms of abuse. More specifically, decreased economic abuse will decrease financial strain over time.

Data and Methods

Sample

This study utilized data collected during a longitudinal, randomized controlled trial study evaluating the impact of a financial literacy program with female IPV survivors over 14 months (Postmus et al., 2015). The Allstate Foundation collaborated with the National Network to End Domestic Violence (NNEDV) to create a financial literacy curriculum that specifically addresses survivors’ economic empowerment, entitled “Moving Ahead through Financial Management.” The specific aims of the curriculum are to identify signs of financial abuse, and to enhance financial knowledge to ensure the survivors’ financial well-being.

The research team adopted the purposeful sampling strategy to recruit participants from 14 IPV organizations in 7 states from four regions, including Northeast, Midwest, Texas, and Puerto Rico. To participate, women must have: (a) experienced at least one form of intimate partner violence in the past year; (b) be female and 18 years old or older;
(c) had not taken a financial literacy class within the past 2 years; (d) committed to participate in four interviews; and (e) committed to attend the curriculum if she was randomly assigned.

Since most IPV agencies serve large populations of English and Spanish survivors, the instruments were translated into Spanish. To serve as a baseline, all participants were randomly assigned into either a control group or a treatment group at Time 1 interview (T1). The first face-to-face interviews were conducted as the baseline prior to the implementation of the curriculum. Advocates across IPV agencies implemented the curriculum to IPV survivors who were randomly assigned to the treatment group while the control group received case management and regular services. The follow-up interviews took place 2 months after the first interview (T2), 8 months after the first interview (T3) and 14 months after the first interview (T4). To maintain retention, the incentives increased: T1 -$25, T2 -$30, T3 -$35, and T4 -$40.

A total of 477 female IPV survivors initially attended in the parent study, and a total of 456 women were randomized at T1 after the eligibility screening. The reasons for case removal included lack of abuse experiences (15 participants), completing the interview too early (5 participants), and duplicity (1 participant). All participants were randomly assigned into either the control group (n=240) or the treatment group (n=216), and 65.6% of participants completed T2 interviews (n=300). The response rates of T3 and T4 were 61.1% and 53.8% of the total 456 participants, respectively. The longitudinal studies of IPV survivors may face a high rate of attrition because of their living instability caused by the abuse (Dutton et al., 2003); in turn, the attrition bias affects the validity for the IPV interventions studies (Ramsay et al., 2005). To address the attrition issue, the sample of
compliant participants at both T1 and T4 were used, and then the results were compared to multiple imputed data of the full sample.

**Measures**

**Financial Strain**

The dependent variable in this study was measured using an 18-item Financial Strain Survey (FSS) developed by Aldana and Liljenquist (1998) then validated by Hetling et al. (2014) among the IPV survivors. The scale utilized 5-point Likert-type scale ranging from “1=never” to “5=always” on 18 items employing five subscales: poor financial education (i.e., “I feel well informed about financial matters”), poor relationships (i.e., “I tend to argue with others about money”), physical symptoms (i.e., My muscles get tense when I add up my bills), poor credit card use (i.e., “I get new credit cards to pay off old ones”), and inability to meet financial obligations (i.e., “Many of my bills are past due”). The total FSS in this study had a Cronbach’s reliability coefficient of .84 at T1 and .88 at T4. The five subscales at T1 also demonstrated strong internal reliability (poor financial education, $\alpha = .81$; poor relationships, $\alpha = .80$; physical symptoms, $\alpha = .87$; poor credit card use, $\alpha = .54$; inability to meet obligation, $\alpha = .82$).

**Intimate Partner Violence**

The main independent variables consisted of different forms of IPV measured by the 25-item Abusive Behavior Index-Revised (ABI-R) scale (Postmus, Stylianou, et al., 2016), a modified version of 30 items from the original ABI (Shepard & Campbell, 1992). Participants reported behaviors that had been used by their intimate partners or former partners in the past 12 months by using a 5-point Likert type scale from “1=never” to “5=very often”. Women were asked to report the frequency of experiencing physical
abuse (i.e., suffering being pushed, hit, spanked, choked etc.), psychological abuse (i.e., suffering being threatened with or without weapon, humiliated, criticized, etc.) and sexual abuses (i.e., “pressured you to have sex in a way you don’t like.”) (alpha reliability = .95 at T1 and .97 at T4).

Additionally, economic abuse was measured by the 12-item Scale of Economic Abuse (SEA-12; Postmus. Plummer, et al., 2016). Using a 5-point Likert-type scale from “1=never” to “5=quite often”, participants reported frequency of behaviors by their partner or ex-partner in the past 12 months, including employment sabotage (4 items, i.e., “Threaten you to make you leave work”), economic control (5 items, i.e. “Keep financial information from you”), and economic exploitation (3 items, i.e., “Spend the money you needed for rent or other bills.”) (alpha reliability = .88 at T1 and .92 at T4).

Control Variables

This current study included control variables that may affect IPV and financial strain, such as demographics, socioeconomic characteristics, familial factors, and membership in the treatment or control group. Demographic characteristics in this study consisted of age, ethnicity, and U.S.-born. Age was calculated as the year of interview subtracted by the participants’ year of birth. Eight attributes of race/ethnicity were dichotomized into Hispanic and non-Hispanic. Participants were asked if they were born in the U.S. or not. The other three socioeconomic characteristics include education, employment status, and annual income. Participants were asked about their educational attainment and the years of completed education were collapsed into three groups: less than high school, high school, and college and graduate school. Their reports of employment status were dichotomized to employed and unemployed. Average annual household income was
measured by 5-level categorical variables from less than U.S. $10,000, $10,001-$15,000, $15,001-$25,000, $25,001-$35,000 and more than $35,000. Since approximately half (45%) of the sample earned less than U.S. $10,000 per year, the answers were recorded into a dichotomous variable for whether the woman reported $10,000 or more of income compared with less. Regarding familial factors, participants were asked yes or no to these two questions: whether they were currently in a relationship with the abusive partner and responsible for any children under the age of 18. Participants who were randomly assigned to the treatment group received the financial literacy curriculum compared to the control group who received regular services.

**Analytic Strategy**

Regression and decomposition analysis were used to examine the association between different forms of IPV and financial strain among female survivors. To decompose the change of financial strain among female IPV survivors over time, this study used longitudinal data collected at both T1 (n=456) and T4 (n=246, 53.8 % of T1 sample). The data of educational attainment, a critical factor associated with financial strain, was only available at T4. Thus, this study is limited to those who answered education level at T4 and used the same responses for their education variable at T1. As a result, this study analyzes the data from 229 female survivors to examine the association between IPV experiences and financial strain.

Missing values in longitudinal panel data is common in IPV studies because IPV survivors may be more likely to leave the study due to violence exposure (Johnson, 2018; Krause et al., 2008). In this study, the results of Little’s MCAR test ($X^2=3047.436$, DF=2897, p=.025) and separate-variance t tests suggested that the data might not be
missing completely at random but rather are consistent with miss at random (MAR) (Garson, 2015). To address the attrition issue, the multiple imputation method was used to generate the full sample data at T4 except the outcome variable, financial strain. The regression results of the imputed data were used to compare with those of 229 female survivors at T4.

The fact that female IPV survivors may face living and job instability due to abuse experiences may lead to higher rate of sample attrition (Dutton et al., 2003); in turn, the attrition bias affects the validity for the IPV longitudinal studies (Ramsay et al., 2005). According to the missing value analysis of the parent study, there was 29% of missingness across all values in the data set (Johnson, 2018). Hence, this study used multiple imputation to generate 30 imputations to maintain the full sample of T4 (Graham, 2009). Multiple imputation was only used in the multivariate regression models, not the decomposition analysis because there was no available method to combine the imputation data in the decomposition analysis (Maika et al., 2013).

Multiple regression models were performed to examine the relationship between different types of abuse and socioeconomic variables on financial strain. Based on the linear regression method, the Blinder-Oaxaca decomposition method (Blinder, 1973; Oaxaca, 1973) was used to partition different types of abuses in contributing to the change of financial strain over time. To compare the variation in the outcome differences, the decomposition technique has been widely applied to decompose the difference between changes over time (Vujicic & Nasseh, 2014) or the differences between two groups, such as gender wage gap (Oaxaca, 1973), racial wage discrimination (Blinder, 1973), racial placement instability (Foster et al., 2011), or rural-urban digital inequality
(Liao et al., 2016). Regression and decomposition analysis were used to perform the data analysis by Stata 15 (StataCorp, 2017).

For the current study, the linear regression model is expressed as:

\[ Y_{ig} = \beta_g x_{ig} + \epsilon_{ig}. \]

\( Y \) referred to financial strain and \( X \) denoted all forms of IPV including economic, physical, psychological, and sexual abuse. The \( g \) indicates the different time periods: T1 and T4, and \( g=(T1, T4) \), in which \( g \) was valued T1 or T4. For \( i=1, 2, \ldots, 229 \) in this sample. The Blinder and Oaxaca decomposition is explained in the following way:

\[ \overline{Y}_{T4} - \overline{Y}_{T1} = \Delta OLS = \beta_{T4} (\overline{X}_{T4} - \overline{X}_{T1}) + \overline{X}_{T1} (\beta_{T4} - \beta_{T1}) \]

In the above equation, the difference of financial strain at T1 and T4 were divided into two parts with a sum of 100%. The first “explained” part, \( \beta_{T4} (\overline{X}_{T4} - \overline{X}_{T1}) \), displays part of the difference of financial strain between T1 and T4 is due to the mean differences among different types of abuses between T1 and T4. More specifically, female IPV survivors whose financial strain changed over time would be explained by the change of their different experiences of abuse over time (e.g. physical abuse and economic abuse). The second “unexplained” part, \( \overline{X}_{T1} (\beta_{T4} - \beta_{T1}) \), shows the remaining part of financial strain differences over time is beyond the explained coefficients, which could not be explained by the main independent variables. The higher percentage of explained part indicates that the differences of multiple IPV forms contribute to the difference of financial strain over time.
Results

Descriptive Results

In this study, the findings show that the IPV experiences and financial strain significantly decreased over 14 months among female survivors. In Table 1, the mean of financial strain decreased significantly from 2.83 at T1 to 2.20 at T4. T-test results showed the difference of financial strain between T1 and T4 as significant, t=10.25 (p< .001). Similarly, each type of IPV significantly decreased from T1 to T4 (p< .001), and the significant differences can be decomposed into their contributions to the mean changes of financial strain over time. The majority of IPV survivors were at their young adulthood, Hispanic, college and graduate school, employed, and earned annual income over 10,000. Notably, almost every four of five women (80%) were not in a relationship with an abuser and had children under 18 year-old (see Table 1).

Table 1

Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Time1</th>
<th>Time4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Strain</td>
<td>2.83</td>
<td>2.20***</td>
</tr>
<tr>
<td>Physical abuse</td>
<td>2.23</td>
<td>1.20***</td>
</tr>
<tr>
<td>Psychological abuse</td>
<td>3.51</td>
<td>1.68***</td>
</tr>
<tr>
<td>Sexual abuse</td>
<td>2.06</td>
<td>1.14***</td>
</tr>
<tr>
<td>Economic abuse</td>
<td>2.59</td>
<td>1.43***</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than 30</td>
<td>23.14%</td>
<td>20.52%</td>
</tr>
<tr>
<td>30-45</td>
<td>55.02%</td>
<td>56.33%</td>
</tr>
<tr>
<td>45+</td>
<td>21.83%</td>
<td>23.14%</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>14.41%</td>
<td>14.41%</td>
</tr>
<tr>
<td>High school</td>
<td>39.74%</td>
<td>39.74%</td>
</tr>
<tr>
<td>College and graduate school</td>
<td>45.85%</td>
<td>45.85%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>60.26%</td>
<td>60.26%</td>
</tr>
<tr>
<td>U.S.-Born</td>
<td>52.84%</td>
<td>52.84%</td>
</tr>
<tr>
<td>In a relationship with abuser</td>
<td>19.65%</td>
<td>16.59%</td>
</tr>
</tbody>
</table>
Multivariate Results

The regression results are presented in Table 2. The full model accounted for an estimated 13% and 22% of the variation in financial strain at T1 and T4, respectively. The effect of economic abuse on financial strain was greater than other factors, and persisted over time. Other types of abuse showed a marginal effect on financial strain. Age, Hispanic, and U.S. born showed a significant impact on financial strain at T1, but the statistical significance diminished over time. Participation in the treatment group was significantly associated with the decrease of financial strain over time. Curiously, employment and income status were not significantly associated with the magnitude of financial strain among these survivors. The regression models using multiple imputed data in the full sample of 456 participants at T4 despite the fact that they dropped out or discontinued services. The results from multiple imputations supported the research hypothesis that the economic abuse was strongly associated with financial strain, followed by physical abuse than other demographic or socioeconomic characteristics.
Regression Models of Financial Strain on Types of Abuse and Other Factors

<table>
<thead>
<tr>
<th></th>
<th>T1</th>
<th>T4</th>
<th>All</th>
<th>Multiple Imputation of T4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical abuse</td>
<td>0.09</td>
<td>0.26*</td>
<td>0.12+</td>
<td>0.32*</td>
</tr>
<tr>
<td>(0.05)</td>
<td>(0.14)</td>
<td>(0.05)</td>
<td>(0.15)</td>
<td></td>
</tr>
<tr>
<td>Psychological abuse</td>
<td>-0.02</td>
<td>-0.09</td>
<td>0.11</td>
<td>-0.02</td>
</tr>
<tr>
<td>(0.06)</td>
<td>(0.08)</td>
<td>(0.05)</td>
<td>(0.09)</td>
<td></td>
</tr>
<tr>
<td>Sexual abuse</td>
<td>0.05</td>
<td>-0.17+</td>
<td>-0.01</td>
<td>-0.21+</td>
</tr>
<tr>
<td>(0.04)</td>
<td>(0.12)</td>
<td>(0.04)</td>
<td>(0.11)</td>
<td></td>
</tr>
<tr>
<td>Economic abuse</td>
<td>0.29**</td>
<td>0.36**</td>
<td>0.34***</td>
<td>0.26*</td>
</tr>
<tr>
<td>(0.06)</td>
<td>(0.11)</td>
<td>(0.06)</td>
<td>(0.11)</td>
<td></td>
</tr>
<tr>
<td>Age Less than 30</td>
<td>(Reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age 30-45</td>
<td>0.16*</td>
<td>0.16*</td>
<td>0.15**</td>
<td>0.20+</td>
</tr>
<tr>
<td>(0.10)</td>
<td>(0.11)</td>
<td>(0.08)</td>
<td>(0.11)</td>
<td></td>
</tr>
<tr>
<td>Age 45+</td>
<td>0.21*</td>
<td>0.13</td>
<td>0.15**</td>
<td>0.21</td>
</tr>
<tr>
<td>(0.13)</td>
<td>(0.14)</td>
<td>(0.10)</td>
<td>(0.14)</td>
<td></td>
</tr>
<tr>
<td>Less than high school</td>
<td>(Reference)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High school</td>
<td>0.03</td>
<td>0.08</td>
<td>0.03</td>
<td>0.05</td>
</tr>
<tr>
<td>(0.13)</td>
<td>(0.13)</td>
<td>(0.09)</td>
<td>(0.13)</td>
<td></td>
</tr>
<tr>
<td>College and graduate school</td>
<td>0.10</td>
<td>0.08</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>(0.14)</td>
<td>(0.14)</td>
<td>(0.10)</td>
<td>(0.13)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.20*</td>
<td>-0.02</td>
<td>0.08+</td>
<td>-0.04</td>
</tr>
<tr>
<td>(0.10)</td>
<td>(0.10)</td>
<td>(0.07)</td>
<td>(0.10)</td>
<td></td>
</tr>
<tr>
<td>U.S.-born</td>
<td>0.18*</td>
<td>-0.11</td>
<td>0.04</td>
<td>-0.18+</td>
</tr>
<tr>
<td>(0.10)</td>
<td>(0.11)</td>
<td>(0.07)</td>
<td>(0.11)</td>
<td></td>
</tr>
<tr>
<td>In a relationship with abuser</td>
<td>0.10</td>
<td>0.00</td>
<td>0.04</td>
<td>-0.00</td>
</tr>
<tr>
<td>(0.10)</td>
<td>(0.12)</td>
<td>(0.08)</td>
<td>(0.12)</td>
<td></td>
</tr>
<tr>
<td>Having children under 18 year-old</td>
<td>0.12</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.03</td>
</tr>
<tr>
<td>(0.12)</td>
<td>(0.13)</td>
<td>(0.09)</td>
<td>(0.13)</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>0.01</td>
<td>-0.09</td>
<td>-0.04</td>
<td>-0.18+</td>
</tr>
<tr>
<td>(0.08)</td>
<td>(0.09)</td>
<td>(0.06)</td>
<td>(0.09)</td>
<td></td>
</tr>
<tr>
<td>Annual household income over $10,000</td>
<td>-0.05</td>
<td>-0.09</td>
<td>-0.07</td>
<td>-0.11</td>
</tr>
<tr>
<td>(0.08)</td>
<td>(0.09)</td>
<td>(0.06)</td>
<td>(0.09)</td>
<td></td>
</tr>
<tr>
<td>Treatment group</td>
<td>-0.01</td>
<td>-0.21***</td>
<td>-0.11***</td>
<td>-0.26**</td>
</tr>
<tr>
<td>(0.08)</td>
<td>(0.08)</td>
<td>(0.06)</td>
<td>(0.09)</td>
<td></td>
</tr>
</tbody>
</table>

**N** 229  229  458  456  

**F** 3.32  5.39  14.06  /

**R² a** 0.13  0.22  0.30  /

**Note.** Standardized beta coefficients. Standard errors in parentheses.
+ p < .10, * p < .05, ** p < .01, *** p < .001
The decomposition model examined how time-changing variables accounted for the change of dependent variable. The decomposition results explained 76.68% of the difference on financial strain between T1 and T4, and the alleviation of IPV experiences mainly accounted for the decrease of financial strain (See Table 3). The decrease of economic abuse and physical abuse significantly contributed nearly 77.92% the difference, and economic abuse contributed about over half (58.13%) of the change of financial strain over time. But the change of economic factors (employment and income) did not contribute significantly and the contributions were close to zero. The contributions of some variables equaled zero because they did not change over time, such as being Hispanic, U.S. born, and assigned to the treatment group.

Table 3

Decomposition Results

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
<th>Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time 1</td>
<td>2.83***</td>
<td></td>
</tr>
<tr>
<td>Time 4</td>
<td>2.20***</td>
<td></td>
</tr>
<tr>
<td>Difference</td>
<td>0.63***</td>
<td>100.00%</td>
</tr>
<tr>
<td>Explained</td>
<td>0.48***</td>
<td>76.68%</td>
</tr>
<tr>
<td>Physical abuse</td>
<td>0.10* (0.05)</td>
<td>19.79%</td>
</tr>
<tr>
<td>Psychological abuse</td>
<td>0.11 (0.08)</td>
<td>22.92%</td>
</tr>
<tr>
<td>Sexual abuse</td>
<td>-0.01 (0.07)</td>
<td>0.01%</td>
</tr>
<tr>
<td>Economic abuse</td>
<td>0.28*** (1.31)</td>
<td>58.13%</td>
</tr>
<tr>
<td>Age</td>
<td>-0.01 (0.01)</td>
<td>0.01%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.00 (0.01)</td>
<td>0.00%</td>
</tr>
<tr>
<td>U.S.-Born</td>
<td>0.00 (0.00)</td>
<td>0.00%</td>
</tr>
<tr>
<td>Education level</td>
<td>0.00 (0.00)</td>
<td>0.00%</td>
</tr>
<tr>
<td>Employment status</td>
<td>0.01 (0.01)</td>
<td>0.01%</td>
</tr>
<tr>
<td>Annual income over 10,000</td>
<td>0.00 (0.01)</td>
<td>0.00%</td>
</tr>
<tr>
<td>In a relationship with abuser</td>
<td>0.00 (0.00)</td>
<td>0.01%</td>
</tr>
<tr>
<td>Having children under 18 year-old</td>
<td>-0.00 (0.00)</td>
<td>0.00%</td>
</tr>
<tr>
<td>Treatment Group</td>
<td>0.00 (0.01)</td>
<td>0.00%</td>
</tr>
</tbody>
</table>

Note. Standard errors in parentheses
* \( p < .05 \), ** \( p < .01 \), *** \( p < .001 \)
Discussion

Guided by stress theory, this study primarily examines the associations between IPV (stressor) and financial strain (outcome) among female survivors. Based on the Stress Process Model (Pearlin et al., 1981), IPV is a prominent source of stressor on other stressors for those who have such experiences. This paper includes different types of abuse and longitudinal data that has not been previously addressed. This research concluded that physical abuse and economic abuse experiences were significantly associated with financial strain based on the results of regression models. Over a span of 14 months, decomposition results showed that 58% of the decrease in financial strain over time was explained by the decrease of economic abuse.

There has been increased attention to the relationship between economic abuse and financial consequences of IPV (Kutin et al., 2017; Sauber & O’Brien, 2020). However, this paper closes the gap that the change of economic abuse over time can account for the change of financial strain using longitudinal data. When abusers use exploitative behaviors to control IPV survivors economically, direct experiences of financial interference lead to the continued lessening of economic well-being (Postmus, Plummer, McMahon & Zurlo, 2012). This study found evidence that such experiences of economic abuse directly affected their financial wellbeing the most, and the impact lasted longer than at least one year for women.

Similar to the results of previous studies (Copp et al., 2016; Lucero et al., 2016; Zheng et al., 2019), this study also found that physical abuse is associated with financial strain. Informed by the Stress Process Model, the consequences of physical abuse may cause additional financial-related stressor leading to increased self-perceived financial
strain. For instance, a physical injury may force women to leave work temporarily and then lose their source of income to make ends meet. Moreover, this study included the form of economic abuse and further specified that the impact of economic abuse on financial strain was stronger than other forms of IPV including physical abuse.

Given that IPV experiences significantly impact the level of financial strain among female IPV survivors, the findings of this study provide evidence-based practice for social work advocates. As economic abuse is commonly experienced among IPV survivors (Stylianou, 2018), this paper points out the importance of economic abuse and financial consequences of IPV that needs more attention in direct services. For example, social workers and risk assessors need to screen for economic abuse that is a less recognized form of IPV (Postmus et al., 2020). Clinicians and therapists need to assess financial well-being of IPV survivors. To alleviate financial strain, advocates need to be well versed in supporting survivors to develop safety plans aimed at decreasing physical and economic abuse experiences.

An understanding of policy implications is the fact that experiencing IPV and financial hardship are often intertwined with economic inequality. Policy makers have a responsibility to protect IPV survivors from immediate and chronic abuse, and then follow up with legislation designed to secure their financial wellbeing. In addition, the criminal system needs to address protection for physical safety and financial security of IPV victims and survivors.

Opposed to the fact that socioeconomic status is highly related to financial strain in general population (Fatimah et al., 2012; Szanton et al., 2010; Zimmerman & Katon, 2005), such socioeconomic variables showed no associations with the magnitude of
financial strain while the IPV experiences were included. In this sample, nearly half of female survivors had college degrees and above, employed, and earned less than $10,000 per year. The sample did not have enough variation to test this relationship between socioeconomic status and financial strain. One possible reason is that economic abuse experiences directly affect their economic reality and financial well-being. Interestingly, age was the only demographic variable linked to the financial strain. Older female survivors reported higher levels of financial strain since they may face higher risk of no income source.

Additionally, the decomposition results that 23.32% of the variance was unexplained that captured all the potential effects other than different types of abuse. One possible explanation was that financial strain of female survivors decreased because they received formal support as a result of their help-seeking behaviors. As the sample of female IPV survivors were recruited from shelters and advocacy agencies, external resources may decrease their perceptions of financial strain over time. More research is needed to examine other potential factors.

The findings of this study examined the relationship between IPV and financial strain faced by many female survivors, and a few limitations should be considered when interpreting the results. With regard to the characteristics of the study sample, the self-selected responses and limited sample size impacted the generalizability. First, the missing data of education attainment at T1 limited the full understanding of association between socioeconomic status and financial wellbeing among female survivors. Second, the study sample for the parent study was a purposive sample in certain states and was not randomly selected from a population of female IPV survivors. Participants who
received domestic violence services volunteered to participate in a financial literacy program and chose to respond to the evaluation survey. The response bias limited the generalizability of the findings to other female IPV survivors across the nation. Further research is suggested to determine if these results hold up over a longer period of time. The finding of this study evidenced the prominent association between economic abuse and financial strain; researchers can further include financial strain as a significant variable and examine its effect on other outcomes including depression.
Chapter 4: Paper 2

ECONOMIC ABUSE AND DEPRESSION: IS FINANCIAL STRAIN A MISSING MODERATOR OR MEDIATOR?

By

HSIU-FEN LIN

Manuscript 2 of 3 of a dissertation entitled:

FEMALE SURVIVORS OF INTIMATE PARTNER VIOLENCE: FINANCIAL STRAIN, DEPRESSION, AND FINANCIAL EDUCATION INTERVENTION

A dissertation submitted to the PhD Program in Social Work Rutgers, The State University of New Jersey in partial fulfillment of the requirements for the degree of Doctor of Philosophy Graduate Program in Social Work

Written under the direction of Judy L. Postmus
Introduction

Women are at higher risk of economic abuse that in turn leads to depression. Economic abuse has been increasingly recognized as an invisible form of IPV as perpetrators use multiple financial tactics to maintain power and control over women including financial control, economic exploitation, and job sabotage to maintain power and control over women (Postmus et al., 2020; Postmus, Plummer, McMahon, Murshid, et al., 2012). Cross-sectional studies have shown that the experience of economic abuse is associated with high levels of depression among IPV survivors (Gibbs et al., 2018; Stylianou, 2018). Such findings advance knowledge pertinent to the importance of economic abuse and its impact on depression. However, the effect was not consistent in one longitudinal study, which suggests that there may be other mediating variables, for example, financial strain (Stylianou, 2016).

Financial strain is a common stressor that refers to a subjective perception of economic hardship due to lack of financial resources to alleviate debt or meet basic needs (Gutman et al., 2005). Financial strain has a ripple effect on health owing to limited access to healthcare, or lower utilization of healthcare (Grafova, 2018). Research has shown a correlation between financial strain and depression: the higher the level of financial strain, the higher the probability of depression (Dijkstra-Kersten et al., 2015; Price et al., 2002). Given that financial strain is a strong predictor of depression among the general population, the research on financial strain of IPV survivors is often overlooked. Many IPV survivors find that it takes much longer than expected to develop economic independence. Even after leaving the abusive relationship, they experience increased stress and anxiety about household finances and increased risks for more
serious health and wellness issues (Frieze et al., 2020; White, 2018). This phenomenon shows the importance of IPV survivors’ financial stress that is compounded by economic abuse.

Previous studies have not investigated how economic abuse interacts with other variables that are believed to be linked to depression such as financial strain. In order to address the research gap, this study examines the association between economic abuse and depression by adding financial strain, the missing variable. The research to date have found a significant association between economic abuse and depressive symptoms (Gibbs et al., 2018; Postmus, Huang, et al., 2012; Stylianou, 2018; Voth Schrag, 2015), but there is little information about how economic abuse is related to depression. When an abuser controls a woman’s ability to access and maintain economic resources, causing economic insecurity (Adams et al., 2008) and financial hardship (Lin, unpublished manuscript-a), the female survivor can have increased levels of depression.

Based on the Stress Process Model (Pearlin et al., 1981), this paper reviewed the literature on economic abuse, depression, financial strain, and any available research on the relationships between these key variables of interest. This paper hypothesized that financial strain can act as a missing moderator or mediator of the relationship between economic abuse and depression, and further identified the role of financial strain using a sample of female IPV survivors.

**Background**

Systematic reviews have found a correlation between stress and depression: the higher the level of stress, the higher the probability of depression (Lancaster et al., 2010; Liu & Alloy, 2010). Hammen (2005) suggests that the research on the association of
stress and depression needs more comprehensive models that integrate multiple factors including sociodemographic moderators and mediators.

The current study utilized two theories to extend previous IPV research by investigating the role of financial strain on economic abuse against women: the cumulative adversity and the stress proliferation theory. Hammen (2005) suggests that using the measure of cumulative adversity, a combination of life events, strains and traumas, increases 1 to 12 percent of the explanatory power in depressive symptoms rather than a single life event. The stress proliferation theory describes how multiple stressors affect people's health in a sequence or across a lifespan, rather than a single negative event (Lancaster et al., 2010; Liu & Alloy, 2010). The primary stressor generates secondary stressors that may worsen health of individuals (Pearlin et al., 2005).

Women who experience economic abuse are more likely to report depression; however, the link would have been clearer if other significant variables had been investigated. This present study hypothesizes that financial strain plays a role as a moderator or a mediator in the relationship between economic abuse and depression. The cumulative effect exists among female IPV survivors, referring to the reason why women develop depression because they experience a mix of multiple stressors including economic abuse and financial strain. Those who display a higher level of depression can strengthen the relationship between economic abuse and depression. Financial strain could be considered as a moderator. On the other hand, financial strain is considered as the secondary stressor caused by economic abuse, resulting in depression based on stress proliferation theory. This study utilized the data from a sample of female IPV survivors to further examine whether the moderation model or the mediation model provides new
insights between economic abuse and depression.

**Economic Abuse and Depression**

Previous research has established that depression and depressive symptoms are the best-documented mental health outcomes related to physical, sexual, and psychological violence against women (Pearlin et al., 1981). However, few studies have shown a substantial linkage between depression and another form of IPV: economic abuse. Economic abuse has significantly negative effects on psychological distress including depression across the globe (Antai, Oke, et al., 2014; Gibbs et al., 2018; Hamdan-Mansour et al., 2011; Nancarrow et al., 2008). Gibbs et al. (2018) conducted a cross-sectional study among 680 women aged 18-30 in South Africa; the findings indicated that economic abuse performs a stronger and more consistent association to suicidal ideation than other forms of IPV including emotional abuse, physical abuse and sexual abuse. Similarly, Jordan et al. (2010) found that women who experienced economic abuse were 4.7 times more likely to display depression symptoms among a sample of 532 women in Queensland, Australia.

There is an increasing research on economic abuse (Chowbey, 2017; Christy & Valandra, 2017; Sanders, 2015; Sedziafa et al., 2017); however, the association between economic abuse on depression is evidenced by only three published studies in the U.S. (Postmus, Huang, et al., 2012; Stylianou, 2018; Voth Schrag, 2015). Two of the three studies which draw data from the Fragile Families and Child Wellbeing Study (Fragile Families), Voth Schrag (2015) and Postmus, Huang, et al., (2012) reported the cross-sectional (n=3, 282) and longitudinal (n=2, 305) associations between economic abuse and depression, respectively. Voth Schrag (2015) reported economic abuse at
baseline was associated with a 2.4 times greater likelihood of meeting the clinical cutoff for depression at baseline when controlling for experiencing material hardship at baseline. Postmus, Huang, et al. (2012) found that mothers who experienced economic abuse at Year 1 were 1.9 times higher likelihood of experiencing a depressive episode at Year 5 than their counterparts.

However, the measurement issue of the Fragile Families data limited the interpretation of these findings because there were only two non-validated items regarding behaviors of job/school sabotage and money control. Such limited number of behaviors may fail to capture other tactics used by the abuser; for example, the abusers delayed or refused to pay the bills. Hence, Postmus, Pummer et al. (2016) reduced the original Scale of Economic Abuse from 28 items to 12 items (SEA-12), and validated the revised scale among IPV survivors. Accordingly, (Stylianou, 2018) utilized the SEA-12 scale to examine the effects of economic abuse on depression by using a sample of 457 IPV service recipients. The study indicated that economic abuse was a stronger predictor of depression than psychological abuse after controlling for sociodemographic characteristics and abuse experiences.

Less is known about how economic abuse against women evokes depressive symptoms. (Stylianou, 2018) found that the impact of economic abuse was highly related to depressive symptom compared to other forms of IPV such as psychical, psychological or sex abuse. She provided a potential explanation that economic abuse jeopardizes IPV survivors’ economic well-being and traps them in the abusive relationship due to economic dependence; therefore, other factors including financial hardship play a significant role in association between economic abuse and depression.
Financial Strain and Depression

Experiencing financial strain is common across different populations, but often is not taken into account that its strong relationship with depression among IPV survivors. Empirical literature demonstrates that financial strain has significant effects on depression among general population sample and some vulnerable groups, such as Netherlands adults (Dijkstra-Kersten et al., 2015), Sudanese refugees in Canada (Simich et al., 2006), and cancer patients in France (Sullivan et al., 2016). It has previously been observed that people who have a high level of financial strain are more likely to develop depressive symptoms (Aranda & Lincoln, 2011; Dijkstra-Kersten et al., 2015; Okechukwu et al., 2012; Price et al., 2002). Such findings are consistent with the cumulative adversity theory, as chronic stress has a three to four times stronger impact on depression than other cumulative stressors-life trauma (Turner & Lloyd, 1995). However, the impact of financial strain on depression is understudied for IPV survivors who experience traumatic stress from different types of abuse.

Although depressive symptoms is associated with socioeconomic disadvantage, empirical studies have found that financial strain remains the strongest direct predictor of depressive symptoms after controlling socioeconomic variables (Bridges & Disney, 2010; Butterworth et al., 2012; Drentea & Reynolds, 2014; Lincoln & Chae, 2010). People with multiple adverse conditions including less education, low income or unemployment tend to experience depression, but their perception of financial hardship performs a stronger predictor of depression than their socio-economic positions. For example, Butterworth et al. (2012) demonstrated that financial hardship is more strongly associated with depression than socio-economic indicators. In other words, people in similar
socio-economic circumstances have different experiences of financial hardship associated with depression, thus assessment of financial hardship is critical to improve mental health.

Notably, women who experience financial strain are at greater risk of depression than men across different cultures (Aranda & Lincoln, 2011; Butterworth et al., 2012; Chou et al., 2004; Drentea & Reynolds, 2014; Kahn & Pearlin, 2006; Okechukwu et al., 2012; Starrin et al., 2009). Several studies specifically focused on mothers with young children because maternal depression impacts women’s health, family functioning and children’s development (Bridges & Disney, 2010; Dennis et al., 2003; Reading & Reynolds, 2001; Starkey et al., 2013). The interrelationship of multiple stressors- financial stress, violence, and intense isolation and loneliness- increased women’s vulnerability (Bloom et al., 2013). Dennis et al. (2003) found that mother’s subjective perception of economic pressure was related to maternal depression, not low-income or income-to-needs ratio. Also, maternal depression mediated the relationship between maternal economic pressure and children behaviors, especially for the boys.

Research has shown that the relationships between financial strain and depression can be affected by different socio-demographic characteristics such as age, gender, race, nativity, U.S. residence, income, employment, education, and marital status (Aranda & Lincoln, 2011; Asebedo & Wilmarth, 2017; French & Vigne, 2019; Kahn & Pearlin, 2006; McCormick et al., 2016; Shippee et al., 2019). For example, older Latino who were born in the United States reported more financial strain compared to those who were not, which may be explained by the reference group theory that they compared to those in their country of origin (Aranda & Lincoln, 2011).
In addition, to be regarded as a predictor or an outcome variable, financial strain and depression are also viewed as moderators or mediators. Financial strain moderated the relationship between income and depression among elderly in Hong Kong (Chou et al., 2004). Using a 2-year longitudinal study of 756 unemployment job seekers, Price et al. (2002) found that financial strain at Time 2 (six months after the first interview) mediated the relationship between job loss at Time 2 and depression at Time 3 (two years after the first interview), suggesting that financial strain is a critical secondary stressor to personal health. Other studies found that depression mediated the relationship between financial strain (stressor) and other outcome variables, such as children’s Adjustment problems (Dennis et al., 2003), smoking behaviors (Robles et al., 2017), and hostile parenting (Reeb et al., 2013).

Given the strong relationship among economic abuse, financial strain, and depression remains unclear, this study provides one of the first investigations into modeling these three variables. This paper set out to test two hypotheses based on the cumulative adversity theory and the stress proliferation theory. This study hypothesized the moderation effect between economic abuse and depression is stronger for IPV survivors who experience high levels of financial strain than their counterparts (Hypothesis 1). According to the cumulative adversity theory, the joint experience of economic abuse (life trauma) and financial strain (chronic stress) increase the effect on mental health. Furthermore, the high level of financial strain is expected to have a stronger impact on depression than economic abuse. Second, the present study hypothesizes that financial strain will perform as a mediator between economic abuse and depression prior to and
after the financial education intervention (Hypothesis 2). The stress proliferation theory is suitable to assume the sequence of multiple stressors. IPV survivors who experience economic abuse (the primary stressor) will increase financial strain (the secondary stressor), causing them to display depressive symptoms.

Methods

This study utilized data collected during a longitudinal, randomized control study evaluating the impact of a financial literacy program with IPV survivors. During a span of 14 months, participants from 14 domestic violence agencies were recruited using the purposeful sampling method from ten states and Puerto Rico. All participants were randomly assigned into either a control group or a treatment group, and the research team conducted four face-to-face interviews. A total of 449 female survivors were interviewed at Time 1 (T1 hereafter) as the baseline data. Then, the control group received regular case services while the treatment group received an additional 6-weeks financial management curriculum. Participants completed three follow-up interviews at Time 2 (two months later after T1), at Time 3 (six months later), and at Time 4 (six months later), and received a $25 gift card incentive with an increase of $5 for each subsequent interview.

To test the moderation model, the current research used the data from T1 only. To test the mediation model, this current study utilized the cross-section data at T1 as well as the longitudinal data from T1 to T3. Variables of interest were measured by validated scales, including the Scale of Economic Abuse-12 (SEA-12; Postmus, Plummer, et al., 2016), the Center for Epidemiologic Studies Depression Scale (CES-D; Radloff, 1977), and the Financial Strain Scale (Aldana & Liljenquist, 1998). Sociodemographic
characteristics included ethnicity, age, born in the U.S., having children under 18, and annual income over 10,000. Multiple regression models were performed to examine the mediator effect of financial strain. In the original sample of 456 female survivors, the mean age was 37.23 with a range from 19 to 63 years of age. Almost half of the sample included Hispanic (46.15%) and employed women (44%). Over half was born in the U.S. (51.98%) and had annual income over $10,000 (51.68%). Notably, every four out of five female survivors (80%) were responsible for their minors.

**Measures**

The current study identified economic abuse as the independent variable, depression as the dependent variable, and financial strain as the mediator. To compare the models, this study included the same covariates as in (Stylianou, 2016), including age, ethnicity, U.S. born, employment status, student, having children under 18 year-old, received social services, and annual income less than 10,000.

**Depression**

The CES-D scale (Radloff, 1977) was used to measure the degree of feeling depressed during the past week. Twenty items in the scale measured sadness (i.e., I feel sad or I had crying spells), loss of interest (i.e., I did not feel like eating; my appetite was poor), and hopelessness (i.e., I thought my life had been a failure). Respondents reported their frequency using a 4-point Likert-type ranging from “1=not at all” to “4=nearly every day.” The responses were summed with a possible range from 20 to 80 as the higher score, the worse. In this study, the Cronbach’s alpha reliability was .92 and .94 at T1 and T3, respectively.
**Financial Strain**

The variable was measured using an 18-item Financial Strain Survey (FSS) developed by (Aldana & Liljenquist, 1998) then validated among IPV survivors (Hetling et al., 2014). The scale utilized 5-point Likert-type scale ranging from “1=never” to “5=always” on 18 items employing five subscales: poor financial education (i.e., I feel well informed about financial matters), poor relationships (i.e., I tend to argue with others about money), physical symptoms (i.e., my muscles get tense when I add up my bills), poor credit card e (i.e., I get new credit cards to pay off old ones), and inability to meet financial obligations (i.e., many of my bills are past due). The responses were summed with a range from 18 to 90 as the higher score, the worse. The total FSS in this study had a Cronbach’s reliability coefficient of .84 at T1 and .96 at T2, respectively.

**Intimate Partner Violence**

The main independent variable was economic abuse measured by the SEA-12 (Postmus, Plummer, et al., 2012). Participants answered questions about how often their partner or ex-partner did these behaviors, including employment sabotage (i.e., Threaten you to make you leave work), economic control (i.e. Keep financial information from you), and economic exploitation (i.e., Spend the money you needed for rent or other bills). Economic abuse was measured by a 5-point Likert-type scale from “1=never” to “5=quite often.” The responses were summed with a range from 12 to 60 as the higher score, the worse. In this study, Cronbach’s alpha reliability = .88 at T1.

Other types of IPV were measured by a modified version of 25 items from the Abusive Behavior Index (ABI-R) (Aldana & Liljenquist, 1998). Participants reported behaviors that had been used by their intimate partners or former partners in the past 12
months. The study used twenty-five items, which was answered using 5-point Likert type scale from “1=never” to “5=very often” to measure the frequency that women suffered physical abuse (i.e., suffering being pushed, hit, spanked, choked etc.), psychological abuse (i.e., suffering being threatened with or without weapon, humiliated, criticized, etc.) and sexual abuse (i.e., pressured you to have sex in a way you don’t like). The responses were summed with a range from 25 to 125 as the higher score, the worse. The Cronbach’s alpha for this scale used in this study was .94 at T1.

**Control Variables**

Demographic characteristics included age, ethnicity, U.S. born, employment status, student, having children under 18 year-old, received social services, and annual income less than $10,000. Age was calculated as the year of interview (2012) subtracted by the participants’ year of birth. Answers to the ethnic group question were categorized into Hispanic or not since over half of the participants were Latina. In addition, participants were asked yes or no to questions whether they were born in the U.S., currently employed, being a student, responsible for any children under the age of 18, receiving social services within three months, and annual income over $10,000. Average annual household income was measured by 5-level categorical variables from less than U.S. $10,000, $10,001-$15,000, $15,001-$25,000, $25,001-$35,000 and more than $35,000. The answers were recorded into a dichotomous variable for whether the woman reported $10,000 or more of income compared with less.

**Analytic Plan**

In this study, data from the variables of interests were cleaned and analyzed using the descriptive analysis, missing data analysis, and regression. Negative-coded items
were first reverse coded first and then calculated in the sum and mean of the whole scale. In this study, listwise deletion was used to exclude the entire record with any single missing value for regression analysis. In the moderation analysis, 27 cases (6.1%) were excluded and the final sample size was 422. In the mediation analysis, 15 cases (3.3%) were excluded resulting in 434 female IPV survivors as the sample used in the regression models.

For the moderator effects, both the continuous variables economic abuse and financial strain were standardized and dichotomized into two groups: low and high; then the interaction term (the product of the z-scored economic abuse and z-scored financial strain) was added. To perform the analysis, depressive symptoms were regressed on z-scored economic abuse and z-scored financial strain in the first step and the interaction term in the second step.

Multiple regressions were used to test the mediator effect of financial strain on the relationship between economic abuse and depressive symptoms. For the mediator effects, the impact of financial strain on the association between economic abuse and depressive symptoms was conducted following the most common three steps (Baron & Kenny, 1986). The first step is to examine that the predictor is significantly related to the outcome. The second step is to examine that there is a significant relation between the predictor and the mediator. The third step is to examine that the mediator is associated with the outcome. If financial strain is a complete mediator, the relationship between economic abuse and depressive symptoms should be statistically insignificant. If financial strain is a partial mediator, which is hypothesized, the relationship between economic abuse and depressive symptoms will be significantly smaller. The mediation
models were tested using the cross-sectional data at T1, and longitudinal data across T1 to T3, respectively. To maximize the power of mediation effect, the Bootstrap method (Bollen & Stine, 1990) were used to test significance of the mediation effect. All the data analysis was performed by the Stata 16 (StataCorp, 2017).

**Results**

Descriptive statistics for the study sample are presented in Table 4. The sum of depression scale at T1 was 45.24 with the actual range from 20 to 80 as same as the potential range, and decreased to 37.97 at T3. The sum of financial strain at T1 was 50.17 with the actual range from 21 to 82 as the potential range from 18 to 90, and decreased to 42.62 at T2. The sum of economic abuse at T1 was 31.73 with the actual range from 12 to 60 as same as the potential range.

**Table 4**

*Descriptive Statistics*

<table>
<thead>
<tr>
<th></th>
<th>Percentage / Mean</th>
<th>SD</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>45.24</td>
<td>14.11</td>
<td>20</td>
<td>80</td>
</tr>
<tr>
<td>T3</td>
<td>37.97</td>
<td>12.25</td>
<td>20</td>
<td>71</td>
</tr>
<tr>
<td>Financial strain</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T1</td>
<td>50.17</td>
<td>11.96</td>
<td>21</td>
<td>82</td>
</tr>
<tr>
<td>T2</td>
<td>42.62</td>
<td>12.09</td>
<td>18</td>
<td>87</td>
</tr>
<tr>
<td>Economic abuse at T1</td>
<td>31.73</td>
<td>12.00</td>
<td>12</td>
<td>60</td>
</tr>
<tr>
<td>Physical abuse at T1</td>
<td>22.20</td>
<td>10.27</td>
<td>9</td>
<td>45</td>
</tr>
<tr>
<td>Psychological abuse at T1</td>
<td>46.57</td>
<td>13.19</td>
<td>13</td>
<td>65</td>
</tr>
<tr>
<td>Sexual abuse at T1</td>
<td>6.45</td>
<td>3.75</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Age</td>
<td>37.13</td>
<td>9.16</td>
<td>19</td>
<td>63</td>
</tr>
<tr>
<td>Ethnicity-Hispanic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>45.15</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>U.S. born</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>52.80</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Percentage / Mean</td>
<td>SD</td>
<td>Min</td>
<td>Max</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-------------------</td>
<td>---------</td>
<td>-----</td>
<td>-----</td>
</tr>
<tr>
<td>Yes at T1</td>
<td>45.19</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes at T3</td>
<td>55.88</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes at T1</td>
<td>13.67</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes at T3</td>
<td>16.12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Having children under age 18</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes at T1</td>
<td>80.36</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes at T3</td>
<td>81.45</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Received social service over 3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>months</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes at T1</td>
<td>51.12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes at T3</td>
<td>63.91</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Annual household income over $10,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes at T1</td>
<td>51.92</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes at T3</td>
<td>51.30</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

To test if financial strain performed as a moderator, regression results showed that the interaction effect was insignificant (p > .05) (See Table 5). Therefore, Hypothesis 1 was not supported and personal financial strain did not moderate the relationship between economic abuse and depression. Only the main effect of financial strain on depression was significant (p < 0.01).

**Table 5**

*Moderator Regression Results*

<table>
<thead>
<tr>
<th>Dependent variable: Depression</th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial strain</td>
<td>0.227**</td>
</tr>
<tr>
<td>Economic Abuse</td>
<td>0.094</td>
</tr>
<tr>
<td>Physical Abuse</td>
<td>0.055</td>
</tr>
<tr>
<td>Psychological Abuse</td>
<td>0.059</td>
</tr>
<tr>
<td>Sexual Abuse</td>
<td>-0.024</td>
</tr>
</tbody>
</table>
Dependent variable: Depression

<table>
<thead>
<tr>
<th></th>
<th>Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.001 (0.003)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.038 (0.058)</td>
</tr>
<tr>
<td>U.S. born</td>
<td>0.008 (0.058)</td>
</tr>
<tr>
<td>Employed</td>
<td>-0.068 (0.050)</td>
</tr>
<tr>
<td>Annual income over $10,000</td>
<td>-0.002 (0.050)</td>
</tr>
<tr>
<td>Having children under 18 year-old</td>
<td>-0.065 (0.065)</td>
</tr>
<tr>
<td>_cons</td>
<td>1.915*** (0.166)</td>
</tr>
</tbody>
</table>

N 422

Adjusted R^2 0.133

Note. Standardized coefficients are provided. Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

To test if financial strain performed as a mediator, the steps outlined by Baron and Kenny (1986) were used with the cross-sectional data at T1, the results of three regression models indicated that financial strain performed a complete mediator between economic abuse and depression among IPV female survivors (See Table 6). Model 1 examined the effect of economic abuse on depression while controlling for other variables. The result showed that economic abuse was statistically significant associated with depression (p< .05) compared to other types of abuse. The model explained 11% of the variance on depression among female survivors. Model 2 examined the effect of economic abuse on financial strain while controlling for other variables. This model showed that economic abuse was strongly associated with financial strain compared with other types of abuse. Model 3 included financial strain and explained 23.6% of variation on depression. The standardized regression coefficient of financial strain on depression (0.41) was 8 times stronger than economic abuse on financial strain (0.06). The increase
of Adjusted $R^2$ from Model 1 (11%) to Model 3 (24 %) supported Hypothesis 2 that joint multiple stressors provided a stronger explanation on depression.

Comparing the three models, the standardized regression coefficient of economic abuse on depression dropped from 0.13 (Model 1) to 0.05 (Model 3) and became insignificant when financial strain was included. The result demonstrated that financial strain performed as a significant mediator between economic abuse and depression. The majority of mediation studies have not tested the significance of the mediated effect. Therefore, this study used the bootstrap method, and the results confirmed financial strain as a significant mediator (5.03, $p< .001$). In other words, female IPV survivors who experienced economic abuse reported higher levels of depression because the experiences of economic abuse resulted in higher levels of financial strain, leading to higher levels of depression. Such findings supported Hypothesis 2 that the sequence of economic abuse and financial strain results in a higher level of depression, which is aligned by stress proliferation theory.

Being a student was statistically significant related to the decrease of depression ($p< .05$) in Model 1 and Model 3. Women who were older, non-Hispanic, born in the U.S., and had lower income than $10,000 reported higher levels of financial strain. When all predictors were included in Model 3, employment and having children under 18 were marginally associated with a decrease of depression.
Table 6

Multiple Regression Results of the Cross-Sectional Data at T1

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression T1</td>
<td>0.126**</td>
<td>0.198***</td>
<td>0.046</td>
</tr>
<tr>
<td>(0.046)</td>
<td>(0.043)</td>
<td>(0.043)</td>
<td></td>
</tr>
<tr>
<td>Economic Abuse</td>
<td>0.042</td>
<td>0.033</td>
<td>0.029</td>
</tr>
<tr>
<td>(0.042)</td>
<td>(0.039)</td>
<td>(0.039)</td>
<td></td>
</tr>
<tr>
<td>Physical Abuse</td>
<td>0.082</td>
<td>0.008</td>
<td>0.079*</td>
</tr>
<tr>
<td>(0.050)</td>
<td>(0.047)</td>
<td>(0.047)</td>
<td></td>
</tr>
<tr>
<td>Psychological Abuse</td>
<td>0.003</td>
<td>-0.015</td>
<td>0.009</td>
</tr>
<tr>
<td>(0.034)</td>
<td>(0.032)</td>
<td>(0.032)</td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>0.002</td>
<td>0.008*</td>
<td>-0.002</td>
</tr>
<tr>
<td>(0.004)</td>
<td>(0.004)</td>
<td>(0.004)</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>-0.141*</td>
<td>-0.257***</td>
<td>-0.036</td>
</tr>
<tr>
<td>(0.080)</td>
<td>(0.075)</td>
<td>(0.075)</td>
<td></td>
</tr>
<tr>
<td>U.S. born</td>
<td>0.044</td>
<td>0.171*</td>
<td>-0.025</td>
</tr>
<tr>
<td>(0.082)</td>
<td>(0.077)</td>
<td>(0.076)</td>
<td></td>
</tr>
<tr>
<td>Employed</td>
<td>-0.091</td>
<td>0.051</td>
<td>-0.112*</td>
</tr>
<tr>
<td>(0.069)</td>
<td>(0.065)</td>
<td>(0.064)</td>
<td></td>
</tr>
<tr>
<td>Student</td>
<td>-0.209*</td>
<td>-0.016</td>
<td>-0.203*</td>
</tr>
<tr>
<td>(0.097)</td>
<td>(0.091)</td>
<td>(0.089)</td>
<td></td>
</tr>
<tr>
<td>Annual income over $10,000</td>
<td>-0.011</td>
<td>-0.107*</td>
<td>0.033</td>
</tr>
<tr>
<td>(0.069)</td>
<td>(0.064)</td>
<td>(0.064)</td>
<td></td>
</tr>
<tr>
<td>Having children under age 18</td>
<td>-0.114</td>
<td>0.108</td>
<td>-0.158*</td>
</tr>
<tr>
<td>(0.089)</td>
<td>(0.083)</td>
<td>(0.083)</td>
<td></td>
</tr>
<tr>
<td>Received social services over 3 months</td>
<td>-0.066</td>
<td>0.0082</td>
<td>0.032</td>
</tr>
<tr>
<td>(0.068)</td>
<td>(0.064)</td>
<td>(0.063)</td>
<td></td>
</tr>
<tr>
<td>Financial strain</td>
<td>0.406***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(0.048)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>_cons</td>
<td>1.708***</td>
<td>1.918***</td>
<td>0.929***</td>
</tr>
<tr>
<td>(0.226)</td>
<td>(0.213)</td>
<td>(0.229)</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>434</td>
<td>434</td>
<td>434</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.108</td>
<td>0.119</td>
<td>0.236</td>
</tr>
</tbody>
</table>

Note. Standardized coefficients are provided. Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001

Using the longitudinal data, the mediation model tested whether economic abuse at T1 was associated with financial strain at T2, resulting in depression at T3 (see Table 7).
Depression at T1 and financial strain at T2 were included as controlling variables with other covariates at T3. Financial strain remained a mediator between economic abuse and depression at different time periods. In Model 1, economic abuse at T1 was not associated with depression at a later time. In Model 3, women who were non-Hispanic, employed and born in the U.S. and had children underage 18 were associated with the decrease of depression. Financial strain at T2 remained as the robust prediction of depression at T3.
### Table 7

*Multiple Regression Results of the Longitudinal Data from T1 to T3*

<table>
<thead>
<tr>
<th>Dependent variable</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Depression T3</strong></td>
<td>-0.041</td>
<td>0.038</td>
<td>-0.057</td>
</tr>
<tr>
<td>(0.052)</td>
<td></td>
<td>(0.059)</td>
<td>(0.052)</td>
</tr>
<tr>
<td><strong>Financial Strain T2</strong></td>
<td>0.003</td>
<td>-0.038</td>
<td>0.003</td>
</tr>
<tr>
<td>(0.046)</td>
<td></td>
<td>(0.052)</td>
<td>(0.046)</td>
</tr>
<tr>
<td><strong>Depression T3</strong></td>
<td>-0.016</td>
<td>0.015</td>
<td>-0.020</td>
</tr>
<tr>
<td>(0.054)</td>
<td></td>
<td>(0.060)</td>
<td>(0.053)</td>
</tr>
<tr>
<td>Economic Abuse at T1</td>
<td>-0.035</td>
<td>-0.004</td>
<td>-0.032</td>
</tr>
<tr>
<td>(0.038)</td>
<td></td>
<td>(0.043)</td>
<td>(0.038)</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td>0.001</td>
<td>0.008</td>
<td>-0.001</td>
</tr>
<tr>
<td>(0.005)</td>
<td></td>
<td>(0.005)</td>
<td>(0.005)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>0.150†</td>
<td>0.043</td>
<td>0.167†</td>
</tr>
<tr>
<td>(0.090)</td>
<td></td>
<td>(0.101)</td>
<td>(0.089)</td>
</tr>
<tr>
<td><strong>U.S. born</strong></td>
<td>-0.301***</td>
<td>-0.047</td>
<td>-0.314***</td>
</tr>
<tr>
<td>(0.086)</td>
<td></td>
<td>(0.097)</td>
<td>(0.085)</td>
</tr>
<tr>
<td>Employed at T3</td>
<td>-0.374***</td>
<td>-0.096</td>
<td>-0.376***</td>
</tr>
<tr>
<td>(0.079)</td>
<td></td>
<td>(0.088)</td>
<td>(0.078)</td>
</tr>
<tr>
<td><strong>Student at T3</strong></td>
<td>-0.078</td>
<td>-0.008</td>
<td>-0.084</td>
</tr>
<tr>
<td>(0.101)</td>
<td></td>
<td>(0.113)</td>
<td>(0.099)</td>
</tr>
<tr>
<td>Annual income over $10,000 at T3</td>
<td>-0.143†</td>
<td>-0.112</td>
<td>-0.121</td>
</tr>
<tr>
<td>(0.077)</td>
<td></td>
<td>(0.086)</td>
<td>(0.075)</td>
</tr>
<tr>
<td>Having children under age 18 at T3</td>
<td>-0.237†</td>
<td>-0.065</td>
<td>-0.248†</td>
</tr>
<tr>
<td>(0.103)</td>
<td></td>
<td>(0.115)</td>
<td>(0.102)</td>
</tr>
<tr>
<td>Received social services over 3 months at T3</td>
<td>0.006</td>
<td>0.001</td>
<td>0.012</td>
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<tr>
<td>(0.074)</td>
<td></td>
<td>(0.082)</td>
<td>(0.072)</td>
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<tr>
<td>Depression at T1</td>
<td>0.556***</td>
<td>0.492***</td>
<td></td>
</tr>
<tr>
<td>(0.054)</td>
<td></td>
<td></td>
<td>(0.058)</td>
</tr>
<tr>
<td>Financial strain at T1</td>
<td>0.541***</td>
<td></td>
<td>0.041</td>
</tr>
<tr>
<td>(0.068)</td>
<td></td>
<td></td>
<td>(0.071)</td>
</tr>
<tr>
<td>Financial strain at T2</td>
<td></td>
<td>0.159**</td>
<td></td>
</tr>
<tr>
<td>(0.060)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>_cons</td>
<td>1.410***</td>
<td>0.681†</td>
<td>1.175***</td>
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<tr>
<td>(0.276)</td>
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<td>(0.319)</td>
<td>(0.284)</td>
</tr>
<tr>
<td><strong>N</strong></td>
<td>236</td>
<td>236</td>
<td>236</td>
</tr>
<tr>
<td><strong>Adjusted R²</strong></td>
<td>0.410</td>
<td>0.246</td>
<td>0.432</td>
</tr>
</tbody>
</table>

*Note. Standardized coefficients are provided. Standard errors in parentheses
* p < 0.05, ** p < 0.01, *** p < 0.001*
Discussion

The current study found that financial strain mediated the relationship between economic abuse and depression among IPV female survivors. The experience of economic abuse is associated with higher levels of financial strain, which in turn leads to higher levels of depression. This study used data from a sample of female IPV survivors to elucidate the impact of financial strain on the association between economic abuse and depression. Depression is well-known for the negative mental health outcomes of IPV (Devries et al., 2013; Ouellet-Morin et al., 2015; White & Satyen, 2015), and growing studies link economic abuse to depression (Postmus, Plummer, McMahon, Murshid et al., 2012; Gibbs et al., 2018; Sauber & Obrien, 2017). This study extends previous findings and further confirms that financial strain mediated the relationship between economic abuse and depression. More specifically, experiences of economic abuse accumulate the magnitude of financial strain, leading to depression among female IPV survivors. Given the relationship between economic abuse and depression, this present study contributes to identify underlying mechanisms to validate how economic abuse affects depression.

Consistent with the stress proliferation theory (Pearlin et al., 2005), this current study confirmed that female IPV survivors experience a sequence of stress including economic abuse and chronic financial strain; as a result, they may be vulnerable to depression. Compared to other types of abuse, economic abuse was found to be associated with a higher level of financial strain (Lin, unpublished manuscript-a). Economic abuse increases financial strain among this sample of IPV survivors; their financial strain then impact their depression. For instance, the abusers sabotage survivors
from work resulting in absence or unemployment, and then worsen their depression. Moreover, this study supports the finding that chronic financial strain plays a critical role than other life events or life traumas (Jirek & Saunders, 2018; Turner & Lloyd, 1995). In this study, after including financial strain in the full model (Model 3), the Adjusted R-squared doubled from 0.11 to 0.24, indicating that financial strain is a robust predictor of depression among female IPV survivors. At the same time, the coefficient of economic abuse dropped from 0.13 (Model 1) to 0.05 (Model 3), indicating that the mediation effect is significant. Thus, financial strain fully mediates the relationship between economic abuse and depression.

Much research has shown that there is deleterious effects of financial strain on depression among low-income or the general population (Aranda & Lincoln, 2011; Assari & Lankarani, 2018; Lincoln & Chae, 2010; Tucker-Seeley et al., 2013), but is less clear among female IPV survivors. The findings of this study provide evidence that female IPV survivors with high levels of financial strain report more depressive symptoms. Possibly, women who are exposed to financial strain may lack financial resources to obtain treatment; in turn, their poor mental health becomes more severe. Moreover, financial strain remains strongly associated with depression in Model 3 even after controlling for income, education, and employment status. The struggle of having enough resources to cover basic expenses makes female IPV survivors vulnerable to psychological distress regardless of their socioeconomic status.

Based on the stress proliferation theory, this study establishes a mediation model to examine the association among two major stressors and the mental health outcome that female IPV survivors face using validated measurement. As noted, the experience of
economic abuse negatively affects survivors' economic and psychological well-being. Taken together, the cross-sectional data of this study found that the relationship between economic abuse and depression diminished when the mediator of financial strain was included in the model. One possible reason is when female IPV survivors experience economic abuse, the primary stressor directly proliferates the secondary stressor: financial strain; hence, the chronic strain of resource inadequacy directly worsens their mental health in the display of depressive symptoms.

In this study, being a student or employed appeared to be protective factors of depression. According to the Stress Process Model (Pearlin et al., 1981), education and employment allow female IPV survivors to change their perceptions of stress, receive more formal support, or adopt better coping behaviors that mitigate the impact of economic abuse on financial strain leading to decrease of depression. The findings suggest that interventions should target to decrease financial strain and depression through education and employment. For example, IPV advocates can connect survivors to education and employment resources and policymakers can increase funding to programs that assist IPV survivors for higher education, more job training, and more employment opportunities.

Although the sample of the present study was recruited from survivors who utilized IPV services, the results should be interpreted within such a population, and cannot be inferred to those IPV survivors who did not seek services. Their experiences of abuse, financial strain, and depression may be different from the current sample. Ideally, the mediation model is suggested to utilize the longitudinal data collected from at least three different waves (Baron & Kenny, 1986). However, the effect of economic abuse on
depression in this study became statistically insignificant as the mediator was inclusive. This result limited further examination of the mediation effect using the longitudinal data from the original study. Future research can identify other stressors or different stress outcomes related to the association between economic abuse and financial strain using longitudinal data. Also, future research can further identify mediators or moderators to elucidate the mechanism underlying the association between financial strain and depression, such as social support or financial behaviors. Lastly, this study presented the correlations among the major stressors, where causality cannot be concluded. For example, the relationship between depression and financial strain can be reciprocal in which those who experience high level of depression have higher levels of financial strain. Future research is suggested to specify the direction of this relationship.

This current study contributes to identify financial strain as a significant mediator of economic abuse on depression among female survivors. Given the strong association between financial strain and depression, the findings demonstrate the need to assess financial strain that is less recognized in risk assessment tools. Practitioners and advocates can utilize the findings to address the aspect of financial strain for the intake; moreover, mental health interventions should consider decreasing financial strain as a way to reduce depression. Additionally, IPV policy makers should fund programs that aim to decrease financial strain, leading to promote economic well-being and mental health for IPV survivors. More research is needed to identify effective evidence-based practices and to evaluate the impact of IPV legislation on economic welfare.
Chapter 5: Paper 3

PATH ANALYSIS TO DECREASE DEPRESSION THROUGH FINANCIAL EDUCATION INTERVENTION AMONG FEMALE IPV SURVIVORS

By

HSIU-FEN LIN

Manuscript 3 of 3 of a dissertation entitled:

FEMALE SURVIVORS OF INTIMATE PARTNER VIOLENCE: FINANCIAL STRAIN, DEPRESSION, AND FINANCIAL EDUCATION INTERVENTION

A dissertation submitted to the PhD Program in Social Work Rutgers, The State University of New Jersey in partial fulfillment of the requirements for the degree of Doctor of Philosophy Graduate Program in Social Work

Written under the direction of Judy L. Postmus
Introduction

The mental health and economic toll of abused women is often underestimated even though one in three U.S. women have experienced intimate partner violence (IPV) in their lifetime (Smith et al., 2017). The most prevalent mental health consequence of IPV is depression as survivors tend to develop depressive symptoms, such as depressed mood, hopeless, or sleeping/eating problems than non-IPV women (Beydoun et al., 2012; Han et al., 2019). Compared to non-abused women, female IPV survivors are three times more likely to develop depression (Bonomi et al., 2006). Recently, research started to link depression and economic abuse (Gibbs et al., 2018; Stylianou, 2018) as IPV survivors display depressive symptoms associated with their financial difficulties compounded by economic abuse (Lin, unpublished manuscript-a).

The multiple impacts of violence on health have been well documented, but the linkage of violence and financial well-being has only recently come to the forefront (Bacchus et al., 2018; Sauber & O’Brien, 2020; Strenio, 2017). Previous abuse research predominantly focused on physical abuse and psychological abuse; however, economic abuse, a less known type of IPV (Postmus et al., 2020), presents different challenges that require new solutions. When abusers use tactics to limit victims’ access to financial resources, survivors may have to worry if they can make ends meet or pay bills on time. Research has shown that victims of economic abuse report poor quality of life (Adams & Beeble, 2019; Postmus et al., 2020), worse financial wellbeing (Chowbey, 2017), and high levels of financial strain (Kutin et al., 2017; Lin, unpublished manuscript-b). Due to lack of financial capabilities, abused women may become economically dependent on abusers and feel they are trapped in abusive relationships (Kim & Gray, 2008).
IPV-tailored psychosocial interventions are significantly effective to enhance mental well-being of survivors. Meta-analytic results showed that depressed IPV survivors who received short-term psychological interventions had a 33% gain compared to those who did not (Arroyo et al., 2017). For instance, cognitive behavioral therapy (CBT) interventions are designed to change survivors’ cognitive appraisal and attribution of the traumatic event. Survivors can learn coping skills to replace unhealthy behaviors and then improve mental health outcomes such as depression (Brown et al., 2020).

Systematic review findings show that short-term CBT interventions were most effective (Arroyo et al., 2017) whereas other research found the evidence of CBT were weak (Lomax & Meyrick, 2020). What may be lacking in psychosocial interventions is a consideration of financial recovery because IPV survivors are faced with financial hardship on a daily basis.

Research indicates that financial education is an emerging need for depressed women in general (Starkey et al., 2013), but it has not been widely applied to IPV survivors. Financial education programs have been validated to empower women economically (Postmus et al., 2015; Sanders et al., 2007; Silva-Martínez et al., 2015; Warren et al., 2019). When abused women gain more financial literacy, they may make better financial decisions, build financial safety plans and become financially independent, leading to less financial stress in their daily life. Once the IPV survivors can handle financial stress better, they can have more chances to reduce depression as they feel they have control over their financial issues. However, this important facet in psychosocial interventions to counteract depression has not been adequately explored.

Given the significant interrelationship of stress, abuse, and mental health that IPV
female survivors experience, an empirical study shows that survivors who received financial education significantly decreased their financial strain over time (Postmus et al., 2015). Guided by the Stress Process Model, this study aims to test whether financial education intervention is an effective strategy to mitigate two pivotal stress outcomes caused by economic abuse: financial strain and depression. This paper further examines whether financial education reduces financial strain, which in turn, leads to a decrease in depression.

**Background**

**Stress Process Model**

The Stress Process Model, initiated by Pearlin and colleagues (1981), provides a revolutionary framework to understand how stress impacts mental health. Using a longitudinal study with 2,300 U.S. adults, Pearlin et al. (1981) primarily examined how disruptive job events (i.e. being fired, laid off, or downgraded) affect depression. They also identified other predictors of depression and the interconnections, such as economic strain, coping behaviors, and self-esteem. Their findings evidenced that economic strain mediated the relationship between job loss and depression (Pearlin et al., 1981). Stress is better understood as a process that consists of multiple elements and dynamic relationships; accordingly, the Stress Process Model was later modified by (Taylor & Aspinwall, 1996) to include moderators and mediators. Their psychosocial stress model is more complex and dynamic as it integrates personal resources (genetic, individual, and familial factors) and external resources. Furthermore, in Taylor’s and Aspinwall’s (1996) model, each factor can play a role as a stressor, a mediator, or an outcome.
**Economic Abuse, Financial Strain, and Depression**

The relationship between IPV and financial strain can be viewed as bidirectional: financial strain leads to IPV, and vice versa, IPV leads to financial strain. On one hand, a higher level of financial strain predicts a higher incidence of economic abuse, as the abuser needs more control over financial resources. For example, male perpetrators experience financial strain and may use violence to react to alleviate stress. Based on the general stress model, family violence, mainly referring to husband-to-wife abuse, is considered as a response to stressors that families experience (Farrington, 1980) and then becomes an umbrella term whereas IPV specifically denotes violence between intimate partners. The male perpetrator actively uses violence against women as a response to the accumulation of financial stressors associated with a perceived excess of demands over resources (Benson et al., 2003; Copp et al., 2016; Fox et al., 2002; Friedan, 1995).

On the other hand, financial strain can be viewed as the economic consequence of IPV. Women suffer violence resulting in limited access to financial resources because perpetrators tend to isolate them or sabotage them from work; in turn, the IPV victimization leads to higher levels of financial strain. Using a sample of female IPV survivors, Hetling et al. (2014) found that IPV experiences increase financial hardship. In addition, IPV victimization is associated with economic hardship at a later time as IPV intensity increases the likelihood of reporting economic hardship for both males and female victims (Strenio, 2017).

Additionally, research has shown a strong connection between IPV and depression (Beydoun et al., 2012; Beydoun et al., 2017; Oram et al., 2017; White & Satyen, 2015). In particular, economic abuse is highly related to depression among women (Nancarrow
et al., 2008; Postmus, Huang et al., 2012; Stylianou, 2018; Voth Schrag, 2015).

Economic abuse was associated with a 2.4 times greater likelihood of meeting the clinical cutoff for depression (Voth Schrag, 2015). Postmus and colleagues (2012) found that mothers who experienced economic abuse at Year 1 were 1.9 times higher likelihood of experiencing a depressive episode at Year 5 than their counterparts. (Stylianou, 2018) found that the impact of economic abuse was highly related to depressive symptoms compared to other forms of IPV such as physical, psychological or sexual abuse.

Furthermore, empirical literature demonstrates that financial strain has significant effects on depression (Aranda & Lincoln, 2011; Dijkstra-Kersten et al., 2015; Okechukwu et al., 2012; Price et al., 2002). Compared to men, women who report financial strain are at greater risk of experiencing depression (Aranda & Lincoln, 2011; Butterworth et al., 2012; Chou et al., 2004; Drentea & Reynolds, 2014; Kahn & Pearlin, 2006; Okechukwu et al., 2012; Starrin et al., 2009). Financial strain also mediates the relationship between reemployment and depression (Price et al., 2002).

**Financial Education Intervention**

To empower women economically, financial education programs are often used as means to enhance women’s financial literacy (Jarecke et al., 2014), particularly vulnerable groups such as low-income women (White et al., 2018). In general, women have a lower level of financial literacy than men regardless of age, marital status, education, or income (Bucher-Koenen et al., 2017). Using three nationally representative household surveys from the U.S., Netherlands, and Germany, Bucher-Koenen and colleagues (2017) found that old women, young women, widowers and single women knew substantially less than men about finance and investment. Even when men and
women have had similar education and income levels, women reported a lower level of financial literacy than men. In Bucher-Koenen’s study, the gender gap of financial literacy was not fully explained by demographics and socioeconomic status between men and women, which indicated to other factors. For example, women lack opportunities to work outside the home, access credit, hold property, or receive formal financial services, in turn, women accumulate less financial knowledge (Hung et al., 2012).

As IPV interventions should prioritize survivors’ financial recovery and empowerment (King et al., 2017), financial education programs have been increasingly used for IPV survivors (Hoge et al., 2020). Financial education programs provide a tool to enhance an individuals’ financial knowledge, to make better financial plans, to model personal money-wise decisions, and to manage personal finance. In addition to financial knowledge, financial education programs for IPV survivors should address the recognition of economic abuse and financial safety planning (Postmus, 2010).

To date, only two of U.S. financial education programs for IPV survivors have been evaluated. The first evaluation of financial literacy curriculum, Redevelopment Opportunities for Women’s Economic Action Program (REAP), with female IPV survivors was conducted in 2001 (Sanders et al., 2007). The second evaluation of a financial education program was conducted using data from a longitudinal randomized controlled study (Postmus, Plummer, McMahon, & Zurlo, 2012). Both evaluation studies have shown that participants in the intervention group reported increased self-efficacy, increased confidence to manage their finances, and decreased financial strain (Hetling et al., 2016; Johnson, 2018; Postmus et al., 2015). Accordingly, financial education should be viewed as an important intervention for female IPV survivors.
Methods

The specific aim of this paper is to evaluate whether financial education reduces depression among IPV female survivors by mitigating financial strain. In order to specify a causal pathway from the independent variable (financial education intervention) to the dependent variable (depression), financial strain was included as a mediator.

Data and Sample

Secondary data were used for this study. The data were collected as part of a randomized control study that evaluated the impact of an economic education curriculum on the lives of IPV survivors that covered a span of 14 months (Postmus et al., 2015). The curriculum, entitled “Moving Ahead through Financial Management,” was created by the Allstate Foundation and the non-profit National Network to End Domestic Violence (NNEDV). The financial education curriculum aimed to help IPV survivors to improve individual financial management and increase financial knowledge such as saving, budgeting, credit, and assets. They also learn to identify signs of economic abuse, create financial safety plans and obtain resources to deal with challenges caused by abuse (Postmus, 2010).

Participants in the evaluation research were recruited from the shelter and non-residential programs in the domestic violence agencies in four regions, including the Northeast, Midwest, Texas, and Puerto Rico. To participate, women had to: (a) experience at least one form of intimate partner violence in the past year; (b) be female and 18 years old or older; (c) have not taken a financial literacy class within the past 2 years; (d) commit to participate in four interviews; and (e) commit to attend the curriculum if randomly assigned. The whole sample of 456 participants was randomly
assigned to the intervention group (received financial education intervention in addition to regular services, n=240) and control group (received regular services, n=216). However, 7 participants were excluded owing to ineligibility; the final analytic sample was 449 female IPV survivors.

To serve as a baseline, the first face-to-face interviews were conducted prior to the implementation of the curriculum at Time 1 (hereafter T1). Participants received a $25 gift card as compensation after they completed the interview. After the T1 interview, both groups received regular services from the domestic violence organizations. The intervention group additionally was provided with the financial management curriculum. Advocates in each agency implemented the financial education intervention. The research team adopted several strategies to assure fidelity. First, the research team provided a training that included PowerPoint presentation slides for the advocates to utilize, including instructions and written sentences for explanations and transitions. Second, a checklist was designed for advocates to ensure that all the topics and contents were covered. Each advocate completed the checklist after they finished providing the intervention. Third, the research team developed the standard of implementation, such as the minimum quantity of group (at least 4 group sessions) and individual sessions (at least 1 individual session) and a time-frame from which to complete the intervention (between 4-8 weeks).

The follow-up interviews took place 2 months after the first interview (Time 2, T2), 8 months after the first interview (Time 3, T3) and 14 months after the first interview (Time 4, T4). To maintain participant retention, the research team provided monthly check-ups by phone and increased the incentives over time: T2 -$30, T3 -$35,
and T4 -$40. However, the sample size decreased at each time period due to dropouts and loss of follow up: 65.6% of T1 participants (n=300) completed T1 and T2 interviews, 61.1% of T1 participants (n=279) completed T1 to T3 interviews, and 53.8% of T1 participants (n=246) completed all four interviews.

**Attrition and Analytic Sample**

One of the main challenges in longitudinal research is attrition (Twisk & de Vente, 2002), which can significantly threaten the internal, external, and statistical validity of intervention studies (Marcellus, 2004). Specifically, longitudinal studies of IPV survivors may face a high rate of attrition because of their living instability caused by the abuse (Dutton et al., 2003); in turn, the attrition bias affects the validity for the IPV interventions studies (Ramsay et al., 2005). To deal with attrition issues in intervention research, the intention-to-treat (ITT) analysis and per-protocol (PP) analysis are used to evaluate the effect of an intervention with randomized controlled trials (Melnyk & Morrison-Beedy, 2012).

The ITT analysis is considered as the primary approach for intervention evaluation because it includes all randomized participants in both treatment or control groups, even though they did not follow through the protocol, did not complete the treatment or dropped out (Sackett & Gent, 1979). The advantages of the ITT analysis include: (a) disregards noncompliance and protocol deviation; (b) provides an unbiased estimate of treatment effect; (c) preserves the sample size and statistical power, and (d) minimizes Type I error (Gupta, 2011). However, the ITT analyses result in heterogeneity problems due to the inclusion of noncompliant participants, dropouts, and complainants and is at risk of Type II error (Gupta, 2011).
The PP analysis is defined as a subset of the ITT analysis because it evaluates the effect of treatment from the fully compliant participants only (Gupta, 2011). Thus, the PP analysis can be biased because it removes individuals who may differ from the analyzed sample and leads to Type I error (Melnyk & Morrison-Beedy, 2012). In other words, the PP evaluation may bias the results in favor of positive effects of the treatment. In sum, the ITT analysis emphasizes the effect of the initial assignment, and the PP analysis focuses on the effect of the actual treatment received. The full analysis should include both the ITT approach and PP approach for a robust interpretation of the intervention effect (Gupta, 2011).

In the parent study, the whole sample 449 of female IPV survivors had missing/incomplete data on the three follow-up interviews because some of them did not complete the intervention, lost contact, or dropped out. Using the dataset from the same parent study, To address longitudinal sample attrition issue, Johnson (2018) conducted the ITT analytic sample (Figure 4) and the PP analytic sample (Figure 5) with the Consolidated Standards of Reporting Trials (CONSORT) flow diagrams. This paper evaluated the longitudinal effect of financial literacy intervention on depression by using the ITT sample (n=449) and the PP sample (n=194).
**Figure 4**

**CONSORT Diagram for Intention-to-Treat Analytic Sample (n=449)**

**Screened/assessed for eligibility**
- Excluded (n=21)
  - Do not meet inclusion criteria (n=15)
  - Too early with interview (n=5)
  - Duplicative (n=1)

**Randomized (n=456)**

**Allocation**
- Allocated to intervention (n=240)
  - Received allocated intervention (n=195)
  - Did not receive allocated intervention (n=45)
- Allocated to control (n=216)
  - Received treatment as usual (n=208)
  - Did not receive treatment as usual (n=8)

**Follow up**
- Ineligible for study (n=6)
  - Dropped after T1 by research team (n=54)
    - Contamination (n=7)
    - Did not complete intervention (n=45)
    - Left IPV program (n=2)
  - Dropped out after T1 (n=2)
- Lost to follow-up (n=54)
  - Lost contact after T1 (n=12)
  - Lost contact after T2 (n=15)
  - Lost contact after T3 (n=27)
- Ineligible for study (n=1)
  - Dropped after T1 by research team (n=6)
    - Contamination (n=4)
    - Left IPV program (n=2)
  - Dropped out after T1 (n=3)
- Lost to follow-up (n=82)
  - Lost contact after T1 (n=30)
  - Lost contact after T2 (n=17)
  - Lost contact after T3 (n=35)

**Analysis (n=449)**
- Analyzed (n=234)
- Excluded from analysis (n=6)
  - Ineligible for study (n=6)
- Analyzed (n=215)
- Excluded from analysis (n=1)
  - Ineligible for study (n=1)

Figure 5

CONSORT Diagram for Per-Protocol Analytic Sample (n=194)

Screened/assessed for eligibility

Excluded (n=21)
- Do not meet inclusion criteria (n=15)
- Too early with interview (n=5)
- Duplicative (n=1)

Randomized (n=456)

Allocated to intervention (n=240)
- Received allocated intervention (n=195)
- Did not receive allocated intervention

Allocated to control (n=216)
- Received treatment as usual (n=208)
- Did not receive treatment as usual (n=8)

Follow-up

Ineligible for study (n=6)
Dropped after T1 by research team (n=54)
- Contamination (n=7)
- Did not complete intervention (n=45)
- Left IPV program (n=2)
Dropped out after T1 (n=2)
Lost to follow-up (n=80)
- Lost contact after T1 (n=36)
- Lost contact after T2 (n=25)
- Lost contact after T3 (n=23)

Analysis (n=194)

Analyzed (n=93)
Excluded from analysis (n=6)
- Ineligible for study (n=6)
- Dropped after T1 by research team (n=54)

Ineligible for study (n=1)
Dropped after T1 by research team (n=6)
- Contamination (n=4)
- Left IPV program (n=2)
Dropped out after T1 (n=3)
Lost to follow-up (n=109)
- Lost contact after T1 (n=48)
- Lost contact after T2 (n=30)
- Lost contact after T3 (n=27)

Analyzed (n=101)
Excluded from analysis (n=119)
- Ineligible for study (n=8)
- Dropped after T1 by research team (n=6)

Research Question

Based on the Stress Process Model, this current study proposed the longitudinal mediation model that connected two stressors (economic abuse, financial strain), outcome (depression), and the external resources (financial education intervention) over time (see Figure 6). The research questions addressed were the following: (a) Did economic abuse at T1 impact financial strain at T2? (path a); (b) Did financial strain at T2 mediate the relationship between economic abuse at T1 and depression at T3 and T4? (path a + b); (c) Did the financial education intervention reduce depression at T3 and T4? (path c); (d) Did the financial education intervention reduce financial strain at T2, leading to a decrease of depression at T3 and T4 (path d+b)? According to the Stress Process Model and extant research, the four hypotheses in this study included: (a) Economic abuse at T1 was associated with financial strain at T2; (b) Financial strain at T2 mediated the path between economic abuse at T1 and depression at T3 and T4; (c) Financial education was associated with depression at T3 and T4; (d) Financial strain at T2 mediated the path between financial education (intervention) and depression at T3 and T4. Additionally, financial strain at T1 and depression at T1 were included as covariates.

Figure 6
Hypothesized Longitudinal Mediation Model
Measures

The scales used in this study included several validated scales, including the Scale of Economic Abuse-12 (Postmus, Plummer, et al., 2016), Financial Strain Scale (Hetling et al., 2014), and the Center for Epidemiological Studies Depression (CES-D) (Radloff, 1977).

Economic abuse

Economic abuse was measured by the 12-item Scale of Economic Abuse (SEA-12) (Postmus, Plummer, et al., 2016). At T1, participants were asked to rate how often their partner or ex-partner used financial abusive behaviors in the past 12 months using a five-point Likert-type scale ranging from “1=never” to “5=quite often.” Higher scores indicate more economic abuse experiences. The SEA-12 scale included three subscales: (a) employment sabotage (3 items, i.e., Threatened you to make you leave work); (b) economic control (5 items, i.e. Kept financial information from you); and (c) economic exploitation (4 items, i.e., Spent the money you needed for rent or other bills). At subsequent interviews (T2-T4), the question asked of participants asked about experiences since the last interview (not the previous 12 months). Each subscale showed high internal reliability at T1 as Cronbach’s alphas were 0.84, 0.84 and 0.80 for employment sabotage, economic control, and economic exploitation, respectively. The overall scale reliability coefficient was 0.88.

Financial Strain

Participants reported individual’s financial strain during the past month using the Financial Strain Survey (Aldana & Liljenquist, 1998), later validated of used for female IPV survivors (Hetling et al., 2014). This is a 5-point Likert-type scale ranging from
“1=never” to “5=always”. Higher scores demonstrated higher financial strain. The measure was 18-item scale employed 5 subscales, including poor education (3 items, i.e., I feel well informed about financial matters.), poor relationships (4 items, i.e., I tend to argue with others about money.), physical worry (4 items, i.e., Do your muscles get tense when you add up your bills?), poor credit card e (3 items, i.e., I get new credit cards to pay off old ones), and unable to meet financial obligations (4 items, i.e., Many of my bills are past due). The Financial Strain Survey demonstrated moderate to high internal reliability. Cronbach’s alphas for overall scale was 0.84 and 0.87 for T1 and T2, respectively.

Depression

The CES-D (Radloff, 1977) is a self-report scale to measure depressive symptomatology in the general population, and is commonly used among IPV survivors as well (Bonomi et al., 2006; Gibbs et al., 2018; Sullivan et al., 2015). The CES-D consisted of 20 items measuring sadness (i.e., I feel sad or I had crying spells”), loss of interest (i.e., I did not feel like eating; my appetite was poor), and hopelessness in the past week (i.e., I thought my life had been a failure). Each item was scored from 1 (less than one day over the past week) to 4 (five to seven days over the past week), and the higher score referred to higher depression. The CES-D scale demonstrated a robust internal reliability as Cronbach’s alpha ranged from 0.92 to 0.94 across all time points.

Data Analysis and Missing data

To test longitudinal mediation effects of the financial education intervention, this study utilized path analysis by structural equation modeling procedure using IBM SPSS AMOS 26.0 (Byrne, 2016). Path analysis uses regression calculations to establish causal
relationships between variables by path diagrams. Similar to regression coefficients, path coefficients denote the relationship between two variables in a path model (Duncan, 1966). To determine these relationships are statically significant, p-value is commonly used as the indicator to describe the probability of presence/absence of an intervention effect. This study applied the significance level of 0.05 as it was first suggested a particular probability value (Fisher, 1925) and then widely used as golden standard (Field, 2013). However, the p-value should be interpreted with caution (Wasserstein & Lazar, 2016). Based on the null hypothesis significance testing (Field, 2013), the null hypothesis of no intervention effect is accepted when the p-value is greater than 5%. In other words, this study took a 5% risk to conclude a false intervention effect when there was no actual effect.

Missing values in longitudinal panel data is common in IPV studies because IPV survivors may be more likely to leave the study due to violence exposure (Johnson, 2018; Krause et al., 2008). In this study, the results of Little’s MCAR test ($X^2=3047.436$, DF=2897, p= .025) and separate-variance t tests suggested that the data might not be missing completely at random but rather are consistent with missing at random (MAR) (Garson, 2015). To handle MAR data in panel studies, the SEM uses full-information maximum likelihood (FIML) method (Enders & Bandalos, 2001). The approach works by estimating a maximum likelihood function for each individual to use all the available data, and it is widely accepted to produce unbiased parameter estimates and standard errors (Enders & Bandalos, 2001). In the SEM model, the FIML procedure generates the best possible estimates for missing values, which allowed all 449 ITT participants to be included in the data analysis for all four waves.
Results

The descriptive statistics are presented in Table 8. In the PP sample of 194 participants, nearly half (47.94%) of the participants were in the intervention group. It is important to note that one case is missing in the depression scale T3 resulting in the sample size of 193. On average, female IPV survivors reported lower scores on financial strain at T2 ($t_{297} = -11.30, p < .001$) after the T1 interview. The depression mean score, after decreasing from T1 to T3 ($t_{274} = -8.35, p < .001$), increased slightly from T3 to T4 ($t_{241} = 5.25, p< .001$). The Cohen’s d coefficients of mean differences of financial strain and depression between pretest and posttest were 0.72 and 0.28, referring to a medium to small effect of the financial education intervention (Cohen, 1992).

Table 8

Descriptive Analysis- the PP Sample (n=194)

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean or %</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression (T1)</td>
<td>194</td>
<td>2.15</td>
<td>0.71</td>
<td>1</td>
<td>3.88</td>
</tr>
<tr>
<td>Depression (T3)</td>
<td>193</td>
<td>1.82</td>
<td>0.77</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Depression (T4)</td>
<td>194</td>
<td>1.86</td>
<td>0.77</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Financial Strain (T1)</td>
<td>194</td>
<td>2.85</td>
<td>0.62</td>
<td>1.17</td>
<td>4.56</td>
</tr>
<tr>
<td>Financial Strain (T2)</td>
<td>194</td>
<td>2.39</td>
<td>0.68</td>
<td>1</td>
<td>4.83</td>
</tr>
<tr>
<td>Economic Abuse (T1)</td>
<td>194</td>
<td>2.56</td>
<td>0.97</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Intervention group</td>
<td>93</td>
<td>47.94%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This study hypothesized that financial education intervention was effective to reduce depression through decreasing financial strain. The hypothesized model on PP (n=194) sample was found to fit the data well [$X^2(8) = 10.783, p=0.214; CFI= 0.993; NFI=0.973$, RMSEA=0.042]. However, economic abuse at T1 did not significantly relate to financial strain at T2 ($\beta = 0.05, p > .05$) and depression at T3 and T4. Hypothesis 1 and 2 was not supported since financial strain did not mediate economic abuse and depression.
Figure 7 presents the statistical model with the standardized regression coefficients for depression after removing the insignificant variable (Economic Abuse at T1) and insignificant relationships. The specified model provided a good fit the data \[X^2 (7) = 10.342, p=0.170; \text{CFI}= 0.990; \text{NFI}=0.972, \text{RMSEA}=0.050\]. Financial strain at T2 also significantly influences depression at T3 (\(\beta = 0.13, p < .05\)) and T4 (\(\beta = 0.19, p < .05\)). Financial education intervention did not significantly affect depression over time (\(\beta = 0.04, 0.09, p > .05\)); however, it had a significant indirect effect through financial strain as the mediating variable (\(\beta = -.37, p < .05\)). Hypothesis 4 was supported because the financial education intervention directly reduced financial strain at the posttest, and the decrease of financial strain directly alleviated depression at the follow-ups.

**Figure 7**

*Results of the Path Analysis on the PP sample (n=194)*

<table>
<thead>
<tr>
<th>Financial Strain Baseline (T1)</th>
<th>Financial Strain Posttest (T2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Financial Education Intervention</td>
<td></td>
</tr>
<tr>
<td>Depression Baseline (T1)</td>
<td>Depression (T3)</td>
</tr>
<tr>
<td></td>
<td>Depression (T4)</td>
</tr>
</tbody>
</table>

Note. Standardized coefficients are presented.

* \(p< .05\).
Table 9 showed descriptive statistics of available data, including depression, financial strain, and economic abuse at different time periods in the ITT sample (n=449). Over half (52.12%) were randomly assigned to the intervention group. Due to attrition at the sequent interviews and item nonresponses, the sample sizes decreased from T2 to T4.

Table 9

Descriptive Analysis - the ITT sample (n=449)

<table>
<thead>
<tr>
<th>Variable</th>
<th>N</th>
<th>Mean or %</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>Depression (T1)</td>
<td>448</td>
<td>2.23</td>
<td>0.74</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Depression (T3)</td>
<td>275</td>
<td>1.85</td>
<td>0.77</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Depression (T4)</td>
<td>243</td>
<td>1.89</td>
<td>0.79</td>
<td>1</td>
<td>3.88</td>
</tr>
<tr>
<td>Financial Strain (T1)</td>
<td>449</td>
<td>2.78</td>
<td>0.67</td>
<td>1.17</td>
<td>4.56</td>
</tr>
<tr>
<td>Financial Strain (T2)</td>
<td>298</td>
<td>2.37</td>
<td>0.67</td>
<td>1</td>
<td>4.83</td>
</tr>
<tr>
<td>Economic Abuse (T1)</td>
<td>448</td>
<td>2.64</td>
<td>0.99</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Intervention group</td>
<td>234</td>
<td>52.12 %</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Using the ITT (n=449) sample, the hypothesized model was also found to fit the data well [X^2(8) = 14.10, p=0.079; CFI= 0.990; NFI=0.977, RMSEA=0.041]. However, similar to the PP model, economic abuse at T1 did not significantly relate to financial strain at T2 (β = 0.05, p > .05) and financial education intervention did not appear to significantly influence depression at T3 and T4 (β = 0.03, 0.06, p > .05). Figure 8 presents the statistical model with the standardized regression coefficients for depression after removing the insignificant variable (Economic Abuse at T1) and insignificant relationships. The specified model provided a good fit the data [X^2(7) = 14.57, p=0.042; CFI= 0.986; NFI=0.974, RMSEA=0.049]. Figure 8 indicated financial strain at T2 also significantly influences depression at T3 (β = 0.18, p < .05) and T4 (β = 0.20, p < .05). Financial education intervention did not significantly affect depression over time; however, it had a significant indirect effect by financial strain as the mediating variable.
\( (\beta = -0.36, p < 0.05) \). Based on the results, financial strain mediated between economic abuse and depression over time, which supported Hypothesis 2. The financial education intervention directly reduced financial strain at posttest, and the change of financial strain directly affected depression at the follow-ups (See Figure 8).
The results of PP and ITT samples showed similar paths rejected hypothesis 1 that economic abuse at T1 did not affect financial strain at T2. The results supported hypothesis 2 that financial education intervention directly reduced financial strain at T2, and the decrease of financial strain at T2 reduced depression at T3 and T4 after controlling both variables at T1. The PP sample results showed a better model fit to the data than the ITT sample.

**Discussion**

To combat the depression that female IPV survivors face, financial education needs to be recognized as an effective intervention. The aim of this study was to evaluate the effectiveness of financial education intervention for female IPV survivors. The results of this study provided evidence that financial education interventions are an effective resource to break the cycle of IPV. Based on the longitudinal mediation analysis, the
results supported that the financial education intervention indirectly decreased depression over time as financial strain mediated the relationship between financial education and depression. Prior studies have noted that female IPV survivors who received a financial education intervention significantly reduced their financial strain and depression respectively (Postmus et al., 2015), but this is the first study to integrate two findings into one path model using longitudinal data. Specifically, this study showed that financial education directly decreased financial strain, which in turn decreased depression.

Financial education can be an effective intervention to treat depression because it directly lowered financial strain, which is often overlooked in traditional psychological interventions. This study validated the claim that financial recovery needs to be prioritized in IPV interventions (King et al., 2017), and further claimed financial education interventions as a powerful tool to deal with survivors’ financial hardships.

This study focused on the assumption that financial education programs can reduce depression by decreasing financial strain. There are many potential explanations on how financial education decreases financial strain. First, female IPV survivors might have reported less financial strain because they learn how to make better financial decisions and manage their finances after participating in financial education programs. Second, IPV survivors gain additional psychological benefits from the financial education intervention that reduces their financial strain. In an evaluation study of a financial education intervention in Australia, (Warren et al., 2019) noted that some IPV survivors built up strong financial management skills even when they had limited or no access to financial resources. Their participation in financial education programs also reduced their financial stress because their confidence or self-efficacy grew when other
members in the group or agency staff validated their experiences. Further research is warranted to explore how financial education intervention effectively reduces financial strain for IPV survivors.

To effectively address the complex challenges that IPV survivors face, financial strain needs to be targeted in short-term interventions. The importance of including screening for financial strain in the services for IPV survivors has been highlighted in previous studies (Lin, unpublished manuscript-a). As financial strain has been well documented as a robust predictor of depression (Asebedo & Wilmarth, 2017; Grafova, 2018; Monserud & Markides, 2017), this study provides evidence of the longitudinal relationship that demonstrated decreased financial strain was associated with decreased depression after 8 and 14 months. In other words, the effect of financial education on financial strain to depression was durable at least over one year. Early short-term interventions aimed to reduce financial strain faced by IPV survivors are beneficial to enhance their psychological health at later times.

This paper contributes to specifying the impact of financial education related to depression over time for IPV survivors shows that financial interventions are an important component to alleviate negative consequences of IPV. Cross-sectional research has uncovered that economic abuse is significantly associated with depression (Stylianou, 2016). Lin (unpublished manuscript-a) further found that financial strain mediated such relationships. However, this study found that the experience of economic abuse at the T1 was no longer associated with financial strain at the posttest and with depression at follow-up interviews. The first potential explanation can be attributed to the characteristics of the sample because the majority (80%) of participants have left their
abusers. The separation from abusers could mitigate the impact of economic abuse on financial strain and depression as survivors began to gain more control over their financial resources and improve their psychological outlook. The second potential explanation can be the outcome of intervention. After seeking help from formal agencies, female survivors may be in crisis in the first 3 months and deal with immediate needs for housing, childcare, or legal matters in the following year. With formal social support, negative impacts created by economic abuse reduced over time. Owing to the fact that these variables were beyond this scope of the study, future research is needed to validate the two potential explanations.

Notably, this study uncovers the effectiveness of financial education intervention using the data from a longitudinal, randomized control trial design (Postmus et al., 2015). Such research design is valuable in IPV research because of a large sample size (n=449) and rigorous experimental design in IPV intervention studies (Arroyo et al., 2017). Retention is a concern while conducting a longitudinal research to follow up with IPV survivors over time because of the sensitive nature of the topic; for example, participants who experienced discomfort during interviews may be reluctant to continue follow-ups (Dichter et al., 2019). Although the original research team provided monthly check-up and increased incentives, this study also had difficulty retaining the sample as the PP sample reduced from 449 to 194 after 14 months. The results from the PP analysis may be biased on the sample of protocol compliers. Thus, this study provided the path model using the ITT analysis to robust the findings and used the FIML method to handle missing data. Such effort can provide a more valid assessment of intervention effectiveness on financial education programs (Armijo-Olivo et al., 2009).
Additionally, this study presented a long-term trend in depression among female survivors. Even though depression decreased from T1 to T3 but increased at T4, this unexpected increase is commonly seen in a longitudinal intervention because the effect of educational interventions often fades out as time goes by, leading to an increase in scores at the final follow-up (Bailey et al., 2017). Another possible explanation for the increase may be due to the outcome of separation. In this study, the majority of survivors (84%) had left the abusive relationship at T1 interview. Several longitudinal studies found that trauma effects significantly decline in the months after separation (Anderson & Saunders, 2003), but some survivors who exposed to high levels of stress experienced dropped depression in the beginning of post-separation but increased depression with time over the 2-year period (Anderson et al., 2003). There is a pressing need for the studies that can inform services to maintain the persistence effect of interventions for depression as well as to support survivors who face multiple stressors after separation.

The findings need to be interpreted within the limitations of the study. First, this study relied on a sample that only represented female IPV survivors who received the services from domestic violence agencies and were willing to participate in a financial education program. The self-selection bias limits the findings to be generalized to other groups of IPV survivors, such as those who were not recruited from the domestic violence agencies or who learn financial education on their own. Second, the threat of fidelity arose because there was a wide variation in implementation across multiple agencies by multiple advocates. The original research team of the parent study have made efforts to minimize the variation by developing a comprehensive manual, providing supervisory webinars, or creating a checklist (Stylianou, 2016). The inconsistencies of
financial education implementation limited the effectiveness of the interventions. Third, the data imputation of the ITT sample needs to be interpreted with caution because of the high attrition rates of participants across time.

These findings have important ramifications for developing financial education interventions to improve financial well-being and depression among IPV survivors. Ahnquist et al. (2007) suggest that policies geared towards reducing health inequalities should counteract long-term exposure to economic hardships and reduce socio-economic inequalities in health. There is a need to build an evidence-base for IPV intervention programs that considers economic support as well as mental health support (Matjasko et al., 2013b).

For social work practitioners, there is a need to assess financial strain since it serves as a mediator between the intervention and depression. Moreover, social workers need more training and education to enhance their own financial literacy that is sufficient to tailor financial education interventions for IPV survivors. Policy makers must consider financial education programs as a significant intervention to combat violence against women. Researchers can explore other mediators or moderators that strengthen the linkage between financial strain and depression among IPV survivors and evaluate the effectiveness of financial education on financial wellbeing and mental health using diverse samples of IPV survivors. To assist female IPV survivors to recover financially and psychologically, financial education intervention and strategies to address financial strain have to become priorities.
Chapter 6: Discussion and Implications

Summary of Key Findings

The 3-paper dissertation highlights the significance of financial strain among IPV survivors based on the hypothesis that financial strain is a crucial stressor that affects survivors’ lives in multiple dimensions. Paper 1 examines the relationship between different types of IPV and financial strain. Paper 2 determines the role of financial strain as a moderator or mediator between economic abuse and depression. Paper 3 evaluates the effect of financial literacy intervention on depression, and testing if financial strain mediates such relationships. Based on the Stress Process Model, the three papers work together to examine the variable of financial strain as the stress source, the mediator, and the outcome, in order to further examine the cause and impact of financial strain among female survivors.

This chapter summarizes key findings, implications, and limitations of this dissertation. The findings from all three papers provide support for the conceptual framework of the Stress Process Model among IPV survivors. The findings suggest that IPV intervention reduced financial strain, and in turn improved the mental health outcome, such as depression, for female survivors.

Paper 1 – Intimate Partner Violence and Financial Strain

This paper investigates the relationship between IPV and financial strain with a focus on economic abuse by using data from IPV survivors who participated in a longitudinal randomized control trial study. In Paper 1, two research questions are stated: (a) What type of abuses are associated with financial strain among female IPV survivors?
(b) If economic abuse relates to financial strain, does such a relationship hold up over time?

The results of regression and decomposition analysis suggest that physical abuse and economic abuse are significantly and positively associated with the magnitude of financial strain. The change of economic abuse and physical abuse from T1 to T4 significantly contribute to nearly 77% of the difference in financial strain, and economic abuse contributed about 58% of the change in financial strain. The results in this study indicate that the effect of economic abuse on financial strain was greater than other factors, and persisted over time.

**Paper 2 - Economic Abuse and Depression**

Based on the results from Paper 1, this study continues to examine how the association between economic abuse and financial strain affects depression among IPV survivors. More specifically, Paper 2 determines whether financial strain acted as a mediator or moderator between economic abuse and depression prior to the intervention. In Paper 2, two research questions are stated: (a) Is financial strain a moderator between economic abuse and depression? The relationship between economic abuse and depression is hypothesized to be varied by different levels of financial strain. (b) Is financial strain a mediator between economic abuse and depression? IPV survivors who experienced economic abuse reported higher levels of financial strain; in turn, they will be more likely to display depressive symptoms.

Results from regression analysis suggest that financial strain does not moderate the relationship between economic abuse and depression. However, financial strain is shown to be a significant mediator. The findings in Paper 2 further discover a mediation model
Paper 3 - Depression and Financial Education Intervention

Using the path model, this study investigates the association between economic abuse, financial strain, and depression over time among female survivors. Specifically, a financial education intervention is included in the model as an external resource. In Paper 3, two research questions are stated: (a) Do financial strain at T2 mediate the path between economic abuse at T1 and depression at T3 and T4? (b) Do financial strain at T2 mediate financial education intervention and depression at T3 and T4?

Results from the path model and longitudinal mediation analysis suggest that financial strain do not mediate the relationship between economic abuse and depression. However, financial strain mediates the relationship between financial education and depression. The results demonstrate that financial education intervention indirectly decreases depression over time because the intervention directly reduces financial strain, and then reduces depression.

Synthesis of Findings

Guided by stress theory, the findings from the three papers generate an understanding of financial strain among female IPV survivors. Even though financial strain is known as a common stressor in daily life (American Psychological Association, 2015, 2017), how financial strain intertwines with IPV experiences is less understood. This 3-paper dissertation points to several conclusions that financial strain can perform different roles such as an outcome variable of IPV in Paper 1, a predictor of depression and a mediator between economic abuse and depression in Paper 2, and a mediator
between financial education and depression over time in Paper 3. Figure 9 depicts the associations between major variables detailed in the three papers.

**Figure 9**

*Variables of Interests in 3 papers*

Generally, economic abuse has been linked to financial strain in non-service seeking samples (Kutin et al., 2017; Schrag et al., 2020). However, this 3-paper dissertation specifically uses data from female IPV survivors who received domestic violence services. Given that women in this sample experienced highly prevalent, long-term, or severe IPV, they might have been more financially vulnerable or financially dependent on abusers. Paper 1 discovers a strong association between economic abuse and financial strain after controlling socio-demographic attributes and other types of IPV (i.e. physical, psychological, and sexual abuse). Additionally, decreased economic abuse contributes to decreased financial strain over a 14-month span. The current findings suggest that financial strain is the economic consequence of economic abuse. To rebuild personal
economic security and financial safety, interventions need to address the tactics of economic abuse.

Paper 2 adds a mediator role to financial strain between economic abuse and depression. In line with previous research (Butterworth et al., 2012; Pulgar et al., 2016), the findings indicate that financial strain is not only a robust predictor of depression among female IPV survivors, but also a significant mediator in the relationship between economic abuse and depression. In other words, the mental health consequence of economic abuse is modifiable when the financial strain of survivors is addressed. Thus, the findings from Paper 1 and 2 establish the linkage of economic abuse and financial strain and the impact of dual stressors on depression.

Paper 3 continues to examine the mediator role of financial strain between economic abuse and depression by using the longitudinal data. Specifically, financial education intervention is introduced in the longitudinal mediation model as an indicator of financial strain. Although financial strain alone does not mediate the association between economic abuse and depression over time, it mediates the linkage between financial education intervention and depression. The findings suggest that financial education could serve as an innovative intervention for depression. Such intervention reduces financial strain after treatment and then reduces depression at later time points (six months and one year). While Paper 1 and 2 demonstrate that financial strain was an important outcome of economic abuse as well as a prominent predictor of depression, Paper 3 adds to this finding by identifying that financial education was an effective intervention for financial strain. Taken together, the 3-paper dissertation suggests that financial strain is closely associated with economic abuse and depression, and the
relationship between these three stressors is modifiable by financial education intervention.

**Limitations of the Study**

The longitudinal data used for this dissertation is unique in IPV studies as the parent study utilizes the randomized controlled trial to collect data from IPV female survivors. The heterogeneity in age and ethnicity allow various data analysis. While this dissertation has deepened our understanding on financial strain among female IPV survivors, it has some limitations. First, partial homogeneous characteristics of the sample limit the generalizability. The parent study utilizes a purposive sample in 14 states where participants receive domestic violence services, volunteer to participate in a financial literacy program, and respond to the evaluation survey. The majority of participants have similar demographic characteristics such as gender, income, and relationship. Such homogeneous characteristics may not have provided sufficient variety to support the hypothesis.

Another issue is the high attrition rate across multiple sites over a 14-month span. Regarding the longitudinal design of high-risk populations, female IPV survivors dropped out of the parent study because they could have faced living and job instability due to abuse experiences. The reduced sample size limits the validity of research findings. This study adopts multiple imputations to deal with missing values and compared the ITT sample with PP sample to enhance the validity of data.

Second, all measures used for this study are self-reported which could be subject to social desirability biases as the IPV survivors concern about the stigma to disclose abuse and depression; as a result, the data may have been underestimated. While women
answered the baseline survey and follow-up surveys retrospectively, their responses for situations in the past months might have been affected by memory. The instrument was translated from English to Spanish, but the reliability and validity of Spanish version measurement had not been validated.

Third, the threat of fidelity for the intervention implementation arises because there was a wide variation in implementation across multiple agencies by multiple advocates. The agency inconsistencies affected the sample size and limited the effectiveness of the interventions. The research team of the parent study made efforts to minimize the variation by developing a comprehensive manual, providing supervisory webinars, or creating a checklist (Stylianou, 2016).

**Contributions to Literature**

The overall goal of this 3-paper dissertation is to address financial consequences of IPV and to prioritize financial recovery within IPV intervention. With the focus on the main variable of financial strain, this dissertation contributes to develop a further understanding regarding the associations between financial strain and other variables among female IPV survivors. Paper 1 supports evidence from previous research (Schrag et al., 2020; Zheng et al., 2019), which shows that economic abuse is found to be significantly associated with financial strain compared to different forms of IPV. Given the fact that economic abuse involves behaviors aimed at controlling or exploiting individual’s access to finances, assets, or employment (Adams & Beeble, 2019; Postmus et al., 2020), survivors of economic abuse suffer increasing financial strain that creates financial insecurity. In line with stress proliferation theory (Pearlin et al., 1997; Roxburgh, 2011), the economic abuse experiences can be understood as a primary source of
stressors that proliferates to other secondary stressors such as financial strain. More specifically, Paper 1 is the first study to use longitudinal panel data to confirm that the reduction of economic abuse subsequently improved financial strain over time. Such findings are particularly salient in light of long-term financial insecurity and financial recovery for IPV survivors.

Paper 2 can be used to understand how financial strain is related to economic abuse and depression. Cross-sectional studies have shown that economic abuse is a key factor of depression (Gibbs et al., 2018; Stylianou, 2018). Based on Paper 1, the change in economic abuse significantly accounts for variation in financial strain over time. Paper 2 introduces financial strain as a mediator to further explain the relationship between economic abuse and depression. Findings from cross-sectional data at T1 show that economic abuse does not relate to depression while the variable financial strain is included. In other words, financial strain is a strong predictor of depression among IPV survivors as well as in other populations such as older widows, cancer patients, and adults with mental health issues (Dijkstra-Kersten et al., 2015; Lathan et al., 2016; Monserud & Markides, 2017; Salmi & Danielsson, 2014). Women who face financial difficulties because of economic abuse are more likely to develop depressive symptoms. To reinforce emotional well-being of IPV survivors, it is imperative to deal with financial strain first.

The findings from Paper 3 can serve as an innovative addition to financial education intervention for IPV survivors. This study has identified that such intervention was effective to reduce financial strain, leading to mitigate depression at later time periods. This study provides less-biased and high-quality evidence of intervention because of the use of RCT and validated measures including SEA-12 (Postmus, Plummer, et al., 2016),
financial strain (Hetling et al., 2014), and depression (Radloff, 1977) in the parent study (Hetling et al., 2016). To battle the most prevalent mental health consequence of IPV, depression, the findings from this study provides promising evidence to prioritize financial recovery based on the strong association between financial strain and depression.

Guided by the Stress Process Model (Pearlin et al., 1981), this dissertation delineates how financial strain interacted with other stressors and outcomes among female IPV survivors. Different from most studies that view financial strain as a risk factor of IPV (Benson et al., 2003; Copp et al., 2016; Schwab-Reese et al., 2016), this study considers financial strain as an outcome variable of IPV from the perspective of female victims because they did not initiate IPV as an outlet of stressors. This 3-paper dissertation identifies that financial strain is an economic consequence of IPV, particularly economic abuse. Female IPV survivors who experience financial strain, an indicator of financial insecurity, are more likely to develop depressive symptoms. As an external resource, financial education intervention is effective to reduce financial strain then lessened the impact on depression.

**Implications of the Study**

**Implications for Research**

In this 3-paper dissertation, the main variable of financial strain is measured by the 18-item Financial Strain Survey (FSS) that has been validated for IPV survivors (Hetling et al., 2014). The total scale and subscales demonstrate good internal reliability except the Poor Credit Card Use subscale ($\alpha = .54$). The low correlation of credit card use subscale may not be adequate to measure financial strain, as women in this sample do not have
credit cards. More research is needed to revise the credit card use subscale. In addition, the FSS was also translated into Spanish in the parent study. To examine whether constructs are consistent across English-speaking and Spanish-speaking groups, measurement invariance tests need be conducted. Lastly, to develop a shorter version of the 18-item FSS for practical use, parallel-forms reliability tests could be conducted.

To understand the Stress Process Model among IPV survivors, more mediators or moderators can be included in the future research. The dataset did not contain variables that should be included in the Stress Process Model. Future research can incorporate indicators known to be related to psychological outcomes-depression, including social support (Catabay et al., 2019; Gariépy et al., 2016; Ogbe et al., 2020) and coping behaviors (Overstreet et al., 2019; Tonsing et al., 2020). Researchers can further identify how financial strain interacts with social support and coping strategies, then decreases depression. Furthermore, more research is needed to examine the path from financial education intervention to financial strain including financial attitudes and financial behaviors. Survivors can apply learned financial knowledge to change their financial attitude and behaviors, boost their financial confidence, and then decrease their financial strain.

For future financial intervention studies, researchers can invite help-seeking survivors from agencies in the same regions, and expand to non help-seekers using social media platforms. Because IPV experiences are very sensitive, researchers may face challenges to recruit participants and retain them. Dichter et al. (Dichter et al.) suggest that in order to enhance the research participation of IPV survivors, the research team can proactively reach out to participants and encourage them with altruistic motivation.
Future research teams can collaborate with agencies to directly reach out to participants by letters or in-person contact. Also, more training is needed for interviewers to better facilitate research interviews and build research relationships.

To reduce the threat of fidelity issues regarding intervention implementation, researchers can engage agency staff members in participating in the research and planning ongoing mechanisms so that the research staff can stay onsite. Some qualitative techniques can be added to assess intervention fidelity, such as using observation, shadowing, videotaping or audiotaping to collect qualitative data from service provision, staff training, and staff meetings (Rubin & Babbie, 2016).

**Implications for Practice**

This study highlights the importance of associations between economic abuse, financial strain, depression, and financial education intervention. Practice needs to address the primary stressor - economic abuse by assessing for economic abuse and developing financial safety plans. Different from other forms of IPV, economic abuse may not pose fatal danger against victims and is less recognized immediately (Postmus et al., 2020). During the intake, advocates can assess the types of economic abuse by using validated scales such as SEA-12 (Postmus, Plummer, et al., 2016). Early intervention can help survivors identify warning signs of economic abusive behaviors, develop financial safety plans that build a foundation for economic safety, and plan for an independent future (Ellsberg et al., 2015). Advocates can assist survivors to plan safety measures at work; for example, informing work supervisors and human resource staff about the abuse, ensuring security guards have photos of abusers, and requiring safety escorts.

Additionally, practice needs to provide screening, assessment, and intervention
towards financial strain. The FSS scale is a reliable instrument that allows advocates and practitioners to screen, identify, and discuss multiple aspects of financial strain with IPV survivors (Hetling et al., 2014). To assess financial strain, this dissertation suggests that financial education intervention can equip survivors with financial literacy of personal budgeting, assets and liabilities, credit scores, estate planning, investment opportunities, public assistance, and community resources. Through financial education intervention, survivors can gain financial knowledge, reduce financial strain, and become economically empowered (Hetling et al., 2016; Johnson, 2018; Postmus et al., 2015). In addition, advocates can provide other financial support or resources to decrease financial strain in a short-term or long run such as tangible assistance, individual development accounts.

**Implications for Policy**

Legal systems should take proactive responses to address economic abuse against women and to decrease survivors’ financial strain at the macro level. Laws such as the Violence against Women Act has not considered economic abuse as a crime or a serious violation; therefore, law should be amended to include economic abuse as unacceptable behavior and hold perpetrators of economic abuse accountable (Postmus, Plummer, McMahon, & Zurlo, 2012). Policymakers need to prioritize criminal responses to economic abuse, such as issuing restraining orders or no-contact orders at the workplace, granting protection orders on property, asset, and child-support, and providing debt-related civil legal aid programs.

Promoting policies on economic security can serve as a means to alleviate financial strain among IPV survivors. The Violence Against Women Act needs to incorporate
stronger provisions for the economic security and economic empowerment of impoverished IPV survivors and to strengthen safety net program such as Temporary Assistance for Needy Families and Supplemental Nutrition Assistance Program (Hahn & Postmus, 2014). Policymakers must enact state-level employment protection policies to require employers responsible for creating a safe working environment (Swanberg et al., 2012). For example, survivors of economic abuse have the right to take work leave for IPV-related services without fear of job loss. Also, policymakers need to allocate more funding for programs such as employment assistance programs (EAPs) and banking services. EAPs provide support and resources to employed IPV survivors to secure their employment (Borchers, 2014; Pollack et al., 2010). Banking services are suggested to serve as the foundation for IPV survivors to build financial security; accordingly, policymakers can regulate financial institutions to remove barriers of financial access for unbanked and banked survivors (Boyce et al., 2014).

**Implications for Social Work Education**

The findings from this 3-paper dissertation emphasize the importance of financial strain among female IPV survivors, which needs more attention in social work education. To maximize traditional psychosocial approach to depression treatment, this study suggests that social work educators, students, and advocates should consider financial education that can indirectly alleviate depression because financial strain is a leading predictor of depression.

Another approach is to integrate financial social work in current social work curricula and in-services because financial recovery needs to be prioritized within IPV interventions (King et al., 2017). Higher education can develop financial social work
courses, certificates, or concentrations that address responses to financial issues. Financial social work can assist clients by ensuring income sufficiency, asset building and financial capability at both micro and macro levels to promote financial well-being for clients (Sherraden et al., 2016). This approach equips social work students and advocates with fundamental financial knowledge, financial resources, and implementation of financial therapy and policies.

To enhance financial wellbeing of vulnerable individuals and their families, financial social work practice should be customized according to different populations for their unique financial concerns and struggles (Callahan et al., 2020). For IPV survivors, it is imperative for students and advocates to learn identifying signs of financial abuse, and implementing financial empowerment interventions with a focus on safety concern (Hoge et al., 2020). Addressing clients’ emotional well-being and financial well-being together is most effective to change their lives.
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