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AN ECOLOGICAL BI-FOCAL MODEL FOR ELDER PHYSICAL ABUSE BY ADULT CHILD: A STRUCTURAL EQUATION MODELING OF RISK FACTORS PREDICTING ELDER ABUSE IN THE UNITED STATES

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AN ECOLOGICAL BI-FOCAL MODEL FOR ELDER PHYSICAL ABUSE BY ADULT CHILD: A STRUCTURAL EQUATION MODELING OF RISK FACTORS PREDICTING ELDER ABUSE IN THE UNITED STATES

By

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ABSTRACT

AN ECOLOGICAL BI-FOCAL MODEL FOR ELDER PHYSICALABUSE BY ADULT CHILD: A STRUCTURAL EQUATION MODELING OF RISK FACTORS PREDICTING ELDER ABUSE ON THE UNITED STATES

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The age structure of the U.S. population has been undergoing an unprecedented shift toward a growing proportion of people aged 65 and older during the last two decades. According to estimates projected by the U.S. Census Bureau the 65 and older age group is expected to almost double between now and 2030, growing from 4.4 million to 8.9 million. Simultaneously each year in the United States, 1 to 5 million adults older than 65 are physically or sexually injured, exploited, or mistreated by their caregivers (mainly adult child caregivers). Although elder abuse has reached epidemic proportions in our society, there is a paucity of research in the field of marriage and family therapy on theoretical frameworks, ecological risk factors associated with violence perpetrated on the elderly and suggestions for successful therapy interventions. This study examines the prevalence and risk factors involved in elder abuse, specifically physical abuse, in a Random Digit Dial (RDD) sample of non-institutionalized and English speaking older adult population in the United States. Using a subsample of 203 elderly participants from Midlife Development in the United States (MIDUS II, 2004-2006), a study sponsored by the MacArthur Foundation that examined age related differences in physical and mental health due to individual and social factors (Ryff et al., 2006), relationships amongst several individual, relational, and social context dimensions as they relate to elder abuse were examined. Latent variable modeling was used to examine the causal pathways and

associations between individual elderly demographic characteristics, physical/ emotional health, and behavioral and contextual characteristics. The analysis of data patterns, univariate calculations of data dimensions, and model syntaxes were written with the aid of Mplus, PAXW, and SYSTAT statistical software packages.

The usefulness of this dissertation model is two pronged. First, the proposed model will empirically examine the assumptions, tenets, and conclusions of the Ecological Bi-Focal Model for Elder Abuse framework then discuss possible MFT clinical implications to better understand the therapeutic needs of older adults and their families.

Implications for the field of marriage and family therapy and future research directions are discussed.

Key Words: Elder Physical Abuse, Ecological Risk Factors in Elder Physical Abuse, LISREL Data Modeling, Social Relations

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CHAPTER I: BACKGROUND AND OVERVIEW

Introduction

The gravity of the problem of elder abuse can be understood, in part, as a consequence of a drastically changing age structure of the U.S. population with growing proportions of people aged 65 and older. The number of Americans aged 65 and older grew from 3.1 million in 1900 to 35.3 million in 2001. This corresponded to a growth from 4% of the population in 1990 to 12.4% in 2001. With baby boomers aging, the number is expected to rise to 70.3 million by 2030, about 20% of the total projected U.S. population (United States Administration On Aging, 2002). This trend was confirmed by 2007 census findings as well, which noted the two fastest-growing five-year age groups in the United States since the last census as 50-54 year olds (55%), and 90-94 year olds (45%) (U.S. Census Bureau, 2007). Furthermore, the age group of 75 and over increased by more than 20%, constituting 20.6 million women and 14.4 million men age 65 and older. The number of Americans aged 65 and older grew from 3.1 million in 1900 to 35.3 million in 2001. This corresponded to a growth from 4% of the population in 1990 to 12.4% in 2001. With baby boomers aging, the number is expected to rise to 70.3 million by 2030, about 20% of the total projected U.S. population (United States Administration On Aging, 2002). A similar trend was observed in the number of elder abuse cases that have been steadily increasing over the last 20 years, according to estimates by the National Center on Elder Abuse. Each year in the United States, 1 to 5 million adults older than 65 are physically or sexually injured, exploited, or mistreated by their caregivers (National Center on Elder Abuse, 2004). Furthermore, government officials reported that cases of elder abuse increased nearly 20% from 2000 and that 42.8

% were 80 years or older. Of the vast majority of elder abuse reports, 89.3% occurred within community settings (family homes), and the most common relationship of victims to alleged perpetrators was parent/child and other family members (National Center on Elder Abuse, 2004). Pillemer and Finkelhor (1988) estimated that the rate of abuse for persons aged 65 and over who were living with only a spouse was 41 per 1,000 couples and that the perpetrators of this abuse were most likely to be spouses (58%) rather than adult children (24%). Furthermore, the authors reported that 32 out of every 1,000 elder adults reported that they had experienced some form of maltreatment at least once since reaching age 65.

As with most crimes, underreporting is the norm. Data on elder abuse in community settings suggest that only 1 in 14 incidents come to the attention of authorities, and even fewer cases are resolved by prosecution (Pillemer & Finkelhor, 1988). More current studies on elder abuse estimate that the frequency and prevalence of elder abuse range from 2% to 10%, based on various sampling and survey methods and case definitions (Lachs, Mark, & Pillemer, 2004). The high elder abuse incidence rate and the continuous increase in allegations of elder abuse and neglect have contributed to mounting scrutiny from politicians, non-profit community-based organizations, governmental oversight agencies, law enforcement officials, and the research/academia community.

The most disturbing fact relating to elder abuse is that victims of abuse, neglect, and exploitation are three times more likely to die at an earlier age than elders who were not victims of abuse (Lachs et al., 2004). While the identification, apprehension, and prosecution of perpetrators of elder abuse have generated considerable interest within our

society, these domains have lagged in relations to social needs. Although researchers have sought to grasp the full scope and causes of elder maltreatment, studies are limited both in quantity and scope, and the gaps in the literature are significant.

While there are a growing number of incidence and prevalence studies on elder abuse in the field of gerontology, with few exceptions researchers based their results and conclusions on small non-representative sample based data thus lacking sufficient statistical power to detect meaningful effects in the population therefore their findings were non generalizable (Acierno, 2003). Seconding Acierno's (2003) conclusions, the National Research Council (NRC) on Elder Mistreatment (2003) as well documented that researchers significantly lack knowledge on elder abuse prevalence in the population. Furthermore, the NRC representatives noted that most of these prevalence studies suffer from methodological weaknesses in addition to using small convenience samples therefore there is a consistent lack of congruence between findings on elder abuse prevalence and various risk factors influence on elder mistreatment. For example, Pillemer and Finkelhor conducted a random sample survey among people aged 65+ and reported a prevalence of 1.4% of verbal abuse and 0.4% of neglect occurring $\geq$10 times, and 0.5% of any physical abuse over a year (Pillemer & Finkelhor, 1988). A few years later, Paveza et al. (1992) concluded that the prevalence of elder physical abuse was at least 5% amongst people aged 40+ with Alzheimer's disease diagnosis. The incongruence in prevalence numbers continued with Lachs et al. (1997), who found that elder physical abuse incidence rates were closer to 1.6% in the population. Almost a decade later, in a cross cultural study Cooper et al. (2006) indicated a physical abuse rate of 4.6% in a probability sample of elderly patient (older than 65 years) receiving health and or

community services in 11 countries adult day health care programs. In addition to sampling and methodological weaknesses these studies differed in several other dimensions as well. For instance, a variety of instruments were employed to measure the construct of elder abuse with unknown or untested psychometric properties. Furthermore, most of these studies did not go beyond a univariate statistical analysis of the data thus they mainly reported frequencies and percentages found in the sample.

Therefore this study will address the gaps identified by the NRC Panel to Review Risk and Prevalence of Elder Physical Abuse (2003) for studying elder abuse, including physical abuse, by: (a) using a representative national random sample, (b) using a standard definition of a specific type of elder abuse (e.g. physical abuse), (c) clearly identified abuse measures based on these definitions, and (d) employing effective statistical models based upon sound mathematical principles that can yield generalizable results. In addition, an ecological approach to elder abuse will be used principally because the NRC (2003) review of elder abuse research suggests that models which reflect the multiple causes of elder abuse ought to be utilized. One major theoretical model identified by the NRC (2003) is the Ecological Bi-Focal Model (Schiamberg & Gans, 2000), which indicated that elder abuse is not caused by any single agent or factor; instead, it is the result of the interplay of multiple factors both within the immediate older adult/ adult child caregiver context and beyond that context (Lauman et al., 2002).

The paucity of research is even more striking in the field of marriage and family therapy. There is a scarcity of theoretical frameworks and research literature on elder abuse and geriatric mental/ emotional health and lifestyle correlates in the field of marriage and family therapy (Ivey et al., 2004; Parra-Cardona et. al, 2007). To a

considerable degree the geriatric population has largely been neglected, specifically on elder marriage and family therapy models and non-spousal domestic violence. Several reasons have been provided for the paucity of research in the field of marriage and family therapy including societal ageism (e.g. systematic stereotyping and discrimination) and elders being uncomfortable when interacting with health care professionals including family and marriage therapists (Ivey et al, 2004). Consequently specific ageist belief systems such as that the elderly are rigid thus unlikely to change their family interactions patterns, are mentally deteriorated, incompetent, or lack interest in most social interaction limit the effectiveness of family and marriage therapist when interacting with elderly persons or couples (Ivey et. al, 2004). The absence of family and marriage therapists with specialized training in gerontology further elevates the level of misunderstandings when responding to the needs of elderly couples and individuals. This author contends that ageism and related biases exist in our society and this might inadvertently guide contemporary couple and family therapy practice. Thus there is a need for a useful theoretical framework and empirically validated clinical intervention models to guide professionals in the field of marriage and family therapy.

Statement of the Problem

Aggression and physical violence directed toward the elderly have substantial consequences for the health and well-being of the individual, and older adults exposed to violence exhibit significant emotional and psychological distress (Comijs et al., 1999) and face increased mortality rates compared to non-abused elderly (Lachs et al., 1998). Although elder abuse is a major societal problem in the United States, few studies cover in detail the various risk dimensions, their interplay, individuals involved, and cumulative impact on the abused adult's well-being. For instance, most elder abuse studies focus either on the victim's characteristics (e.g., cognitive factors such as Alzheimer's, Parkinsons, and dementia) as they correlate with abuse or on the abuser's characteristics (e.g., adult children of aging parents), as they increase the risk of violence directed against older people (Cooney & Howard, 1995). The term elder has generally been used to refer to people who are aged 65 or older. The Department of Health and Human Services Administration on Aging seems to define older Americans as those 65 years and over in some documents (Snapshot, 2003). Additionally, empirical research studies examining the risk factors of elder abuse from a bi-directional perspective (focusing simultaneously on the adult caregiver and the aging elderly as a dyad) are virtually non-existent. For the purposes of this study the term bi-focal model will be defined as a simultaneous focus on both the adult child caregiver and the aging parent as a familial dyad within a broader ecological context when examining risk factors of elder abuse. The one and only theoretical model that adopted such an encompassing ecological perspective was developed by Schiamberg and Gans that examined risk factor dimensions at various systemic levels present during the process of elder abuse in the

community and perpetrated by adult children (Schiamberg & Gans, 2000). Although this Ecological Bi-Focal model of elder abuse has shown a great deal of promise as the vanguard theoretical model of elder abuse, an empirically driven analysis of the model has not been completed up to this date. Since the multidimensional approach to studying violence against the elderly, as espoused by Schiamberg and Gans (2000) in the Bi-Focal theoretical model, best explains risk factors involved in elder abuse; this author believes that we urgently need to undertake the challenge of empirically analyzing the tenants and conclusions of this theoretical model. Moreover, if the assumptions and conclusions reached by the authors of the Applied Ecological Bi-Focal model are validated via empirical/ statistical findings then their multi-level approach to preventing elder abuse should immediately be employed at various societal levels to minimize violence perpetrated on our most vulnerable population. In sum, given the enormous societal costs (medical, legal, health, and etc.) that elder abuse exacts from all of us, there is an immediate need for empirically validated and effective intervention strategies based on sound research that could minimize if not altogether eliminate the health epidemic of elder abuse.

Despite incongruent research findings and methodological difficulties mentioned above, researchers reached consensus on a number of elder abuse types, definitions, and related terms during the past decades (Wilber & McNeilly, 2001). The usual types of abuse included within most definitions are as follows:

1. Physical Abuse: Physical abuse is defined as the use of physical force that may result in bodily injury, physical pain, or impairment (Wilber & McNeilly, 2001).

Examples of physical abuse are: a deliberate or inadvertent hitting, beating, pushing, kicking, pinching, burning, and biting.

2. Sexual Abuse: Any non-consensual sexual contact with an elderly person such as inappropriate touching, groping, forcing the individual to look at pornography, promoting and facilitating unwanted sexual contact with a third party, or any other unwelcomed sexual behavior is considered sexual abuse. Moreover, this kind of abuse may also include acts such as sexual exhibition or coerced nudity.
3. Emotional or Psychological Abuse: Behavior directed towards an older adult that causes them to experience fear, mental anguish, or emotional pain or distress is considered abusive (Wilber & McNeilly, 2001). Examples of this kind of abuse includes name-calling, intimidation, insults, and threats; treating the older adult like a child; and isolating the older adult from family, friends, and social contact by force, threats, or manipulation.
4. Financial or material exploitation: Financial exploitation involves the illegal use or improper use of an elder's funds, property, or assets (Wilber & McNeilly, 2001). Examples of financial exploitations are actions such as denying older adults access to their own funds or home, taking their money under false pretenses, forced property transfers, or even purchasing expensive items without permission.
5. Neglect: Neglect can be defined as a refusal or failure to fulfill any part of care giving obligations or duties to an older person under care (Wilber & McNeilly, 2001). Neglect can range from intentionally failing to meet the older adults' physical, emotional, or social needs to withholding appropriate attention from the

older adult. It can include behaviors such as not food, water, clothing, medication, or assistance with activities of daily living or personal hygiene (Wolf and Pillemer 1989).

Theoretical Foundations

Over the last two decades numerous research studies were conducted on intimate partner violence, psychological/ emotional impact of violence on women and children, and profiling "the batterer" via the examination of multiple personalities and typologies of batterers in the field of marriage and family therapy. Based upon sound research findings, valid and reliable results, marriage and family therapy researchers identified several major risk factors as well as protective factors present during the process of physical abuse of intimate partners and elderly women. In addition, several theoretical models explaining intimate partner violence were developed and consequently successful couple and family therapy interventions were launched. However, despite of these promising successes in the field of intimate partner's violence, MFT researchers failed to expand their study direction and include violence between other family members as well. Consequently neither MFT theoretical frameworks nor intervention models were developed to aid elderly patients abused by their own adult children. This conclusion was reached after an intensive search of the PsychINFO, ProQuest, JSTOR, and Wiley InterScience Journals which resulted in fewer than five published MFT related research studies. Out of these five studies, only Parra-Cardona et. al (2007) focused on building an MFT elder abuse theoretical framework by describing precursors and dynamics associated with elder abuse and neglect in Latino families. The authors used a qualitative

case study (one family) method to examine the tenets, assumptions, and conclusions of the Ecological Bi-Focal Model for Elder Abuse framework as developed by Schiamberg and Gans (2000). Given the inherent limitations (results cannot be replicated or generalized) of a (case study) qualitative research approach, findings and their applications are limited in scope.

Since this research study is only a first step towards an uncharted territory (elder abuse in MFT) the approach taken here will have to combine innovations from the fields of psychology, human development, gerontology, sociology, and family and marriage therapy. The overarching theoretical foundations of this study include both the consideration of context of interaction and specific outcome measures and dimensions that are derived from multiple social science theories. The principal focal theory utilized in this study is the Ecological Bi-Focal Model for Elder Abuse (Schiamberg & Gans, 2000) and the human ecological perspective in general (Bronfenbrenner, 1979, 1986, 1997). Whereas the assumptions, tenets, and conclusions of the Bi-Focal model are captured in this study with several abstract latent constructs at various systemic levels (micro, exo , and mesosystems), several specific indicator variables that directly measure the model's latent variables have their roots in other theoretical frameworks such as: (a) the Choice theory, (b) Subjective Expected Utility theory (c) Symbolic Interactionism, (d) Social Learning theory, (e) Interpersonal theory, (f) the Effortful Control theory, and (g) the Life Course Perspective. Since most theoretical models explaining human behavior incorporate partly or to large extent previous theoretical frameworks, the development of a substantive theory for elder abuse requires an understanding of other models as they relate to the behavior of elder abuse. In the following pages, various

theoretical models and their contributions to understanding both the context and the phenomenon of elder abuse will be illustrated.

Choice Theory

Psychiatrist William Glasser's (1998) suggested that human behavior is composed of four simultaneous components: emotions, ideas, actions, and physiological states. Furthermore, he espoused that humans choose the idea (e.g. he/she mistreated me) and action (e.g. physically attacking an older adult) and that the associated emotions and physiological states occur simultaneously and automatically; thus emotions do not arise or occur independently and without specific contexts. Glasser believed that previous definitions of human behaviors were too narrow and exclusive so he coined the term "total behavior" to distinguish his construct, a continuous loop of ideas, emotions, and actions, from the general concept of human behavior. To accommodate his enhanced construct of human behavior, Glasser used verbs to describe human emotional states. For instance, he used the term "to depress" when describing the total behavior commonly known as depression, which, to him, included depressing ideas, actions, emotions, and physiological states (Glasser, 1998). Consequently, the construct of elder abuse includes not only the physical attack (the last step in a process) on the elderly person but also the abuser's mental picture and emotions aroused by those ideas in regards to the older adult. Moreover, Glasser reasoned that internal choices (whether conscious or unconscious), as opposed to external stimuli, cause the negative emotions in humans that will lead to the final step of physical aggression against the older adult. To explain this, he suggested that the individual's cognitive appraisal of the environment (e.g. he/ she demeans me again)

filtered through the lens of past experiences was the motor behind her/ his emotional processes which in turn would have a strong impact upon the caregiver's subsequent behavior (e.g. to physically assault the elderly or not). Glasser vehemently rejected the idea that the external stimuli coupled with emotional knee jerk reaction were responsible for the individual's response behavior (Glasser, 1998). Consequently adult child caregivers have a choice in whether or not physically assault their elder parent and are not mere drones that automatically react to certain stimuli. As such the adult child caregiver first uses an inner soliloquy, part of which is reading the parent's attitude, which will lead to a decision based on past experiences and coupled with a certain negative emotional state as a precursor to physical violence. In sum, a physical assault on an older adult is a conscious and premeditated behavior option selected by an adult child caregiver whether or not his/ her course of action makes sense to us.

Although Glasser's Choice theory provides a well reasoned and detailed explanation of a complex behavior such as elder abuse within the immediate individual and family context, it does not acknowledge the impact of contexts beyond the dyads control such as social isolation or societal attitudes towards elder abuse. In addition, this framework minimizes the importance of external stimuli such as the victim's behavioral problems (e.g. verbal or even physical assault on the adult child prior to the start of confrontation) on the adult child's choice to physically attack her/ his elderly parent. Several empirical studies on elder abuse suggest a clear correlation between such an external stimuli and the subsequent physical assault on an elderly person, (Shinoda-Tagawa, et al. 2004; Schiamberg et al. 2009). In spite of these shortcomings Glasser has

substantially contributed to the understanding of human behavior such as elder physical abuse and its internal correlates.

Subjective Expected Utility (SEU) Theory

Although Glasser's theory provides insight into the importance of cognitive and psychological processes in explaining elder abuse, it has significant shortcomings. The SEU theory filled these gaps. This theoretical framework is widely believed to be applicable to all human decision making, whether or not is related to events or experiences and regardless of time scale, the level of specificity under considerations, and forms of cognitive processing involved (Mongin, 1997). The success of SEU model in describing human cognition has to do with the model's axiomatic foundations, mathematical structure, and its balance between accuracy and parsimony. The SEU theory assumes a mathematical and statistical (Bayesian roots) thus logical view of human cognitive processes, including choice making.

The SEU framework was intended both to explain and to predict human behaviors by means of a small number of concepts, e.g. intentions, attitudes, and beliefs. Accordingly the caregiver (adult child) is assumed to have a consistent preference in ordering of all possible states of world and a prior distribution of exogenous events, (e.g. past child abuse experience, current negative relationship, financial stress, etc.), (Simon, 1980). Thus the individual's exogenous probability distribution coupled with action strategy selected determines the probability of the expected outcome occurring (in our case elder abuse). It follows that the decision maker (adult child) chooses between risky

or uncertain prospects by comparing their expected utility values (personal benefits) and the probability of negative or positive outcome.

To support this point further, an example is useful. Suppose an adult child initiates a random venture with two possible outcomes, state "y" (verbal criticism) and state "z" (physical aggression), where the first outcome is less regrettable than the second. The outside observer has no idea of what the two states are composed of in the cognitive world of the adult child. However, if the child selects verbal criticism of the elderly parent rather than physically attacking her/ him, we can deduce that the caregiver assigns a greater probability to state y relative to state z. The fact that verbal criticism is more desirable than physically attacking her/ his parent implies that this particular behavior would be more consistent with her/ his beliefs. In addition to individual beliefs, societal values, norms, and laws (prior distributional properties) will also impact the adult child's intentions and subsequent act or lack of it. Therefore, in essence individual beliefs, attitudes, and intention precede the act of physical assault and their distributional properties will either increase or decrease the probability of elder abuse happening.

Symbolic Interactionism

Whereas Glasser's Choice Theory attributes behavior such as elder abuse to the individual's internal processes, the advocates of symbolic interactionsim suggest that human behavior is best understood in relation to their environment and are dependent on symbolic interactions for their existence (Dewey, 1922). Proponents of this theoretical framework emphasize the importance of daily human interactions, relationships, and associated experiences as they shape human behavior rather than the structures associated

with individual psychological processes (micro system) or large scale thus rigid and relatively fixed social forces and laws (meso, macro, and chrono systems). The principal pillar of symbolic interactionism is that human life exists in a symbolic dimension. Symbols provide the context by which reality is constructed and are based on shared meanings that are created and maintained via social interaction. Thus an individual's reality is a social product and originates from a multitude of symbolic interactions. Consequently the individual's behavior (e.g. aggression) is a product of society, or more specifically, social interaction rather than known or unknown internal individual processes as advocated by Glasser. Symbolic Interactionism is based on three primary premises: (a) human beings act towards things on the basis of the meanings those things have for them, (b) these meanings arise out of the interaction of the individual with others, and (c) that an interpretive process is used by the individual in each instance in which she/ he must deal with things or people in he/ his environment (Blumer, 1962). In addition Blumer (1962) suggested that although people's selves are social products, these selves are also purposive and creative and not a mere reflection of the society and environment. As such the individual's self emerges from the social interaction between people in which the person takes on the role of the "other" (objectification) and internalizes the attitudes perceived in both real and imagined others (Blumer, 1962). Hence the interaction between the individual's self-concept (the "I") and the generalized other, the perceived view that the others have of the individual (the "me"), are vital to understanding people behavior (Morrione, 2004). Accordingly, the actions of the others are instrumental in the formation of the individual's beliefs in regard to any specific

object. Based on the symbolic interactionisms perspective the process of elder abuse could be visualized as:

1. The perpetrator; "you stress me out too much", "you never stop complaining and demanding" or simply, "you physically attacked me" therefore "you are evil" so I am justified in "setting you straight".
2. The victim; before taking provocative actions, the older person might reason as "you don't tell me what to do," "you can't deny me taking as much prescription meds as I want", or "you are mean and abusive" therefore I can initiate negative actions against you such as verbal abuse or even physical assault.
3. Although the abuser and victim rationalization processes originate from different sources and were differently constructed, they converge in the initiation and consummation of the behavior of elder physical abuse.

For the proponents of symbolic interactionism perspective the social world is a dynamic and dialectical web of situations and unstable outcomes and individual narratives are always in the process of shifting and transforming thus never fixed and rigid. From this point of view there is no such thing as a solitary individual thus her/ his internal processes are based on societal templates thus always understandable within the "right" context (society). Therefore if the template fits than the adult child caregiver will assault her/ his elder parent. The unfortunate shortcoming of this theoretical perspective is that it removes or rationalizes the individuals' choice during the process of elder abuse and instead blames the society for the outcome.

Social Learning Theory

Social Learning Theory links Glasser's Choice Theory and the Symbolic Interactionsim framework by providing a learning- contextual framework for understanding the phenomenon of elder abuse. This framework is based on the assumption that most learning occurs in a social context thus people learn from one another via observation, imitation, and modeling (Ormrod, 1999). For instance, if an adult child was subjected to child abuse during an early developmental stage she/ he could have learned that violence is an acceptable avenue to settle disputes. Major tenets of this theoretical framework as suggested by Bandura (1973) include:

1. People learn by watching displayed behaviors (most notably the significant others') and observe and weight both the rewards and punishments gained as a direct result of that specific behavior.
2. Behavior does not necessarily have to change as a result of observing other's behavior, thus learning can happen without changes in behavior. Therefore learning may or may not cause a change in one's behavior.
3. Expectations of future punishments or reinforcements have a significant impact on people's displayed behavior. Thus the individual's cognition affects her/ his subsequent displayed behavior (Bandura, 1973).

Thus a fundamental precept of this theoretical framework is that behavior (aggressive) is acquired through learning, including observational learning, symbolic modeling and direct experience (Athens, 1980, 1992). Athens' theoretical model of violent socialization, which includes but is not limited to child abuse or children's observational learning in families, describes how early developmental processes

influence individuals to resort to violence as a preferred method of handling disputes, or "getting one's way." For example, being exposed to chronic and violent episodes of child abuse early on, people learn to circumvent most non-violent social methods of dispute resolution and resort to violent conflict resolutions. Athens attributes violence to conscious, volitional, goal-directed activity (Athens, 1980; 1992). Athens's concluded that there is empirical evidence to suggest that decisions to choose violence for settling disputes almost always involve social conditioning to favor violent resolutions. He called this process "violentization" and defined it as a process whereby individuals are injured and trained to commit violence (Athens 1980; 1992).

Athens also suggested that victims often initiate the violent encounter (knowingly or not) in which they subsequently get injured (Athens, 1992). For example, based on analysis of clinical samples of Alzheimer's patients Paveza et al. (1992) found that symptoms of Alzheimer's illness such as provocative physical and verbal behaviors often lead to elder physical abuse. Such aggression elicitors during an elder abuse encounter may include: (a) aversive treatment (e.g., physical, emotional, or financial withdrawal), (b) anticipation of negative consequences in one person or, more often, in both the aggressor and victim (e.g., fear would activate the fight or flight response in the amygdale), and (c) factors unique to the subjective perspective of either the aggressor or the victim (e.g., unfounded anger or negative thoughts attributed to the other) (Williamson et al., 2005). In sum, aggression acts such as elder abuse is seen as a learned behavior, and certain stimuli (in both the victim and perpetrator as well) may elicit or inhibit the act of aggression.

Interpersonal Theory

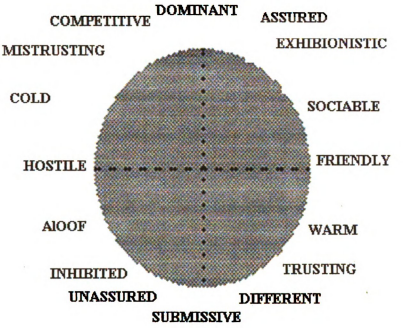
Whereas Athens (1980; 1992) mainly focused on the internal cognitive processes in an individual prior to a violent encounter, proponents of the Interpersonal framework argue that emotional processes and personalities are as important as cognitions in understanding elder abuse. The main assumption of the Interpersonal framework is that everything individuals do in interaction with one another reflects an effort to achieve and maintain self-esteem and to avoid anxiety (Leary, 1957). Hence, aggression and violence could be conceptualized as a sum of interactions of interdependent individual dimensions (cognitive, emotional, and personality) in a relationship and each action and/or reaction is precipitated by a continuous chain of interactions (Day, 1995). Leary (1957) introduced the notion of circular ordering of interpersonal variables known as the interpersonal circumplex (see Figure 1.1, a replica of Kiesler's 1983 circumplex taken from Gurtman, 1997). Interpersonal theory rests upon the following three pillars: (a) the principle of complementarity, (b) the principle of vector length, and (c) the principle of circumplex structure. The principle of complementarity suggests that in dyadic interactions individuals negotiate their relationship through verbal and nonverbal cues. This negotiation occurs along the affiliation axis (friendliness invites friendliness, and hostility invites hostility), and reciprocity tends to occur on the power, vertical axis, (dominance invites submission, and submission invites dominance) (Orford, 1986). This principle specifies ways in which a person's displayed behavior (friendliness) evokes certain behavior (friendliness) from an interactional partner, leading to a self-sustaining and reinforcing system (Orford, 1986; Kiesler, 1983). However individual differences (the overriding factor on the dominance- vertical- axis) often mediate complementarity thus

preexisting individual tendencies toward either submission or dominance will determine aggressive behavior (Bluhm et al., 1990). For instance, if friendliness was unsuccessful, anxiety might result which in turn causes the individual adult child caregiver to revert to strategies that are less vulnerable to disruption, (e.g. hostility).

The principle of vector length suggests that personality types displayed on the interpersonal circle and corresponding to vector lengths measure indices of psychopathology that affects interpersonal relationships (Wiggins et al., 1989). For example, older adults with adaptive and flexible personalities have fewer interpersonal problems than individuals with inflexible rigid personalities. The concept behind the circumplex structure is based upon the suggestion that variables measuring interpersonal relations are arranged around the (Figure 1.1) circle in two-dimensional space (Leary, 1957). Interpersonal relations variables close to each other on the circumplex are more related than the variables that are further apart on the circle, with opposite variables being negatively related and variables at right angles being unrelated to each other. For example friendliness is closer associated with a warm and trusting personality than with a mistrusting and cold personality. The interpersonal relations variables will determine how the individual negotiates her/ his relations and whether or not aggressive acts such as elder abuse will occur.

Therefore, the process of elder abuse could be conceptualized as a product of a dysfunctional interaction (behaviors driven by anxiety) between the elder and his or her adult child caregiver (with opposite personality types) hence the bi-focal contribution to elder abuse.

Figure 1.1 The Circumplex Structure



Effortful Control Theory

Evolutionary psychologists suggest that most emotional/psychological adaptations evolved as adaptive responses to recurrent environmental regularities over evolutionary time. Furthermore, these evolutionary regularities influenced and primed various affective states as a cue to action (Wilson, 1975). For instance, recurrent cues to danger (e.g., caretaker raising his or her voice or assuming a threatening pose toward the elderly, and social stimuli, such as strangers or mind-altering substances) will automatically trigger the affective state of fear, in the older adult (Gray, 1987). These affective states are the various emotional reflexes (fear, anger, etc.) that directly connect to the amygdala via the thalamic pathways and are implicit in emotion regulation (LeDoux, 2000).

Converging evidence in neuroscience and cognitive psychology indicate the existence of two types of cognitive processing: implicit and explicit processing. Implicit

processing is automatic, relatively fast, and effortless and involves parallel processing of large amounts of information (Stanovich, 2004). Implicit processing responds automatically to environment relevant information thus it fits the description of the autonomous set of systems (Stanovich, 2004). Implicit processing is involved in the perceptual interpretations of the other's behavior and it has a priming effect on skills and behaviors. Thus for example, if the elderly person via implicit processing perceives danger may automatically assume the role of the aggressor and threaten the caretaker. In turn, the caretaker might respond by physically attacking and injuring the older person. Therefore when the knee-jerk reaction of implicit processing is involved in elder abuse it is much harder to prevent or deal with on a timely fashion.

Explicit processing on the other hand is a conscious and slower process thus controllable by the individual. Such processing is characteristic of logical thought, planning, and cognitive control processes (Stanovich, 2004). To use the scenario provided above, instead of physically attacking the older adult, the caretaker may step back think about the implications of his/ her actions after which decide on a de-escalating approach instead of attacking. Consequently, whether or not aggression toward the elder occurs may also be influenced by the explicit evaluation of the societal context, such as the possible costs and benefits of the aggressive act (e.g., probability of being caught, penalties for the act, etc.). These explicitly calculated costs and benefits ratio will definitely influence whether aggression will be perpetrated against the elderly by the caretaker or vice versa.

Ecological Bi-Focal Model of Elder Abuse

Previous theoretical frameworks conceptualized and operationalized elder abuse by either focusing on the individual or the relational dimensions thus ignoring systemic influences on this process. The Ecological Bi-Focal Model for Elder Abuse links the individual, relational, and systemic processes as they affect elder abuse. This model incorporates the tenets and assumptions of two broader theoretical frameworks in their explanations of elder abuse: the Bronfenbreener's Eco-developmental model and the Live Course Perspective (Bronfenbrenner, 1979, ; Bengston & Allen, 1993).

Bronfenbrenner and Evans (2000) espoused that individuals interact with different contexts to form and guide their personal development and that these contexts are nested within four levels of environment, or systems, in which the individual exists. These environmental systems affecting the development of individuals are: (a) the microsystem, which is the immediate context within which the human development takes place (e.g. the individuals' family), (b) the mesosystem, which is the relationship between family and other principal settings in which the development occurs (e.g. formal or informal support systems within the community), (c) the exosystem that includes external environments to the developing person, in which other family members participate (e.g. the adult child's workplace), (d) the macrosystem that refers to major external influences such as broad ideological values and norms, and (e) the chronosystem which refers to the influence of temporal changes and continuities on the developing individual.

Hareven (1995) expanded on these assumptions by complementing them with three major dimensions that are hinged upon timing. These three dimensions as they apply to elder abuse are as follows: (a) individual timing of life transitions, (b) the

synchronization of individual life transitions with collective family transitions, and (c) the impact of earlier life experiences on subsequent ones. These additional dimensions help in explaining the relationship between the family's demographic, social-cultural factors, and intergenerational relations in the later years of life as they affect the developing individual and her/ his behaviors (Hareven, 1995).

Instead of following the traditional models of elder abuse, that incorporate only one-dimensional approach (the abuser or the victim characteristics as they relate to abuse) as some of the previous theories reviewed, Schiamberg and Gans's (2000) proposed an ecological framework for the study of elder abuse. They suggested that multiple systems (microsystem through chronosystem) are involved with the etiology and processes of elder abuse, thus the traditional models had to be expanded in order to better understand the phenomenon of elder abuse (Schiamberg & Gans, 2000). For instance, in addition to victim/ abuser individual characteristics the authors proposed to investigate family relational processes, multi-generational changes over time, and cultural beliefs, values, and norms they relate to and impact elder abuse. Furthermore, the reciprocal and bi-directional relationship between the aging parents and their adult children are influenced by the interpolations of multiple contexts such as biology, interpersonal relationships, culture, and political-economical dimensions, which, in turn, will impact the likelihood of elder abuse and increase risk factors (Schiamberg & Gans, 2000). The four nested environmental system that will impact elder abuse are:

1. Microsystem: comprised of elements in the individual's immediate environment and the bi-focal interactions between the characteristics of elderly victims and their abuser such as age, gender, marital status, health (both physical and

psychological), and dependency factors such as living arrangements, history of abuse, etc.). The microsystem is the most basic and immediate context in which human development occurs

2. Adult child- Mesosystem / aging parent-Exosystem: systems that indirectly impact the older adult such as the employment status, financial resources, and in general the outside stressors that might affect the caregiver adult child. In addition, this level might also include the social isolation of either or both individuals in the dyad and the existence of formal support systems for either or both individuals or lack of thereof. For example, while the older parent is not directly involved in her/ his child's workplace activities, nonetheless the child's workplace policies such as family leave might directly impact the elderly.
3. Macrosystem: influences such as cultural values and norms, economics, and national politics that have an overarching impact on the dynamics of elder abuse and individuals involved in this process. Examples of macro influences are: sexism, ageism, attitudes towards violence, and etc.
4. Chronosystem: synchronizations of multiple time clocks to encompass the evolving and interconnected dimensions of the individual and her/ his environment over time. For example, important events such as the addition to the household of an elderly parent in declining health and the loss of employment of the adult child will create challenges that will modify existing relationships. Caring for an elderly parent in ill health is more challenging for an adult child without income and stability than for an adult caregiver who has no such

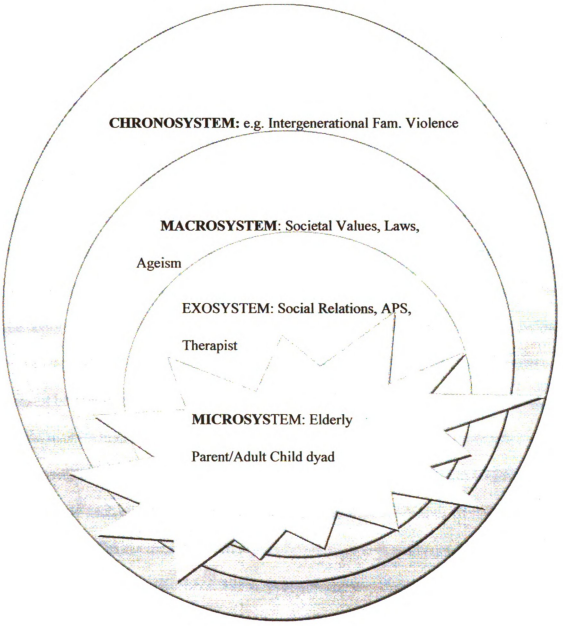
problems. Figure 1.2 provides an overview of elder physical abuse from an Ecological Bi-Focal perspective (Schiamberg & Gans, 2000).

Finally, the "norm of reciprocity", as a vital construct in elder abuse theories, needs some focus. Schiamberg and Gans (2000) used this construct from the social exchange theory (Sabatelly & Shehan, 1993) and integrated into their model to explain why people remain in relationships even if it is abusive. According Schiamberg and Gans (2000) people will remain in relationships (exchanges) as long as the benefits are greater than the costs and the level of relationship satisfaction is greater than the alternative (no relationships).

Theoretical Conceptual Map

The theoretical conceptual map presented below (Figure 1.2) outlines anticipated influences of the ecological factors on the bi-directional dimensions of elder physical abuse. Ecological systems theory places the developing person within a complex system of relationships affected by multiple dimensions of the surrounding environment, (Bronfenbrenner, 1979, 1997). In this study, the environment of elder physical abuse is envisioned as a series of nested structures, each of which has a powerful impact on the developing person and the act of elder abuse.

Figure 1.2 Theoretical-Conceptual Map of the Dissertation study



Conclusions

The Applied Ecological Bi-Focal Model for elder abuse (Schiamberg & Gans, 2000), has been presented as the most inclusive elder abuse framework that best explains the interplay between the four environmental contexts and elder abuse. Whereas certain frameworks such as the Choice, Subjective Utility, Interpersonal, and Effortful Control theories place the emphasis on the individual's internal processes (e.g. emotional, behavioral, and physical well-being) that might directly or indirectly provoke abuse, others attempt to explain elder abuse exclusively through the prism of relational interactions (Symbolic Interactionsim, and Social Learning Theory). This rigid either or approach to understanding elder abuse obscures the connections uniting all human behaviors and reduces complex human actions into simplistic categories. Nevertheless the contribution these theoretical perspectives provide to understanding elder abuse cannot be minimized. For instance, the Choice, Interpersonal, and Effortful Control theories provide detailed explanations and information on basic human internal processes, such as emotions and cognitions, which drive both the victim and the abuser's reactions to each other's real or perceived intentions and subsequent behaviors. Although numerous studies document the vital role of emotional and psychological problems in the process of elder abuse (Kosberg, 1988; Wolf & Pillemer, 1989; Mortimer, 1995), they lack specificity as to what exactly and how they influence the likelihood of elder abuse. These three theories fill this gap in literature.

The Symbolic Interactionism and Social Learning frameworks provide a detailed explanation on how social interactions and relationships, both internal and external, will influence the adult child caregiver's decision to violently attack or not the elderly parent.

Athens explained this phenomenon by suggesting that perpetrators of violence first use an inner soliloquy to define the situation at hand partly based on previous experiences and partly on reading the victim's attitude and behaviors (Athens, 1997). Then based upon this internal soliloquy between the "I" and "Me" (the generalized other) the individual will decide if the situation and the victim's attitude require violence or not. These models complement Schiamberg and Gans (2000)'s explanation on the role of interaction between aging parent and adult child (microsystem level) plays in the process of elder abuse.

Although Bronfenbrenners's Human Ecological Perspective and the Life Course framework (Hareven , 1995, 1996) provide a more general understanding of elder abuse, these explanatory models lack specificity and detail required to empirically test a complex substantive theory of elder abuse. Consequently, elder abuse cannot be adequately conceptualized, understood, operationalized, and mathematically/ statistically analyzed with the aid of these models. Nevertheless these perspectives provide a general framework that was incorporated into the Ecological Bi-Focal Model for Elder Abuse thus they had to be discussed.

Schiamberg and Gans's (2000) Ecological Bi-Focal Model for Elder Abuse suggested that in addition to both unique individual and relational risk factors general contextual influences also impact the phenomenon of elder abuse. Their model provides us (and this study) with an all inclusive prism that takes into account the complexity of individual/ relational processes in addition to understanding how ecological contexts impact the outcome of elder abuse.

While this study mainly focuses on the bi-focal risk factors (nested mainly at the micro, exo and meso systems level) that impact elder abuse, it is important to note that macro and chronosystem dimensions will also have an important influence on violence against the older adult. Given the limited scope of this study and limitations in the MIDUS II data file macro and chronosystems level influences could not be adequately explored thus these aspects will be the main focus of the next study.

Purpose of the Study

The purpose of this study was three pronged: (1) to encourage the establishment of an elder abuse quantitative research direction in the field of marriage and family therapy, (2) empirically examine the assumptions, tenets, and conclusions of the Ecological Bi-Focal Model for Elder Abuse theoretical framework, (3) raise marriage and family therapists' awareness to the needs and challenges the elderly population faces in our society.

The Bi-Focal Model of Elder Abuse will be used as the principal guide in this dissertation study. This author will examine whether empirical results support conclusions reached by Dr. Schiamberg and Gans (2000) in the Ecological Bi-Focal Model for Elder Abuse theoretical framework. The data base used for this study was gathered by the MacArthur Foundation Midlife Research Network on Successful Midlife Development (MIDMAC), under the auspices of the John D. and Catherine T. MacArthur Foundation. Specifically, the National Survey of Midlife Development in the United States (MIDUS) II data set will be used for this study purposes.

Bi-focal risk factors such as mental health issues (Schiamberg et al., 2009; Clark & Winters, 2002); emotional/affective regulation difficulties influencing aggression (Buss, 2005); behavioral problems (Schiamberg et al., 2009); and social isolation (Wolf, 1989, cited in Bennett & Kingston, 1993); caregiver abuse and/or dependence on alcohol and drugs (Cohen, Teresi, & Holmes, 1988; Cohen, Onserud, & Monaco, 1993; Hurlburt, Hough, & Wood, 1996); and the individual's demographics and characteristics (Schiamberg et al., 2009) will be used to establish casual pathways in this study. Since the MIDUS II sample used in this study was drawn from a nationally representative random-digit-dial (RDD) survey of non-institutionalized, English-speaking adults aged 65 and over in the United States (thus representative) and there is an existing theoretical foundation (Schiamberg & Gans, 2000), this research is confirmatory in nature.

The present study proposes to empirically examine the causal bi-focal paths in the familial dyad (elderly parent and adult child) as they related to risk factors in elder abuse incidences. Another major goal for this study was to take a first step towards identifying ecological risk factors at higher systemic levels and their individual and additive contributions to the likelihood of elder physical abuse. Finally, given the ecological approach of the Applied Bi-Focal Model, results of and conclusions reached in this study can be used as a springboard for additional elder abuse and neglect research in the field of marriage and family therapy in developing family interventions geared toward reducing abuse in our society.

Significance of the Study

The significance of this study primarily involves the following outcomes: (1) establishing the Ecological Bi-Focal Model for Elder Abuse as a useful basis for a more complete and effective understanding of elder abuse in the family and community (2) suggesting a quantitative research direction in the field of marriage and family therapy upon which therapy outreach strategies could be based, and (3) developing a better understanding of the multidirectional interactions of the individual/ caretaker dyad and context beyond that dyad in understanding the risk factors of elder abuse in the field of marriage and family therapy.

As the first study that will empirically examine the assumptions, tenets, and conclusions of the Ecological Bi-Focal Model for Elder Abuse (Schiamberg & Gans, 2000) will significantly contribute to the research literature on elder abuse. The current study will specifically focus on the ecology of intergenerational relationships between individual family members (e.g. elderly parent and adult child) over a life course (ontogenic development) and then suggest useful and novel prevention and intervention strategies to reduce elder abuse in the United States. Furthermore, the importance of the elderly parent/ adult child relationship quality construct will be tested via the utilization of a meditational mathematical data modeling design. In addition, results and findings from this study will aid in developing a specific line of future research platform that will further the knowledge in ecological risk factors contributing to elder abuse in the United States. This study will also aid in launching a quantitative research platform focusing on elder abuse in the field of marriage and family therapy. Finally, the innovative research

methods and statistics used in this study could be used as a possible standard for future methodologically sound studies in most areas of social sciences.

CHAPTER II: REVIEW OF RESEARCH

Prevalence/ Incidences of Elder Abuse

Annually, an estimated 2.1 million elder Americans are victims of physical, psychological, or other forms of abuse and neglect (U.S. Department of Health and Human Services, 2006). In the National Elder Abuse Incidence Study, government officials at the Administration on Aging documented, based on overwhelming evidence, that the rate of abuse for individuals aged 65 and over living independently in a community setting or semi-independently with family members was 41 per 1,000 families. The perpetrators of these abuses were most likely to be adult children or grandchildren (77%) rather than spouses (23%) based on NCEA findings, (National Center on Elder Abuse, 1998). The definition of elder abuse incorporates several types of abusive behaviors such as physical, sexual, emotional/ psychological, financial, and some would prefer neglect in this category as well (Griffore et al, 2009; Schiamberg & Gans, 2000; Schiamberg et al., 2010). This study will only focus on elder physical abuse (physical and sexual abuse) given that: (1) there is a lack of agreement between researchers on whether psychological/ emotional and financial abuse measure the latent variable elder physical abuse (serious concerns relating uni-dimensionality), (2) investigators overwhelmingly exclude neglect from the family of variables measuring physical abuse, and (3) there is an agreement in the academic and research communities on physical abuse including sexual abuse as well (Schiamberg et. al, 2011; Griffore et al, 2009, Fulmer et al., 2004; and Meeks-Sjostrum, 2004).

Although emotional/ psychological elder abuse and elder neglect have great relevance to the field of marriage and family therapy, (Parra-Cardona et al., 2008), these measures could not be included in this study for the following reasons:

1. As indicated above, there is a significant controversy in the academic and research circles on whether emotional and psychological abuses measure the latent variable physical abuse.
2. The MIDUS II data base had no direct indictors (manifest variables) to measure elder neglect and respondent emotional abuse, and
3. The principal focus of this dissertation study is elder physical abuse.

Issues relating to definition of elder abuse

Since elder abuse takes on a variety of forms, involves different relationships, and occurs in several types of settings, it is important to first define what elder abuse is. Elder abuse in all its types is a relatively common form of interpersonal violence therefore researchers, academics, and government officials are in agreement on its definitions (Hawes, 2002; Clarke & Pierson, 1999, Schiamberg & Gans, 2000). In general, physical abuse can range from slapping or shoving to severe beatings, the use inappropriate restraints (e.g. with ropes or chains), force feeding, or sexual abuse (Schiamberg et. al, 2009). When a caregiver or other family members use enough force to cause unnecessary injury or pain, even if the reason is to help the elder, the behavior is regarded as abusive. Elder physical abuse may only include the use of personal weapons (hands, feet, other body parts) and performing abusive acts such as slapping, pushing,

kicking, or striking an older adult or may also include the use of objects such as sticks or even baseball bats with the intent to inflict harm or pain.

In accordance with other researchers who include sexual abuse and non-consensual sexual involvement (e.g., being forced, threatened, or deceived into sexual activities ranging from looking or touching to intercourse or rape), the current study treats sexual abuse and non-consensual sexual involvement in the category of physical abuse (Hawes, 2002). Sexual abuse can range from rape to sexual exhibition. The act of sexual abuse can include physically forcing the individual to look at pornography, inappropriate touching, and imposing sexual contact with a third party, or any unwanted sexualized behavior (Hawes, 2002). It also includes rape, sodomy, or coerced nudity. Sexual abuse is a less often reported form of elder abuse (Hawes, 2002).

Although this study's principal focus is on elder physical abuse (including sexual abuse) and its correlates, it is important to define the other types of elder abuse in order to clarify and distinguish amongst the various forms of aggression directed towards older adults. Emotional or psychological abuse can range from giving the "silent treatment" or name-calling to verbally or physically intimidating and threatening the elderly individual. As a rule of thumb, when a family member or a caregiver behaves in a way that causes fear, distress, or emotional pain, that behavior can be regarded as abusive. Emotional and psychological abuse can also include treating the older person like a child (e.g., denying access to a phone) or isolating the elderly from family, community members, and routine activities (e.g., walking in a park or shopping at a grocery store), either through manipulation, threats of force, or actual physical aggression (Bennett & Kingston, 1993).

The conscious and premeditated refusal or failure to meet the essential needs of the older adult in order to punish her/ him or "teach a lesson" for various perceived reasons is considered active neglect (Lachs & Pillemer, 1995). Certain care giving behaviors, such as denial of food, health services, medication or outright abandonment of the elderly, are considered elder neglect. In addition, the unintentional care taker neglecting behavior stemming from developmental needs ignorance is also considered a form of neglect (passive neglect).

The last form of elder abuse that will be defined in this study is financial exploitation, which can range from misuse of an elder's funds to outright embezzlement (Bennett & Kingston, 1993). Financial exploitation may include denying the older person access to his or her personal funds, purchasing of items or services with the elderly person's money without her or his knowledge or permission, forced property transfers, fraud, or forgery (Bennett & Kingston, 1993). Given that older persons are more trusting and often starved for companionship, they may fall prey to non-family members as well, such as sales people and health, mortgage, and financial company representatives or any other opportunistic acquaintance (Bennett & Kingston, 1993).

Impact of elder abuse on the victim and physical signs of abuse

Elder abuse seriously impacts the health and well-being of older adults on several dimensions. Victims of elder abuse show increased levels of psychological, emotional, and physical distress (Comijs et al., 1999) and experience increased mortality rates compared to non-abused elderly (Lachs et al., 1998). Recent research studies found that elders who have been abused tend to die earlier than those who are not abused, even in

the absence of chronic conditions and/or life threatening illnesses (Bonnie & Wallace, 2003). In addition, since older adults in United States are mainly covered by taxpayer founded Medicare health insurance policy, medical treatment of victims imposes an additional financial burden on the US society.

Physical signs that cannot be explained medically might suggest elder abuse and need to be further investigated. For instance, bruises or grip marks around the neck or arms, welts on the wrists and/or ankles, rope marks, repeated "mysterious" injuries, and more importantly, dismissive statements or attitudes by relatives about the elder's injuries (U.S. Department of Health and Human Services, Administration on Aging, 2004). Unexplained vaginal or anal bleeding, bloody or ripped underwear, bruises around the breast or genitalia areas, and the presence of venereal diseases or vaginal infections might indicate the possibility sexual abuse (U.S. Department of Health and Human Services, Administration on Aging, 2004).

Reporting and detection of elder abuse

Since the majority of older people live on their own or with their spouses, adult children, or other relatives, and not in institutional settings, elder abuse overwhelmingly takes place at home (U.S. Department of Health and Human Services, Administration on Aging, 2004). Therefore, when elder abuse happens, family, other household members, or paid caregivers are the principal perpetrators of physical abuse against the older adult. Elderly victims seldom report abuse for a variety of reasons, including concern for themselves or for the abusive family member (Griffin & Williams, 1992). Other reasons for concealing the abuse might include feelings of shame and grief, love for the abuser, or

fear of institutionalization. Unfortunately, the abused older adult will often go to great lengths to protect their abusive children, thus keeping their own abuse a secret (Quinn & Tomita, 1986). Even when confronted, the victimized elderly will often deny the abuse altogether or mitigate the severity and seriousness of their adult child's aggression, thus creating a make belief illusion of normalcy (Kethineni 2004). In addition most abused elderly would rather suffer in silence than break the family's unity and create discord amongst members (Kethineni 2004). Finally, many abused elderly victims suffer from a variety of cognitive, physical, emotional, and psychological illnesses hence they are often isolated from the rest of society consequently, the abuse becomes more difficult to detect (Kosberg, 1988). Despite these obstacles to reporting of incidence rates and prevalence of elder abuse, studies suggest that child parent bi-directional violence is a real problem for a significant number of elderly parents (Jackson 2003).

In addition to problems with reporting elder abuse, methodological issues such as the use of rigorous sample surveys methods and employing non-uniform sampling and research instruments used for data collection produce often non-replicable or even contradictory results (Pillemer & Finkelhor, 1988). Therefore, not surprisingly, there is an incongruity in research findings, due to discrepancies in research methods, designs, and inaccurate reporting and/or underreporting of elder abuse (Hudson, 1986). All things considered, the problems with underreporting and non-uniform theoretical perspectives and research designs underscore the need for more studies in this field.

Risk Factors of Elder Abuse

Often nonprofessional caregivers (e.g. adult children, spouses, relatives and friends) find taking care of an older adult relative to be an enriching and rewarding experience. However the demands and responsibilities of the day to day elder care giving can also be extremely stressful, especially when the older adult's physical, cognitive and psychological conditions deteriorate. The stress of elder care can lead to caregiver burn out most notably in the areas of emotional, mental, physical, and physical health in addition to the sometimes incurred financial costs associated with caring for the elderly. Caregivers pushed beyond their coping threshold, financial or psychological resources may not mean to yell at, strike, or ignore the needs of the elders in their care. There is no single pattern of elder abuse or a specific road map of abuse that could be recognized by most family members or social services, law enforcement, and court officials. Sometimes the abuse is a continuation of long-standing patterns of physical or emotional abuse within the family. In other instances, more commonly, the abuse is related to changes in the older adults' cognitive, psychological, and financial situation and her/ his dependence on family members or relatives for meeting basic needs. Therefore the process of elder abuse is a complex problem with numerous causes and risks and affected by the interplay of at least one or more ecological systems. These risk factors might emerge at any systemic levels or multiple levels simultaneously during the same time frames ranging from the microsystem to the macrosystem level.

Elder Abuse Risk Factors at Microsystem Context: Adult Child/Older Adult Relationship

History of relationship between the older adult parent and her/ his child:

The history of the relationship between the older adult parent and her/ his child has a significant impact and often plays a determinant role (mediates) in whether the behavior of elder physical abuse will happen or not (Jaffe et al., 1990; Athens, 1992; Heide, 1995). Dysfunctional family relationships implicated in the elder abuse process include discord in the family created by the older person's presence, a history and pattern of violent interactions within the family (Kethineni, 2004; Athens, 1992), and prior child abuse patterns accommodated by the family (Heide, 1995). Adult children or grandchildren who have witnessed or have been victims of family violence are more likely to resolve difficult life challenges with violent tactics they learned during their childhood (Athens, 1992). For example, an adult child may take the opportunity to "turn the tables" on the formerly abusive parent by forcefully "restraining" the parent. The use of corporal punishment in addition to a non-strict parenting approach and inappropriate discipline in the child's formative years appears to increase the likelihood of violence from the adult child to her/ his elder parent (Kratcoski, 1984; Peek et al., 1985). Furthermore, it has been suggested that in families where child abuse was occurring, violence was accepted as a legitimate and often successful means to an end and an acceptable expression of anger and frustration (Jaffe et al., 1990). Rhodes (1999) suggested that this desensitization to violence is due to a dysfunctional family process and a cultural phenomenon and not a supposed biological deviation of individuals. The human subject is constructed by a life story. "Selves are not given. They are constructed.

They are built, modified, altered, refurbished, even replaced over time" (Rhodes, 1999, pp. 55). Rhodes (1999) describes this self creation process as children are first brutalized into learning that they will not be protected by the adults responsible for them, that they must brutalize others or be brutalized themselves, and finally, through the performance of such brutalization they become violent individuals themselves.

Since its first official acknowledgement, child parent violence has remained an often avoided or neglected subtype of family violence, with a scarcity of research to document prevalence, severity, and factors influencing aggression against the elderly, (Ulman & Straus, 2003). Pelletier and Coutu (1992) documented that 18% of two-parent and 29% of single-parent families experience child parent violence. Although the prevalence of child-parent violence is significant, these findings do not automatically mean that adult children who were abused while growing up will turn the table on their parents and abuse them when they are most vulnerable. The authors suggested that in most cases the elder mother was injured (71.5%) and that most child parent violence incidences did not result in injuries (injuries in less than 50% of the cases). Walsh and Krienert (2007) also underscored the importance of studying elder abuse in an effort to better understand victim, offender, and offense characteristics.

Therefore, an examination of the bi-directional process of violence would enable a better grasp of the elder abuse phenomenon, especially since there is evidence to suggest an association between child maltreatment and later elder abuse (Heide, 1995).

Kethineni's (2004) concluded in his study that this form of violence is more prevalent than both spousal abuse and child abuse (in the adult child's formative years)

and his findings are consistent with estimates documented by the National Center on Elder Abuse (1998) data.

Given the significance of the relationship quality between the adult child and her/ his elder parent in mediating or moderating elder abuse, this author proposes to construct a latent variable that will measure this construct and examine its direct and meditational influence on elder physical abuse.

Characteristics of the Adult Child that Increase Aggression towards the Elder Parent

A caregiver's (such as an adult child) personal problems, such as the presence of mental or emotional illnesses, addiction to alcohol or other drugs and financial pressures stress and therefore dependency on the elderly parent, might lead to elder abuse (Schiamberg et al., 2009; Griffore et al., 2009; Schiamberg & Gans, 2000). Intrapersonal theories of violence in the field of marriage and family therapy assume that certain male demographic characteristics increase the risk of engaging in physical violence. Pagani et al. (2004) found that women engage in slightly more physical aggression (9.7%) than men (8.8%) within family relationship particularly among young adults. On the other hand males engage more in "severe physical aggression" according to O'Leary et al. (1994). In addition, younger males are significantly likelier to solve relational problems via violence (O'Leary et al., 1994).

Gender

The gender predominance of the perpetrator of elder abuse varies across studies depending on the methodology used. Conclusions reached as regards to gender

predominance in some studies suggest that sons are likelier to abuse their parents than daughters (Cochran et al., 1994; Laurent & Derry, 1999). On the other hand other studies suggest that females were the likelier gender to commit parent abuse (Pagani et al. 2004; Nock & Kazdin, 2002). Yet others found no gender differences in reported parent abuse, (McCloskey & Lichter, 2003). Walsh and Krienert (2007) concluded that teenage and adult male children were more likely to commit aggravated assault or intimidation against their elderly parents than female children, and female children more often used personal weapons (e.g. fists, leg kicks, etc.) against their parents. Furthermore, female children were significantly more likely than male children to cause injury to their elder mother, but no major differences in inflicting injury were found with fathers. Given the contradictory research findings on the adult child's gender as they relate to likelihood of him / her physically attacking the elderly parent, this variable won't be used in this study. Furthermore there is no direct measure of this in the MIDUS II data set as it relates to abuse.

Chronological Age

The chronological age of adult child when she/ he is more likely to perpetrate violence on her/ his elderly parents is still in debate and often varies depending upon the methodology used in specific studies and age inclusion parameters. Cornell and Gelles (1990) suggested that adult male children carry out more assault on their elderly parents as the get older (linear positive relationship) than females. Other researchers found that the prevalence of assault from males decreases as they get older (Strauss & Gelles, 1988). Browne and Hamilton (1998) found no significant associations between age of offender

and physical violence perpetrated on parents C.E. (1998). Results of Ulman and Straus's (2003) metaanalysis seems to indicate that age categories of children who perpetrate violence on their parents vary dramatically and that there is no certainty about whether age impacts the likelihood of elder abuse at all. In sum, the abusers age might not be a good predictor of whether he/ she will abuse the elderly parent. In addition there is no direct measure of this variable in the MIDUS II data set.

Psychological and emotional problems/ illnesses

Ongoing individual psychological and emotional problems (illnesses) in the caretaker have been identified as predictors of elder abuse (Pillemer & Finkelhor, 1988; Kosberg 1988). For instance, if a caregiver (in our case the adult child) suffers from psychological/ emotional problems and who cares for a frail older adult with cognitive impairment is likely to elicit resistant behavior from the old parent, which may lead the caregiver to become physically violent (Kosberg 1988). Therefore the adult child caregivers with severe emotional, cognitive, and psychological health problems will likelier abuse an older adult in their care than a caregiver who has no such problems, (Kosberg, 1988). Wolf and Pillemer (1989) also concluded in their study (based on frequencies in their sample) that 38% of the abusers had a history of mental illness and 46% of abusers reported a recent decline in their mental health status. Cooney and Mortimer (1995) also suggested that caregivers who admitted being physically abusive in their sample had notably higher rates of psychological and emotional health problems than non abusive caregivers (Cooney and Mortimer, 1995). Pillemer (1989) as well

concurred with conclusions reached in others studies that suggest that psychological and physical abuse appeared to be most related to the deterioration in health of the caregiver.

Alcohol and substance abuse addiction

Chemical dependency problems in adult caregivers have often been significantly correlated with the process of elder abuse (Kratcoski, 1984). In a similar study Browne and Hamilton (1998) conclusions concurred with findings that alcohol and drugs abuse by the caregiver (adult child) was linearly (positive direction) associated with an increase in violent encounters between the adult child and the elderly parent. The likely scenario during which the adult child's chemical dependence might play a significant role in a violent encounter with the older adult would be when both the parent objected to the adult child's alcohol/drug use and when the adult child punished the elderly parent while under the influence.

Financial stress and burden

Caregiver' financial stress (economic pressures and or lack of financial resources) may also be a significant risk factor for elder abuse. Kosberg and Nahmias (1996) found that adult children lacking in their financial well-being might be resentful of their parents which in turn might lead to physical abuse. Steinmetz (1990) suggested that financially overburdened and stressed out caregivers were likelier to commit (probably repeatedly) the act of elder abuse than caregivers who could effectively cope with their own stress.

Characteristics of the Elderly Victim

A general review of the elder abuse literature yields a number of victim risk factor dimensions, interacting at various ecological systems level that might impact the likelihood of abuse of older adults living in their own homes, with relatives, or in a community setting (Pillemer & Moore, 1989). In addition, several research studies on elder abuse over the last twenty years highlight individual victim characteristics that are correlated with elderly abuse, such as; (a) suffering from diagnosed Alzheimer's illness (Paveza et al., 1992), (b) elderly in need of assisted home care services, (Fulmer et al., 2005), (c) limitations in mobility, especially in regards to self-care (Fulmer, et al., 2005; Pillemer & Finkelhor, 1988), (d) social isolation (Fulmer et al., 2005), (e) cognitive impairments such as Alzheimer and dementia (Lachs et al., 1997), (f) behavioral problems (Coyne et al., 1993; Paveza et al., 1992), (g) serious chronic health problems (Pillemer & Finkelhor, 1988). Based upon findings in studies (such as listed above) conducted over several decades, it is evident that a relatively large number of late life conditions associated with the last stages of human existence might negatively impact the physical, psychological, and emotional safety of older adults. In addition, the literature on elder abuse reveals that there are several unique factors that might also impact the likelihood of abuse such as:

Gender

Much of the literature on elder abuse suggests that mothers are the most likely victims of child-parent violence. For instance, Nock and Kazdin (2002) suggested that in 88% of the time child violence was directed against the biological mother, followed by

the adoptive mother (5.4%), and finally only 2.7% was against the father. Several other studies as well reached similar conclusions suggesting that elderly women are more vulnerable to abuse than men (Pillmer & Finkelhor, 1988; Kosberg, 1988). Similarly, Kethineni (2004) found in a sample of 83 juveniles arrested for violence against their parents that biological mothers were the victims of child parent violence in 81% of cases. Contrary Kosberg and Nahmias (1996) concluded in their study that there were no major differences in the likelihood of abuse along the gender line. The apparently contradictory results might be due to non-uniform research designs, sampling procedures, and statistical calculations.

Chronological age

Kosberg (1988) suggested that the incremental increase in the elder's chronological age directly impacted (positive correlation) the likelihood of her/ his abuse. This partially might be due to that advancement in age was often linked to a decrease in physical and cognitive health which logically would lead to an increase in psychological and emotional problems that in turn directly correlates with abuse (Kosberg & Nahmias, 1996). Just as with gender, findings on the variable age's effect on elder abuse are not uniform. For instance, Schiamberg et al. (2009) suggested that age had a negative direct effect on the likelihood of elder physical abuse in nursing homes.

Marital status

Although marital violence occurs across the life span, its frequency appears to decline over time (Pillemer et al., 1990). In some instances one might argue that elder

abuse is simply a continuation of abuse that has been occurring in the family over many years. Evidence of spousal abuse suggests that it is proportionately (23%) less than abuse perpetrated by adult children (National Center on Elder Abuse, 1998). Despite the apparent decline in prevalence of abuse, a considerable number of elderly women continue to be victims of spousal abuse. Contrary to this Pillemer and Finkelhor (1988) found that a married older adult is likelier to be abused than a widowed or divorced one. They further suggested that this might be due to living arrangements since an elderly person living with someone else is at higher risk of abuse than someone living alone. In other instances marital stress due to sharing a residence with grown up children or other relatives might lead to marital domestic violence. Once again findings seem to be contradictory and nebulous at best.

Chronic and serious physical health problems

Findings in many empirical studies suggest that physical stressors such as chronic physical illnesses and ADL limitations were significantly associated with the degree of elder abuse (Bonnie & Wallace, 2003). Poor health and limited functional ability, particularly in regard to self-care, were strongly correlated with elder abuse occurring in community settings (Fulmer, et al., 2005; Pillemer & Finkelhor, 1988). In addition, older adults with one or more physical impairments (health problems) are more vulnerable to abuse because of their diminished ability to protect themselves, their dependence on the caregiver, or seek help to end the violence (Lauman et al., 2008). These findings were confirmed by a follow up study completed by Lauman et al. (2008). They confirmed that chronic and serious health problems will definitely increase the dependence on the

caregiver, which strongly correlates with elder abuse (Lauman et al., 2008). Additionally, the elder's physical impairments might increase the stress experienced by the caregiver, which in turn increases the likelihood of a negative and aggressive interaction. When the reverse is true, and the impaired older person is completely dependent on the caregiver, the caregiver may experience resentment that leads to abusive behavior (Lauman et al., 2008).

Presence of cognitive disorders

Pillemer (1992) suggested that older people with Alzheimer's disease were violent on occasion, which in turn, was robustly associated with caretaker physical violence and violent feelings. Older adults who exhibit signs of Alzheimer's may become abusive as part of the disease progression process, and the object of the abuse more likely is the caregiver who provides the day to day care for the impaired elder (Kosberg, 1988). The abuse of the caregiver may manifest as various types of assaults resulting in minor bruises or cuts. The link between cognitive disorders (associated with aggressive and provocative symptoms such as verbal/physical aggressiveness) and an increase in the risk of elder abuse was documented by Cooney and Mortimer (1995) as well.

Williamson et al. (2005) evaluated the reactions of caregivers of cognitively impaired elderly care recipients to of physically impaired elders without cognitive impairment. Their results confirmed that caring for an elder with cognitive deficits can mean not only providing more care but also dealing with more confused and delusional behavior which in turn is the primary contributor to caregiver's feelings of resentment and hostility towards the older adult.

Homer and Gilleard (1990) suggested that although there is no clear association between the diagnosis of cognitive disorders such as Alzheimer or dementia and abuse but evidence unequivocally indicated that violence (or threat of violence) by the person with cognitive impairments seemed to lead to a violent response by the caregiver. Their finding clearly indicates that it is the elder's disturbed and disruptive behavior that was likely to result in abuse by the caregiver, rather than the presence of the diagnosis of cognitive impairment such as dementia. In the end the outcome (elder abuse) is the important part rather than our inability to decide whether the diagnosis or its manifestations are is the reason for the violence directed against the elderly.

Presence of mental and emotional illnesses

Psychological and emotional problems may be both a cause and an effect of elder abuse in many circumstances. When elders behave in disturbing ways due to either psychological or emotional problems (mostly combined effects), it becomes more difficult to provide care for them. Higher levels of physical aggression in the elderly were associated with depression, psychosis, impaired communication, and antipsychotic drug use (Talerico et al., 2002). Furthermore these authors suggested that aggression in the elderly may be a symptom of inadequately treated mental health disorders rather than a conscious and volitional decision to antagonize the caregiver.

In a cross sectional study of 184 elderly patents with mental disorders (65 with depression, 97 with dementia, and 22 with anxiety disorders) Racic et al. (2006) found that the prevalence of elder abuse amongst older adults suffering from depression and anxiety disorders was high. Their findings were consistent with results from others

studies on this domain (Flannery, 2003; Coyne et al., 1993). Findings of Cooney and Howard's (1995) supported previous findings as well that the rate of abuse among older people with mental health problems are higher than in the general population of older people. Finally, co-morbid alcohol/ drug abuse problems are not infrequent companions to psychiatric disorders, particularly depression (Gambert & Katsoyannis, 1995).

Unlike with most other victim/ abuser characteristics, the literature is consistent the correlation and probably cause and effect relationships between emotional and psychological problems and elder abuse.

Substance abuse

A massive amount of data exist on prescription and over the counter (medication) drug use by the elderly. Although the elderly populations makes-up only 12.4% of the population, they consume 25% to 30% of all prescription drugs. They routinely consume more prescription drugs than any other age group and are more likely to consume psychotropic medications with a potential abuse and addiction (Rigler, 2000). The relationships between elder abuse and substance abuse/ drinking in late-life is complicated given disparate and often contradictory findings on the health benefits of moderate drinking at one end and the co-morbidity between psychiatric problems and substance abuse at the other (Turvey et al., 2006). The negative effects of alcohol use and abuse relate mostly to excessive drinking, whereas substance abuse at any level can have potentially harmful effects on the health and welfare of the elderly (Turvey et al., 2006). Alcohol abuse can lead to a plethora of physical health problems (cirrhosis, pancreatitis, or even cardiomyopathy), major emotional and mental health disorders, and memory and

sleep problems, (Speer & Bates, 1992). Rigler (2000) also suggested that elderly individuals with alcoholism problems are mainly early onset drinkers and they overwhelmingly have significant physical, psychological, and emotional health complications.

Given the high co-morbidity rate between the elderly victim's characteristics such as physical, psychological, and emotional problems and substance abuse, in addition to a small sample size (203), this author made the decision no to include elder substance/ alcohol abuse in the final dissertation analysis. Furthermore, not only the literature indicates very high correlations between the above cited victim's characteristics and substance abuse but also the data in form of collinearity.

Victim behavioral problems

Kosberg (1988) suggested that aggressive, overly demanding, or otherwise unpleasant behavior of the elderly might contribute to the risk of abuse. Higher levels of both verbal and physical aggression in the elderly were associated with cognitive (Kosberg, 1988; Talerico et al., 2002), psychological and emotional health correlates (Racic et al., 2006), substance abuse (Rigler, 2000), impaired communication, and higher disorientation (Talerico et al., 2002). Given that elder behavior problems might only be symptoms of one or more untreated physical, cognitive, mental, and emotional health problems, this study will be guided by a conceptual understanding that elderly aggression may represent an expression of certain types of cognitive, psychological, and emotional manifestations or unmet needs of the elderly.

Contexts beyond the Immediate Older Adult/ Adult Child Caregiver Relationship

Several studies on elder abuse suggest the influence of Exo and Mesosystem level factors (outside of the immediate family) that might contribute to an increase in the probability of violence, such as social relationships with people outside the family who maltreat others, social deprivation, and beliefs about behavior and attitudes to education (Paulson et al., 1990). Therefore, an examination of the bi-directional violence at these levels would help us in better understanding and conceptualizing the process of elder abuse.

Social isolation

Fulmer et al. (2005) documented that the strongest predictors of elder abuse in the home were the social isolation of and to some degree the lack of a formal support system for both the victim and the caregiver. Social isolation of the elderly can provide a clue that a family may be in trouble, and it also can be a risk factor for abuse. Social isolation can be a strategy for keeping abuse secret, or it can be a result of the stresses of caring for a dependent older family member (Fulmer et al., 2005). Isolation also makes it more difficult for outsiders to see and intervene in an abusive situation to protect the elderly and to offer help to the abuser. When community members are a part of the elderly person's life, tensions are less likely to reach unmanageable levels, and both the victim and abuser are more likely to receive help. Furthermore, of there not sufficient support pillars for the adult child to provide care, or if their own difficulties are not recognized and assistance offered, as relevant, these difficulties may escalate into an abusive situation (Wolf, 1989).

Financial resources/ employment status

Additional risk factors at higher systemic levels (the adult child/ mesosystem – elderly parent/ exosystem) were also identified in the literature of elder abuse. Aspects as stressors within the family system, such as the caregiver's unemployment thus financial dependence on the older adult may also be implicated in the process of elder abuse (Pillemer, 1986). Some research investigators have indicated that abusers may be dependent on their victims for housing and accommodations (Pillemer, 1986). In addition, apparently some caregivers are not suited to provide care, either physically or psychologically, but who are nevertheless expected to slide into a caregiving role for their parent.

Macrosystem Level Factors that Affect Elder Abuse

Beliefs and views of elderly people as being vulnerable and dependent may contribute to negative perceptions and attitudes about older people. Ageism is a general term that encompasses differential attitudes such as older people need assistance even if they do not want it based on age designations and age discrimination is a displayed behavior based on attitudes. In that sense, the cultural characterization of age groups necessarily implies differences among them, and is a form of age discrimination. This differentiation coupled with meanings and attitudes of ageism may affect the rights and privileges of the elderly by placing heavy constraints on their life and potentially devaluing them. For example, while working for the Family Independence Agency, State of Michigan, I came across several cases where the caregiver unduly withheld finances from the older adult when she/ he intended to purchase items that might have enhanced

her/ his quality of life. When asked for a reason, caregivers almost in unison replied that their relatives (parents) mind (logical reasoning) was gone so what did they no what is needed to adequately live their life.

Research Questions

Given the complexity of the process of elder abuse and the various ecological systems at work interacting with and shaping several risk dimensions, the historical approach to conceptualizing and explaining elder abuse is no longer adequate. The different types of research studies conducted on elder abuse (case control, agency data, studies of awareness and attitudes, and survey of professionals) often employed non-uniform samples, research methodologies, and statistics that resulted in an often contradictory knowledge base in the filed of elder abuse (Pillemer & Finkelhor, 1988; Lachs et al., 1997). In contrast the Ecological Bi-Focal Model for elder abuse has been presented as the most inclusive framework that best explains the complex processes occurring before, during, and after the conclusion of the act of elder abuse.

To date, an understanding of family violence directed against an older adult parent by the an adult child, from an Ecological Bi-Focal perspective has been limited because of the paucity of research targeting adult child members involvement in elder abuse and the fragmented nature of risk factors/correlates analyzed in previous studies (Chermack et al., 2001). In addition, the correct incorporation of all tenets and assumptions of the theoretical Ecological Bi-Focal model of elder abuse requires a large representative sample and a structural equation modeling that was not possible before. Therefore complex research questions and related hypothesis could be advanced in areas

where research on elder abuse had significant gaps. In order to examine causal factors relating to and predicting elder abuse from an Ecological Bi-Focal model for elder abuse the aim of this study was to find answers to the following questions:

I. Prevalence

1. What is the prevalence of elder physical abuse committed by an adult child in the family/ community setting?

II. Immediate older adult/ caregiver context

2. Do victim characteristics influence the likelihood of elder physical abuse?
3. Do victim behavioral problems influence elder physical abuse?
4. Do victim and adult child relationship quality predict, mediate and or moderate elder physical abuse?

III. Contexts beyond focal older adult/ caregiver (ecological model testing)

5. Does the victim's social isolation influence elder physical abuse?
6. Do adult child characteristics influence elder physical abuse?

The temporal dimension (chronosystem)

The impact of ecological temporal transitions on elder physical abuse could not be assessed given the nature of MIDUS II data thus it is beyond the scope of this study to integrate chronosystem level variables.

CHAPTER III: METHODOLOGY

In 1995-2006, the MacArthur Midlife Research Network surveyed over 7,000 Americans aged 25 to 86 to collect data on the role of behavioral, psychological, and social factors in understanding age-related differences in physical and mental health. Data was collected with the aid of baseline assessments (e.g., phone interview and self-administered questionnaire) and additional questions in selected areas (e.g., caregiving, cognitive and emotional functioning, stressful life events, and health condition). The guiding hypotheses for this innovative study were that behavioral and psychosocial factors influence people's physical and mental health. The MIDUS data file was used in 221 studies ranging from stress related health conditions to sexual experience across midlife. Although the MIDUS data set was widely used to investigate various human behavioral characteristics and health conditions, up to this date, it was not used to study elder abuse in the United States. Given the innovative and the broad scientific scope of the MIDUS study in addition to lack of previous research on elder abuse using this data file, the MIDUS data set is optimal to empirically test the Ecological Bi-Focal Model for Elder Abuse (Schiamberg & Gans, 2000).

This chapter describes the dissertation study procedures in a two pronged format. The first part of this chapter will be used to describe the methodology employed in the MIDUS study to compile the data set. The second part will provide a detailed description of the methodology used to empirically test the Ecological Bi-Focal Model for Elder Abuse. This chapter will be organized based on the following format:

I. MIDUS I and MIDUS II data sets

Measures, instrument development and pretest, data collection protocol, interviewer training, research field procedures, survey protocol, and sampling procedures for the MIDUS I and MIDUS II studies.

II. Proposed Dissertation Study

1. Definitions of latent variables and their manifest indicators.
2. Overview of the measurement and structural models used in this study.
3. Overview specific hypotheses to be tested
4. Data analytic plans.

MIDUS I and MIDUS II Data Sets

Measures

In 2004-2006, the MacArthur Midlife Research Network developed, pre-tested, and then used the following three survey instruments to measure several life course dimensions in their study: (1) MIDUS II: Phone Questionnaire With Index (see Appendix A), (2) MIDUSII Self-Administered Questionnaires (SAQ 1 & 2) – mailed to participants, (see Appendix A), and (3) MIDUS II Cognitive TACT instrument, Telephone Assisted Cognitive Testing, (see Appendix A).

Instruments Development and Pretests

The development of the MIDUS 2 phone survey began at the University of Wisconsin in January 2003. The survey instrument came in two waves, wave two was

based on wave one and included modifications (measuring instrument calibrations and improvements).

The MIDUS one wave instruments (telephone and self-administered) were pretested and calibrated by the fall of 2003. A random sample was obtained from Survey Sampling Incorporated, State of Wisconsin, and 50 random numbers were fielded. Out of this sample 38 respondents completed the phone survey and 27 (out of 38) mailed back the SAQ's. 32 respondents completed the Cognitive surveys. All of the data from the pretests were delivered to the University of Wisconsin IOA staff during the late fall and winter of 2003/2004. Based on result outcomes minor calibration changes were made to all three instruments after pretesting process was complete. Final research instruments were prepared for fielding and then utilized to obtain the MIDUS study sample.

The improved wave-two instruments then were used in the creating the final instrument form and programming the Cases CATI computer instrument. MIDUS staff decided to convert the 114 pages two self-administered questionnaires (SAQ's) into PDF files for ease of printing and mailing. Interview data obtained with the Cognitive phone survey instrument (set of digital wave files) were digitally recorded for later computer scoring and analysis. The end product of these recording processes was a set of computer digital wave files that could be listened in, analyzed, and later scored by the research team.

Data collection protocol

The MIDUS data base was generated by both self-completed individual surveys and phone interviews by employing the using CATI (computer-assisted telephone interviewing) protocol. The CATI system was developed and copyrighted by the

University of California- Berkeley's Computer-Assisted Survey Methods Program or CSM. This system is a flexible data collection method since it allows for pre-coded questions, open-ended questions, and combinations of the two. A second major advantage of the CATI system is that during the interview process the text of the survey appears question by question on a computer screen so the data collector can read it to the respondent and enter data values in a timely fashion. The CATI system accepts only valid responses (data values) and interviewer can't move on to a different question before correctly entered a value for the current one. In addition, this data collection system has extra program module added that creates and maintains an electronic cover sheet for each participant that can be retrieved in an a timely and prompt manner thus eliminating the cumbersome process of opening individual interview surveys for identifying information such as the respondent's phone number, address, interview status (complete versus incomplete interviews) for ease of access during follow-up interviews.

Interviewer (data collector) training

MIDUS data collectors (interviewers) received 12 hours of general survey training and four hours of specific MIDUS related issues and instruments. Specifically, training was provided on: (a) general MIDUS research protocols, (b) phone calling guidelines and real life practice simulations of simultaneously talking with "research respondents" and entering data into computer, (b) how surveys (cases) will be fielded and classified, (c) quickly identifying respondents based on the electronic coversheets, and (d) how to conduct mortality (closeout) interviews. In order to assure a quality, valid, and reliable data set, MIDUS interviewers were required to practice the interview format on

at leas three different real respondents and complete entering three practice cases in the computer database. Performance on these three practice simulations were directly supervised and monitored by senior MIDUS research staff and feedback was provided on performance and areas needing improvement to all prospective interviewers.

Close process monitoring and data quality assurance did not cease once interviewers completed the MIDUS data collection training sessions. Supervision and monitoring was extended into data collection as well so once the survey started, interviewer data collecting interviews were regularly monitored using the blind monitoring system. This system was comprised of: (a) randomly a senior research supervisor was placed in a room not visible by the interviewers, (b) supervisors having real life access to the interview conversation transpiring between the interviewer and respondents, and (c) supervisors seeing the same computer screen as interviewers do thus monitoring live data entry.

Interviewers' work quality was reviewed at least on a monthly basis and they received a written feedback that contained constructive work performance critiques and suggestions for improvement, as needed. Interviewers had to implement these suggestions effective immediately and their supervisors continued monitoring how the improvements helped their data collector in fulfilling the MIDUS research expectations.

Research field procedures

Several meetings were held with staff to discuss and implement procedures on how best to deal with a sample of this magnitude and develop a protocol on how to document and completed the multiple contacts with the same respondent. After staff

brainstorming and attending several meetings the following data processing and quality control filed protocol was developed:

1. All confidential records to be kept in electronic format for easy access and follow-up contact.
2. Establishment of a toll-free respondent telephone line: To maximize response rates, a toll-free line for MIDUS was established and kept available only for the MIDUS study purposes. In addition a telephone voicemail box was set up for the events that phone room staff was not available. A voice recording instructed callers to leave a message if they were calling about an interview. Study participants were notified of the toll-free number in advance via letters that were sent to all MIDUS participants.
3. Each MIDUS participant received a personalized advance letter from staff one week prior to being contacted. For the follow-study respondents were asked to call the MIDUS toll-free number to provide updates and future contact times. A Brochure was also enclosed to reacquaint the respondent with the MIDUS survey.
4. Establishing an auto-scheduling system (from of electronic cover sheet) that allowed anyone accessing the case to read all previous contact notes and information and for the tracing department to efficiently trace the case.

Survey Protocol

MIDUS II survey protocol was a complicated process due to a multipronged approach whereby the telephone surveys (also phone cognitive survey) and mail surveys were taking place mostly concurrently with different respondents at different points in the

survey at all times. To further complicate the process, some survey participants completed their mail survey within days of finishing the phone survey and also mailed them to MIDUS headquarters, whereas others procrastinated in completing their mail survey for months and needed constant prompting to mail their surveys. These complications were addressed by MIDUS senior staff by developing and implementing survey protocol that was flexible enough to accommodate these challenges. For more information on this protocol see Appendix A.

Sampling Procedures

The first wave of MIDUS national survey study (MIDUS I) of over 7,108 participants (aged 25 to 74) was carried out during 1995-1996 by the MacArthur Midlife Research Network. The purpose of this study was to examine age related factors as they correlate with the individual's psychological, behavioral, and social factors. For optimal sampling results MIDUS researchers used the random digit dialing survey method (RDD) which is based on the largest database of working residential telephone exchanges and working blocks in the United States. Thus, MIDUS researchers could theoretically draw the sample from any part of the United States (a real random sample), regardless how large or small. Furthermore, this telephone survey method has the advantage of including unlisted numbers as well that would be missed if the numbers were selected from a regular phone book. The MIDUS I study was groundbreaking due to its broad scientific scope (age related differences in mental and physical health due to psychological, behavioral, and social factors) its large and diverse samples, and its creative use of both

phone and mail surveys. A more detailed description of the MIDUS I research study can be found in Appendix B or at http://www.midus.wisc.edu.

The MIDUS II study sample, which is a longitudinal follow-up of the original MIDUS I study, was conducted between 2004 and 2006. MIDUS researchers made every possible attempt to contact and persuade all the original respondents of MIDUS I study to participate in a follow up data collection effort (the MIDUS II study). To increase participation of MIDUS I participants monetary incentives were raised from $20 (MIDUS I participants received) to $60. Of the 7,108 respondents in MIDUS 1 study, interviewers successfully reached 4,963 participants who completed another 30 minutes long phone interview.

Retention and response rates that were cross referenced and then readjusted based on data received from the National Death Index (NDI), for the various MIDUS samples are provided in Table 3.1.

Table 3.1 Sample Sizes, Longitudinal Retention Rates, and Response Rates for MIDUS II

Phone Interview Sample	**# MIDUS 1 Respondents**	**# MIDUS 2 Respondents**	**Longit. Ret. Rates**	**Adjusted for mortality**
Main RDD	3,487	2,257	65%	71%
City Oversamples	757	489	65%	71%
Sibling	950	733	77%	83%
Twin	1,914	1,484	+78%	82%
Full Sample	**7,108**	**4,963**	**70%**	**75%**

*UWSC fielded 7,105 cases at MIDUS 2 because contact information was unavailable for 3 cases.

** Note: From Ryff et al. (2207). Midlife Development in the United States (MIDUS II), 2004-2006 [Computer file]. ICPSR04652-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2007-03-22. doi:10.3886/ICPSR04652

Of the original MIDUS I participants 30% of respondents did not complete the MIDUS II phone interview for the following reasons:

The MIDUS II study also included two self-administered questionnaires (SAQs), each about 55 pages in length, which were mailed to participants, and when completed, returned by mail. Response rates for the MIDUS II SAMPLE are summarized in Table 3.2 provided below.

Table 3.2 SAQs Completion Rates for the MIDUS II study.

Phone Interview Sample	# of Complete SAQs	Completion Rates
Main RDD	3,487	2,257
City Oversamples	757	489
Sibling	950	733
Twin	1,914	1,484
Full Sample	**7,108***	**4,963**

** Note: From Ryff et al. (2207). Midlife Development in the United States (MIDUS II), 2004-2006 [Computer file]. ICPSR04652-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2007-03-22. doi:10.3886/ICPSR04652

In addition, to the initial 30 minutes phone interview, a second 20 minutes telephone interview was conducted in order to collect cognitive battery data. Response rates for completion of the cognitive battery across the above samples are provided in Table 3.3.

Table 3.3 Participation Rates for the MIDUS II Cognitive Battery.

Sample	# of Complete Cognitive Batteries	Completion Rates (% of Phone Participants)*
Main RDD	1,846	83%
City Oversamples	417	87%
Sibling	661	91%
Twin	1,262	86%
Full Sample	***4,186***	**86%**

* Completion rates do not include 71 cases who, after completing the telephone interview, indicated they did not wish to participate in future MIDUS research.

** Note: From Ryff et al. (2207). Midlife Development in the United States (MIDUS II), 2004-2006 [Computer file]. ICPSR04652-v1. Ann Arbor, MI: Inter-university Consortium for Political and Social Research [distributor], 2007-03-22. doi:10.3886/ICPSR04652

Proposed Study

Study Sample

For the purposes of this dissertation study the final MIDUS II sample (participants ranging in age from 35 to 86 old – a total of 4,963 cases) had to be reduced to a specific subsample in order to comply with the criteria set forth in the Applied Ecological Bi-Focal Model for Elder Abuse (Schiamberg & Gans, 2000) and proposed earlier in this study. To be included in this study, participants had to meet the following criteria: (1) their chronological age had to be at least 65 years old and (2) had to be living with an adult child in the home who was providing care to the older adult. Out of 4,963 cases 1880 respondents indicated that they were at least 65 years old. Out of the total of 1880 participants only 203 met the criteria of residing with an adult child who provided the care to their elderly parent. The demographic characteristics of the remaining sample (203 observations) used for this dissertation study is as follows:

Table 3.4. Dissertation Sample Characteristics

Demographics	**Frequencies**	**Percentages**
Age	65-70 years old: 95	46.8%
	71-75 years old: 33	16.3%
	76-80 years old: 37	18.2%
	81-85 years old: 22	10.8%
	86 and above: 16	7.9%
Gender	Male: 75	36.9%
	Female: 128	63.1%
Race	Caucasian: 180	88.7%
	African American: 8	3.9%
	Native American: 3	1.5%
	Other: 11	5.4%
Marital Status	Married: 74	36.5%
	Not Married: 129	63.5%
Education	Not high school: 34	16.7%
	High school: 64	63%
	BA/ Masters : 37	18.3 %
	PhD or Equiv.: 4	2%
Total	**203**	**100%**

Human Subjects Protection

The primary institutional review board (IRB) for the participation of human subjects in this project will be the Michigan State University Committee for Research Involving Human Subjects (UCRIHS). It is IRB's (MSU Institutional Review Board) policy that research that only involves secondary analysis of pre-approved public data files, does not require IRB approval. The IRB must be informed of the conduct of the research project however and certify the use of an approved database. Furthermore, the data file is available for ICPSR (Inter University Consortium for Political and Social Research) members and researchers (public) consumption and can be downloaded from http://www.icpsr.umich.edu/mydata?path=ICPSR. In addition, although the original data file was gathered on identified subjects (to members of the McArthur Foundation), the file available for public use was stripped of all direct and indirect identifiers thus any risk of third party disclosure is non-existent. Before posting the data files both the McArthur Foundation researchers and ICPSR representatives performed a formal disclosure analysis to prevent any accidental identification of individual subjects by third party research investigators.

In order to be in compliance with MSU IRB's requirements, this researcher has submitted the IRB form of Certification for Use of an Approved Public Data File and subsequently obtained response/ certification (see Appendix) to use the data file for this dissertation study.

Data and Safety Monitoring Plan

Because this study is a dissertation project thus does not meet the criteria of a NIH-defined phase III clinical trial, a data and safety monitoring board (DSMB) will not be established. However, the investigator will be responsible for complying with all the policies, procedures, and recommendations indicated by UCRIHS. Rigorous control of data will be implemented and all necessary provisions will be made according to UCRIHS requirements. This investigator will be responsible for ensuring that an adequate data and safety monitoring plan is designed and implemented. As such the data file will be stored on this investigators password protected computer and only this author will have access to the information stored in the data file.

This research investigator has been certified since 2006 in the use of human subjects' protections and the current training expiration data will be on 09/18/2010.

Measures

Dependent Variables and their Indicators (Latent Endogenous)

Physical abuse

The dependent latent variable (endogenous) used for this dissertation research is Physical Abuse. Physical abuse is defined as any direct or indirect action that affects the physical survival, welfare or health of elderly, causing pain, unnecessary suffering or health deficiency (Hawes, 2002). Specific manifestations of physical abuse: (a) injury to the body of the older adult, being hit, kicked, slapped, pushed, etc., (b) inappropriate restriction of mobility, including application of physical and chemical restraints, and (c) sexual abuse and nonconsensual sexual involvement: including being forced, threatened,

or deceived into sexual activities ranging from looking or touching to intercourse or rape (Hawes, 2002).

The reflective indicators (manifest variables) used to measure the main endogenous latent variable (Physical Abuse) as suggested by Schiamberg et al. (2009) are:

Indicator 1: Question: "Ever physically assaulted?"

Coding: Binary variable: 1=No (absence of abuse); 2=Yes (presence of abuse)

Variable scaling: scales were constructed by calculating the mean across each set of items. The variable's coefficient alpha was over .70.

Indicator 2: Question: "Ever sexually assaulted?"

Coding: Binary variable: 1=No (absence of abuse); 2=Yes (presence of abuse). Variable scaling: scales were constructed by calculating the mean across each set of items. The variable's coefficient alpha was over .70.

Victim Adult Child Relationship Quality

The victim / adult child relationship latent variable captures the quality of relationship between the elderly parent and the adult child caregiver. Using this key factor serves several purposes in this study: (1) measures how the relationship quality between the adult child and her/ his elderly parent directly influences the risk of elder abuse (the factors functions as an exogenous variable), (2) whether this latent variable mediates and or moderates elder physical abuse (factor functions as an endogenous variable), (3) to

propose a future elder physical abuse research direction that links child abuse/ neglect to physical abuse of the oldest of the old.

This construct is measured via five proxies as listed below. In addition this latent construct will act as a mediator between the four exogenous latent variables and the Physical Abuse construct. Analytic considerations, model conceptualization, and testing for mediating effects will follow guidelines set forth by Baron & Kenny (1986). Manifest indicators measuring the victim-abuser relationship are as follows:

Indicator 1: Question- "Rate current relationship with child"

Scaling: were constructed by calculating the sum across each set of responses. Positive items were recodes so that higher scores reflect higher sense of social well- being.

Coding: variables are continuous and based on 11 values where 0 stands for worst possible relationship TO 10 representing best relationship ever.

Indicator II: Question- "Children have difficulties in getting along with family Members"

Scaling: were constructed by calculating the sum across each set of responses. Positive items were recodes so that higher scores reflect higher sense of social well- being.

Coding: this variable is discrete dichotomous where 1 stands for No and 2 for the Yes category.

Indicator III: Question- "Rate control over relationship with your child"

Scaling: were constructed by calculating the sum across each set of responses. Positive items were recodes so that higher scores reflect higher sense of social well- being.

Coding: This manifest indicator is considered continuous and based on 11 values where 0 stands for either no relationship TO 10 that represents best relationship.

Indicator VI: Question- "Rate thought/effort put into relationship with your child".

Scaling: were constructed by calculating the sum across each set of responses. Positive items were recodes so that higher scores reflect higher sense of social well- being.

Coding: This manifest variable is continuous and based on 11 values where 0 stands for either no thought effort put into relationship TO 10 represents the most thoughts/ efforts put into relationship.

Indicator V: Question- "Family life with children more negative" (possibly abusive)

Scaling: were constructed by calculating the sum across each set of responses. Positive items were recodes so that higher scores reflect higher sense of social well- being.

Coding: This manifest indicator is categorical and based on four values where 1 stands for not true at all TO four that represents extremely true.

Independent (exogenous) Latent Variables and their Indicators

The exogenous latent variables in the model are as follows: *Victim Health*, Victim *Behavioral Problems, Adult Child Characteristics, and Social Isolation.*

Victim Health

This construct captures the physical and mental well-being of the elderly person/ victim. Older adults in poor health require a great deal of care which increases the demands, dependency, and stress on the caregiver (Lachs & Pillemer, 1995). Victim's emotional and mental health conditions increases the risk for elder abuse (Wang et al., 2000). In addition to the presence of victim psychological disorders, this study uses individual negative affect variables as suggested by Mroczek et al (1988).

Manifest indicators measuring the Victim's Health construct

Indicator I: Question- "Were you diagnosed with Parkinson's illness?"

The variable is coded as: 1- No (absent of condition) and 2-Yes (condition present). Variable scaling: scales were constructed by calculating the mean across each set of items.

Coding: Coding: Binary variable: 1=No (absence of abuse); 2=Yes (presence of abuse).

Scaling: Variable is constructed by taking the total number of "Yes" responses to the items

Indicator II: Question: "Do you have a history (were diagnosed with in the past) neurological disorders?"

Coding: Coding: Binary variable: 1=No (absence of abuse); 2=Yes (presence of abuse).

Scaling: Variable is constructed by taking the total number of "Yes" responses to the items.

Indicator III: Question- "Are you having any chronic/ health/ medical condition?"

Coding: Coding: Binary variable: 1=No (absence of abuse); 2=Yes (presence of abuse).

Scaling: Variable is constructed by taking the total number of "Yes" responses to the items.

Indicator IV: Question- "Were you diagnosed with Anxiety Disorder?"

Coding: Coding: Binary variable: 1=No (absence of abuse); 2=Yes (presence of abuse).

Scaling: Variable is constructed by taking the total number of "Yes" responses to the items.

Indicator V: Question- "Did you feel sad and or depressed during the last two weeks?"

Coding: Coding: Binary variable: 1=No (absence of abuse); 2=Yes (presence of abuse).

Scaling: Variable is constructed by taking the total number of "Yes" responses to the items.

Indicator VI: Question- "Mental and emotional / health self evaluated".

Coding: The variable is coded on a five point Likert scale as: 1= Excellent; 2= Very Good; 3=Good; 4= Fair; and 5= Poor.

Scaling: scales were constructed by calculating the mean across each set of items. Higher scores indicate greater levels of amplification. Reverse coding.

Indicator VII: Question- "Frequency of upset feelings during the last 30 days?"

Coding: The variable is coded on a five point Likert scale as follows: 1= All of the time; 2= Most of the time; 3= Some of the time; 4= A little of the time; 5= None of the time. Note: The variable is reverse coded.

Scaling: scales were constructed by calculating the mean across each set of items. Higher scores indicate greater levels of amplification.

Indicator VIII: Question- "Frequency of angry feelings during the last 30 days?"

Coding: The variable is coded on a five point Likert scale as follows: 1= All of the time; 2= Most of the time; 3= Some of the time; 4= A little of the time; 5= None of the time. Note: The variable is reverse coded.

Scaling: scales were constructed by calculating the mean across each set of items. Lower scores indicate greater levels of amplification.

Indicator XI: Question- "More or less than usual negative feelings?"

Coding: The variable is coded on a seven points Likert scale as follows: 1= A lot less negative than usual; 2= Somewhat less negative than usual; 3= A little less negative than usual; 4= About the same time as usual; 5= A little more negative than usual; 6= Somewhat more negative than usual; 7= A lot more negative than usual. Note: The variable is reverse coded.

Scaling: scales were constructed by calculating the mean across each set of items. Lower scores indicate greater levels of amplification.

Indicator X: Question- "Ever attended emotional problems support group?"

Coding: The variable is coded as: 1=Yes (condition present); 2= No (absence of condition).

Scaling: Variable is constructed by taking the total number of "Yes" responses to the items.

Source and studies using these variables include: Wang et al., 2000; Kessler et al. 1999; Kessler et al, 1998.

Victim Behavioral Problems

Although there is no universally, or even commonly, accepted definition of what is a behavior problem, there is a general agreement to what it refers to: (a) behavior that goes to an extreme - behavior that is not slightly different from the usual, (b) a problem that is chronic - one that does not quickly disappear, and (c) behavior that is unacceptable because of social or cultural expectations (McGraw-Hill, 2002). The reflective indicators measuring this exogenous latent variable as developed by Patrick et al. (2002), are:

Indicator I: Question- "Sometimes I just like to hit someone".

Coding: 1= False; 2= Somewhat false; 3= Somewhat true; 4= True.

Scaling: All scales are constructed by calculating the sum of the values of the items. All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension.

Indicator II: Question- "When people insult me, I try to get even."

Coding: 1= False; 2= Somewhat false; 3= Somewhat true; 4= True.

Scaling: All scales are constructed by calculating the sum of the values of the items. All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension.

Indicator III: "When angry I am ready to hit someone".

Coding: 1= False; 2= Somewhat false; 3= Somewhat true; 4= True.

Scaling: All scales are constructed by calculating the sum of the values of the items. All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension.

Adult Child Characteristics

Although there is no universally, or even commonly, accepted definition of what is a behavior problem, there is a general agreement to what it refers to: (a) behavior that goes to an extreme - behavior that is not slightly different from the usual, (b) a problem that is chronic - one that does not quickly disappear, and (c) behavior that is unacceptable because of social or cultural expectations (McGraw-Hill, 2002). Latent indicator variable of abuser (adult child) characteristics are as follows:

Indicator I: Question- "Alcohol/substance problems during the last 12 months?"

Coding: The variable is coded as: 1=No (condition absent); 2= Yes (condition present).

Scaling: All scales are constructed by calculating the sum of the values of the items. All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension.

Indicator II: Question- "Emotional/ psychological problems during the last 12 months?"

Coding: The variable is coded as: 1=No (condition absent); 2= Yes (condition present).

Scaling: All scales are constructed by calculating the sum of the values of the items. All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension.

Indicator III: Question- "Financial problems during the last 12 months"

Coding: 1 True of you; 2 Somewhat true; 3 Somewhat false; 4 False.

Scaling: All scales are constructed by calculating the sum of the values of the items. All items except ones marked with (R) were reverse-coded so that high scores reflect higher standing in each dimension.

Source and studies using these variables include: Patrick et al. 2002.

(Victim's) Social Isolation

This concept captures the virtual absence of interaction with others, outside of the contacts required to perform basic life functions–e.g. food shopping, transportation, work, and entertainment (McGraw-Hill, 2002). Victim's social isolation construct was measured via the following manifest indicator variables, as suggested by Keyes (1995):

Indicator I: Question- "I do not feel I belong to community?"

Coding: 1 Strongly agree; 2 Somewhat agree; 3 A little agree; 4 Don't know; 5 A little disagree; 6 Somewhat disagree; 7 Strongly disagree.

Scaling: were constructed by calculating the sum across each set of responses. Positive items were recodes so that higher scores reflect higher sense of social well-being.

Indicator II: Question- "Few close friends to share concerns with?"

Coding: 1 Strongly agree; 2 Somewhat agree; 3 A little agree; 4 Don't know; 5 A little disagree; 6 Somewhat disagree; 7 Strongly disagree.

Scaling: were constructed by calculating the sum across each set of responses. Positive items were recodes so that higher scores reflect higher sense of social well-being.

Indicator III: Question- "I don't fit in with people and community?"

Coding: 1 Strongly agree; 2 Somewhat agree; 3 A little agree; 4 Don't know; 5 A little disagree; 6 Somewhat disagree; 7 Strongly disagree.

Scaling: were constructed by calculating the sum across each set of responses. Positive items were recodes so that higher scores reflect higher sense of social well-being.

Indicator VI: Question- "I feel close to others in community?"

Coding: 1 Strongly agree; 2 Somewhat agree; 3 A little agree; 4 Don't know; 5 A little disagree; 6 Somewhat disagree; 7 Strongly disagree.

Scaling: were constructed by calculating the sum across each set of responses. Positive items were recodes so that higher scores reflect higher sense of social well-being.

Indicator V: Question-"Frequency of contact with friends?"

Coding: 1 Strongly agree; 2 Somewhat agree; 3 A little agree; 4 Don't know; 5 A little disagree; 6 Somewhat disagree; 7 Strongly disagree.

Scaling: were constructed by calculating the sum across each set of responses. Positive items were recodes so that higher scores reflect higher sense of social well-being.

Victim Background Independent Variables

Acknowledging and understanding victim demographic risk factors might prove useful for family and marriage therapist when conceptualizing cases involving physical aggression towards the elderly. Often used and tested background information in the field of marriage and family therapy research are variables such as age, gender, and marital status (Holtzworth et al., 2002). Individual victim demographic variables are available in the MIDUS II data base so they will an integral part of this dissertation model. Unfortunately this data set lacks relevant demographic information on the abuser (adult child) therefore these important background variables can't be part of the proposed model. In this study the following manifest indicators were used as model background variables to introduce and estimate the influence of certain demographic characteristics on the primary endogenous factor:

Variable 1: Victim's chronological age

Coding: Continuous variable values ranging from 65 to 89 years of age.

Variable II: Victim's gender.

Coding: Nominal level binary variable with values of 1 = Male and 2 =Female

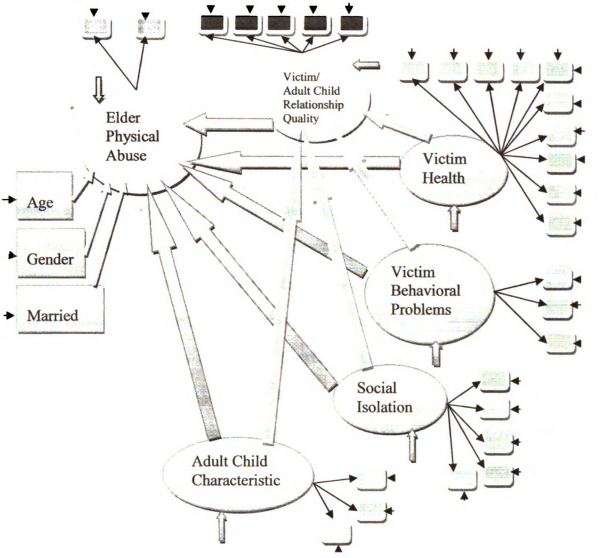
Variable III: Victim's marital status.

Coding: Nominal level binary variable with values of 1= Not married and 2 = married.

Proposed Path model

The proposed path model diagram for this study is based on the Ecological Bi-Focal model of elder abuse developed by Schiamberg and Gans (2000). This path diagram is equivalent to a set of model equations and distributional assumptions (most) and also permits a ready communication of models. Figure 3.1 (provided below) outlines the anticipated causal relationships amongst the model's 31 manifest variables with their respective six latent variables and the influence of the four exogenous variables on the mediator and the outcome endogenous latent (elder abuse) variables. The latent variables (represent concepts of main interest and are not directly observable or measurable) are designated with an oval in the model. The 31 observed manifest variables (directly measured and recorded in the MIDUS II data file) are represented with squares. Assumed explanatory relationships between the latent variables are expressed via a one way arrow and the unspecified relationships (correlation) between models' exogenous latent variables are designated with a two way curved arrow. Each manifest variable has a residual error hence all 31 will receive a short one way arrow. The model's endogenous variable (*Elder Physical Abuse*) receives five one way arrows from the exogenous variables indicating explanatory (also causal) relationships.

Figure 3.1. Full Path Model Relationships

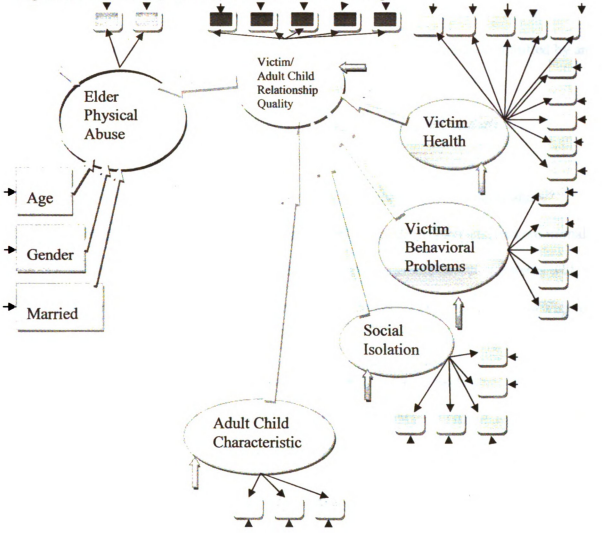


According to the social learning framework, individuals' (in our study the elderly parent and the adult child) ineffective attempts to deal with internal and external challenges result in conflictual relationship which leads to escalating conflicts between them. However, the individual's inability to deal with internal and external stressors does not automatically lead to a dysfunctional and abusive relationship (Karney & Bradbury,

1995). Consequently the relationship quality between the elder parent and adult child could be conceptualized as a mediator between the individual's internal and external challenges and the act of elder physical abuse.

Given the nested structure of MIDUS II data and the multilevel nature of the study's hypotheses, a two levels modeling approach had to be employed wherein the model presented above (full study model) contains a restricted model or mediation (model 2) which will allow the testing of mediating effects that *Victim/ Adult Child Relationship Quality* latent variable has on the *Physical Abuse* endogenous latent construct. The removal of direct loading parameters of *Victim Health, Victim Behavioral Problems, Adult Child Problems* and *Social Isolation* on the *Elder Physical Abuse* latent construct will yield the restricted model (Figure 3.2). The estimation of model 2 parameters will follow along similar dimensions as in the case of the study's full model. Shrout and Bolger (2002) suggested that the power to detect causal relationships between the exogenous and endogenous constructs ($\xi \rightarrow$ M and M$\rightarrow \eta$) through a proximal relationship in a mediated model (nested in this study) is often stronger than is the power to detect direct relationships between these variables. Accordingly, if the *Victim/ Adult Child Relationship Quality* variable is the mediator in the study's model than we should expect more robust (larger estimate values, lower corresponding error terms, and significant T- values) parameter estimates and better model fit of the nested model.

Figure 3.2 Restricted (Medition) Path Model Relationships



Specific Research Questions, Hypotheses, and Measures

I. Prevalence

1. What is the prevalence of elder physical abuse (in the sample) committed by an adult child in the family/ community setting?

   Data analysis: Univariate and descriptive analyses of sample statistics.

II. Immediate Older Adult/ Caregiver Context

2. Do victim characteristics influence the likelihood of elder physical abuse?

   Hypothesis #1 – Victim health factors (physical, psychological, and emotional, health problems) are positively related to (more severe health problems will results in higher likelihood of physical abuse) elder physical abuse (see Figure 3.1).

   Data analysis: Latent variable modeling with SEM/ LISREL.

3. Do victim behavioral problems influence elder physical abuse?

   Hypothesis #2 – Victim behavioral problems will positively correlate with (increase) elder physical abuse, (see Figure 3.1)

   Data analysis: Latent variable modeling using SEM/ LISREL.

III Victim/ Adult Child Relationship Quality

4. Does victim/ adult child relationship quality predicts elder physical abuse when allowed to mediate between the model exogenous and endogenous constructs?

   Hypothesis #3: Victim/ Adult Child Relationship Quality latent variable is positively correlated with elder physical abuse when allowed to mediate between the model's exogenous latent factors (Victim's Health, Victim Behavioral Problem, Adult Child Characteristics, and Victim's Social Isolation)

and the Elder Physical Abuse construct. Worst relationship will increase the likelihood of physical abuse. In addition, more serious victim health problems and victim social isolation will correlate with worst victim/ adult child relationship quality (negative relationship), (see Figure 3.2).

Data analysis: Latent variable modeling using SEM/ LISREL.

III. Contexts beyond focal older adult/ caregiver (ecological model testing)

5. Does the victim's social isolation influence elder physical abuse?

   Hypothesis # 4: Social isolation will positively co-vary with elder physical abuse when mediated by Victim/ Adult Child Relationship Quality otherwise its predictive effects will be non-significant.

   Data analysis: Latent variable modeling using SEM/ LISREL techniques.

6. Do adult child characteristics influence elder physical abuse?

   Hypothesis #5 Adult Child Characteristics (psychological/ emotional, alcohol and substance abuse, and financial problems) will directly correlate (positive relations) with elder physical abuse (see Figure 3.1)

   Data analysis: Latent variable modeling using SEM/ LISREL techniques

Data Analysis Plan

The initial focus in the data analytic plan will be on obtaining sample descriptive characteristics and a contingency cross-tabulation table of specific victim living arrangements with elder physical abuse. The next step will be to closely examine the MIDUS II- 65 and older, data base for systematic patterns in missing values. For this study it is assumed that missing value indicators hide true values for subjects and

variables, which are meaningful for analysis (Little & Rubin, 2002). That is, missing entries in the data set mask underlying (true) values. Therefore this dissertation study will use neither pairwise nor listwise deletion approach instead all missing data values will be imputed with Expectation Maximization (EM algorithm) used by Little's MCAR test statistic (SYSTAT software).

Since conventional regression techniques cannot be used to estimate latent variables with multiple indicators, LISREL (Linear Structural Relationships) modeling for categorical (discrete) data will be used to test hypotheses two, three, four, and five. LISREL modeling will allow a closer examination of various paths (relationships) between latent variables as well between manifest and latent variables while rejecting the unrealistic assumption that our indicators will exhibit perfect validity and reliability (absence of measurement and structural errors). Mplus statistical computer program will be employed to complete the covariance structure analysis necessary to test whether the hypothesized relationships amongst latent variables and manifest indicators and their respective are real and significant (Muthen & Muthen, 2007). The specifications of directional arrows in the model are based upon a substantive theory expressed in the Applied Ecological Bi-Focal Model for Elder Abuse as a rich set of causal conjectures, (Schiamberg & Gans, 2000). Thus published reports provided theoretical and causal grounds for the presence or absence of every directed arc in this path model.

Since this study uses recursive models, with no closed cycles formed by directed paths, the path equations of recursive models satisfy the conditions for regression equations, thus interpretation of findings will be relatively straightforward. A sufficient condition for the parameters of a measurement model to be identified (except for scaling)

is the condition that the factor loadings form independent clusters. This requires each latent variable or common factor to have at least two pure indicators if the factors are correlated and at least three if they are not (McDonald & Ho, 2002). The model's latent variables (both endogenous and exogenous) used in this dissertations study have at least two pure (overwhelmingly three or more) and correlated indicators thus it meets requirements as suggested by McDonald and Ho (2002).

The independence model (also called the null model), which assumes zero population covariances among the observed variables or complete independence amongst all variables, will be used as a baseline model to evaluate how well this doctoral candidate's model fits the MIDUS II- 65 and older- data. If the model accounts for the data well (that is for the observed covariances) and correctly estimates causal versus non-causal aspects of observed correlations then it should be somewhere in between the independence model and the saturated model (a model in which the number of estimated parameters equals the number of covariances amongst observed variables). As proposed by Muthen et al (2007), a set of goodness-of-fit indices (chi-square statistics, RMSEA, TLI, and CFI) will be used to determine the degree to which this model as a whole is consistent with the empirical data at hand (Diamantopoulos & Siguaw, 2006).

Data Analyses Rationale

The purpose of this study is to establish meaningful relationships between the outcome variables (physical and sexual abuse) and their explanatory variables (e.g. individually measurable health or behavioral problems variables) and to predict the likelihood of elder physical abuse (study's endogenous construct) given a set of

exogenous constructs based on elder abuse theories. Since the study proposes to predict the likelihood of elder physical abuse some form of statistical regression analysis must be used. The most general kind of structural equations model is a structural regression (SR) model which is also called a LISREL model (Kline, 2005) is used in this study. The SR model is a synthesis of structural and measurement models and it allows the testing of direct and indirect causal effects between latent constructs, reciprocity, measurement errors in both the dependent and independent variables, and interdependence (Joreskog & Sorbom, 2001). This allows researchers to specify constructs related to a model and then to simultaneously "test the plausibility of hypothetical assertions about potential interrelationships among the constructs as well as their relationships to the indicators or measures assessing them" (Raykov & Marcoulides, 2006, p. 1).

The assumptions made under the general LISREL framework, which are as follows: (a) multivariate normality (normal data distribution, zero means on observed variables or mean centered variables), (b) linearity (linear explanatory relationship between exogenous and endogenous variables), (c) data should be free of outliers, (d) non-spurious relationships (observed covariance matrix must be true), (e) uncorrelated error terms, (f) uncorrelated error terms with predictors in X (design matrix), and (g) I-B is invertible (Raykov & Marcoulides, 2006), will be applied to this study.

Mathematical definitions of the dissertation model

The general LISREL model for single samples continuous dependent variables is defined by the following equations:

a) Measurement part in the Y: $Y = \nu + \Lambda \ \eta + \varepsilon$, or

$$Y1 \text{ (physical abuse)} = \lambda 1F1 + E1,$$

$$Y2 \text{ (sexual abuse)} = \lambda 2F1 + E2, \text{ and}$$

b) Structural part: $\eta = \alpha + B\eta + \zeta$ where

α= intercept

λ = factor loadings,

F= factors

η= random vector of latent dependent variables

ζ= vector of structural equations errors

ε= vector of measurement errors in Y (including E1 & E2)

B = matrix of structural regression coefficients (q x q).

Λ = matrix of factor loadings (p x q)

Given the discrete nature (measurement levels) of both manifest dependent variables (physical abuse and sexual abuse) used in this study, they may exhibit more than minor violations of normality therefore the general LISREL modeling equation will not yield accurate and reliable estimates. Past research studies routinely employed statistical methods designed for continuous (at least ratio measurement level) data even if their dependent variables were measured on categorical or nominal levels (Raykov & Marcoulides, 2006). Ignoring data measurement levels yields potentially misleading and serious biases in parameter estimates, incorrect standard errors (thus T-Values as well), and serious biases in calculations of model fit and parameter restrictions (Raykov & Marcoulides, 2006). Muthén and Muthén (1984) worked out an alternative statistical modeling approach that is better suited for studies with dependent categorical (including binary) variables as it is the case here. They postulated that with a large enough sample

size (above 200) and arbitrary distribution of Y's the following model fit function would yield accurate model fit and parameter estimates (Muthén and Muthén,1984):

$F(ADF) = (s - \sigma(\gamma))' W (s - \sigma(\gamma))$,

where s and $\sigma(\gamma)$ are the strung-out vectors of non-redundant elements of S and $\Sigma(\gamma)$, and W is a weight matrix (the inverse of the asymptotic covariance matrix of elements of empirical covariance matrix S).

ADF = 'asymptotically distribution-free' method; the most general of all methods for model fitting. The ADF function will be used to assess model fit and to estimate parameters.

Since neither of the discrete manifest dependent indicators used in this study posses metric scale properties the assumption of linearity becomes an issue as well. Therefore we have to use the corresponding underlying continuous variables instead to build linear relationships. The use of the underlying metric variable is often both plausible and meaningful in empirical research and this assumption is frequently invoked within other analytic contexts outside of SEM (e.g., use of limited dependent or categorical variables in medicine, psychology or economics) (Raykov & Marcoulides, 2006). Consequently this researcher will make the assumption that for each categorical observed dependent variable there is an underlying latent continuous variable that has a normal distribution. This assumption is often convenient and will not be limiting the generalizability of results (Raykov, 2005; Raykov & Marcoulides, 2006).

In addition, the continuous latent variable (elder physical abuse) can only be crudely measured with our instrumentation (MIDUS II) and will take on a value of 0 (no abuse) or 1 (abuse). Hence the binary variables (manifest) physical abuse and sexual

abuse are the result of this measurement and are related to underlying continuous variable as:

$Y = 1$, if $Y^* > \tau$, 0, otherwise , where τ is an unknown threshold.

Furthermore, this study model stipulates that the random variable vector Y is related to an another random variable vector, X, as:

$Y^* = \pi X + \delta$, (Raykov, 2005; Raykov & Marcoulides, 2006).

where π is an unknown parameter and δ is a residual term (a random variable in its own right, with a mean of 0 and unrelated to X).

The probability of the outcome 1 (presence of abuse) on the Y variables given the predictors could be expressed as:

$P(Y = 1 \mid X = x) = F(\alpha + \beta x)$, (Raykov, 2005; Raykov & Marcoulides, 2006).

Where α and β are unknown constants (parameters) and F is either (a) the cumulative distribution function (CDF) of the standard normal distribution, or (b) the CDF of the standard logistic distribution.

The underlying continuous latent variable can be expressed as follows:

$P(Y = 1|X = x) = P(Y^* > \tau \mid x) = 1 - P(Y^* < \tau \mid x)$, (Raykov, 2005; Raykov & Marcoulides, 2006), where τ is an unknown threshold.

Finally, the underlying latent variable modeled as a linear function of predictors in this study can be expressed as:

$P(Y = 1 \mid X1=x1 \text{ and } X2=x2) = \Phi(\alpha + \beta 1\, x1 + \beta 2\, x2 + \beta 3\, x3 \ldots + \beta 28\, x28)$,

where Φ is the CDF (cumulative distribution function) of the standard normal distribution, α and β ' s are our unknown parameters that will have to be estimated.

Dealing with possible normality violations

Given the discrete nature of both manifest dependent variables (physical abuse and sexual abuse) used in this study, they may exhibit more than minor violations of normality therefore this general LISREL equation will not yield accurate and reliable estimates. For cases where normality does not hold yet the sample size is large enough (over 200) there is an alternative method for parameter estimation and model testing, (Raykov, 2005; Raykov & Marcoulides, 2006). With a large sample size and arbitrary distributions in the Y's the following fit function will yield accurate estimates and model fit:

$F(ADF) = (s - \sigma(\gamma))' W (s - \sigma(\gamma))$,

where s and $\sigma(\gamma)$ are the strung-out vectors of non-redundant elements of S and $\Sigma(\gamma)$, and W is a weight matrix (the inverse of the asymptotic covariance matrix of elements of empirical covariance matrix S).

ADF = 'asymptotically distribution-free' method; the most general of all methods for model fitting.

Relationship between latent variables and their predictors in the model

For the purposes of this study, the assumption that for each categorical observed dependent variable there is an underlying latent continuous variable is made (Raykov, 2005; Raykov & Marcoulides, 2006). Therefore the binary manifest variables (physical abuse and sexual abuse) are the result of this measurement and are related to underlying continuous variable as:

$Y = 1$, if $Y^* > \tau$, 0, otherwise, where τ is an unknown threshold.

The probability of the outcome 1 (presence of abuse) on the Y variables given the predictors could be expressed as:

$P(Y = 1 \mid X = x) = F(\alpha + \beta\ x)$, (Raykov, 2005; Raykov & Marcoulides, 2006).

Where α and β are unknown constants (parameters) and F is either (a) the cumulative distribution function (CDF) of the standard normal distribution, or (b) the CDF of the standard logistic distribution.

The underlying continuous latent variable can be expressed as follows:

$P(Y = 1|X = x) = P(Y^* > \tau \mid x) = 1 - P(Y^* < \tau \mid x)$,

(Raykov, 2005; Raykov & Marcoulides, 2006), where τ is an unknown threshold.

Finally, the underlying latent variable modeled as a linear function of predictors in this study can be expressed as:

$P(Y = 1 \mid X1=x1 \text{ and } X2=x2) = \Phi(\alpha + \beta 1\ x1 + \beta 2\ x2 + \beta 3\ x3 \ldots + \beta 28\ x28)$,

where Φ is the CDF (cumulative distribution function) of the standard normal distribution, α and β's are unknown constants (parameters).

CHAPTER IV: RESULTS

Descriptive Statistics

This study empirically examined the structural relationships between four hypothesized latent exogenous factors (*Victim's Health, Victim's Behavioral Problems, Victim's Social Isolation, and the Adult Child's Characteristics*) and the main endogenous latent variable (*Elder Physical Abuse*). This approach is based on the ecological theory of elder abuse in the community as proposed by Schiamberg and Gans (2000) and the related recommendations for elder abuse theory and theory testing by the NRC Panel, NRC,2003). LISREL data modeling with ordinal variables was used to test hypothesized relationships between theoretical constructs at various ecological levels. A second covariance structure data model was employed to examine the mediating role of the *Victim/ Adult Child Relationship Quality* factor in the process of elder abuse.

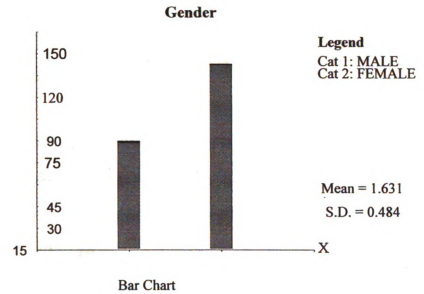
The first part of this chapter will describe the dissertation study sample characteristics from a bi-focal perspective, including both elderly parent and adult child demographic frequencies. In addition, this subsection will contain results of sample based univariate statistics on the manifest dependent variables and missing data analyses. The following subsection will provide an overview of analyses results obtained with LISREL data modeling. Results of model fit will be presented and discussed in terms of how well they reproduce the observed data. In addition, the measurement parts of both models will be examined and evaluated to determine the validity and reliability of measures used. Finally, the hypotheses testing results, power assessments, and additional model diagnostics will be presented at the end of this chapter.

Sample Based Descriptive Statistics

Older Adult Descriptive Statistics

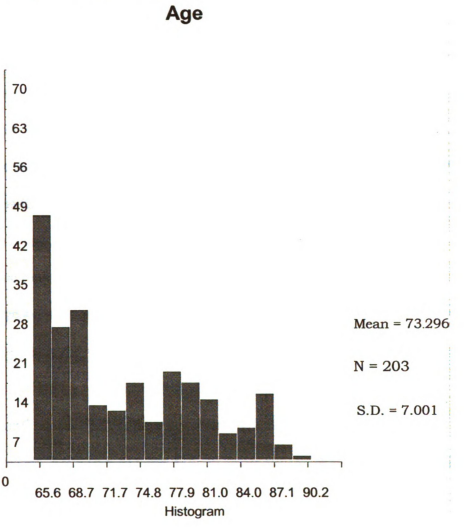
This section will provide an answer to the research question: What is the prevalence of elder physical abuse (in the sample) committed by an adult child in the family/ community setting? For the purposes of this dissertation study 203 older adults respondents from the MIDUS II survey meet the dual selection criteria of: (1) being 65 years or older at the time of interviews and (2) residing with an adult child caregiver. Of the 203 total sample of elderly respondents 63.1% (n = 128) participants were females and 36.9% (n = 75) were males, (see Figure 4.1). This gender value distribution is unique to the sample used for this dissertation study because this variable had different distributional (53% females versus 47% males) properties in the original MIDUS II sample (n=4,963).

Figure 4.1. Gender Univariate Result



The age manifest variable was considered continuous (normal distribution) with a mean of 73.296 and standard deviation of 7.001. Given the selection criteria, (variable range between 65 to 90 years), the data distribution was larger on the left distribution tail, (see Figure 4.2). These findings make sense since age is strongly correlated (positive relationship) with the presence of chronic and debilitating illnesses that result in death (whether natural or suicide) in the oldest of the old population (65 years or older). In addition, Figure 4.2 clearly indicates a terminal decline in health after reaching age 87.

Figure 4.2. Age Univariate Results



The skewness (0.564) and kurtosis (-0.902) of the Age variable were within expected limits given a sharp increase in mortality rates due to physical, psychological, emotional illnesses after age 65.

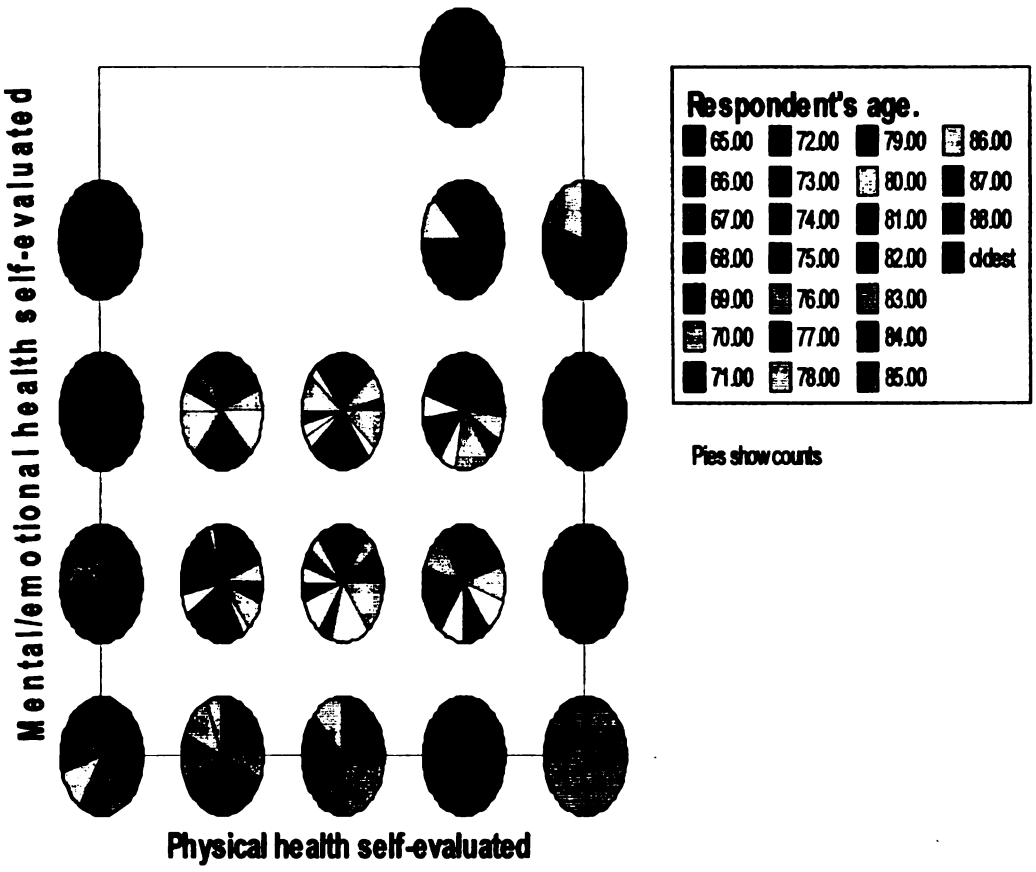
Of the total 203 respondents 63.5% (n = 129) reported that they were married and the remaining 36.5% (n = 74) were either never married (n = 1), or separated (e.g. divorced, separated, or widowed). It is important to note that in the dissertation sample a

high percentage of abused older adults (63.5%) were still married and resided with a spouse. These proportions are even higher (71% married versus 29% not married), as expected, in the complete (N= 4,963) MIDUS II sample. These sample based statistics appear to suggest that since a higher percentage of older adults were married they probably still lived in their own home. Consequently more adult children lived in their elderly parents' home than older single adults at their children's residence. These results might be due to individual adult child characteristics (e.g. psychological/ emotional, substance abuse, and financial problems). In addition, these results raise more questions (e.g. whether only one, the respondent, or both parents were abused by the adult child) than we have answers at this stage. Statistical data modeling, analyses, and structural results presented in the second part of this chapter might provide answers to these questions.

Regarding the racial make up of the sample, 88.7% (n = 180) reported that they were Caucasians, 3.9% (n = 8) were African American, 1.5% (n = 3), and 5.4% (n = 11) indicated that their race was "other". Demographic results were similar in the unrestricted MIDUS II sample where 90% indicated that they were Caucasians, 4% African Americans, and 5% other. This skewed population sample demographic results might be due to the uncertainty introduced by the MIDUS investigators because they used over five variables to measure this one dimension, thus possibly confusing respondents. Consequently the race variable is not an accurate indicator to measure this very important demographic characteristic in this study. This issue will be addressed in the research limitations section.

Regarding education level, the largest percentage were high school graduates (n = 64, 63%), while over 18.3% (n = 37) reported of having obtained either a Bachelors or Masters Degree. A significant percentage, 16.6% (n = 34), of respondents never completed the requirements for high school graduation. 2% (n = 4) of respondents had a PhD level degree. Regarding religious preference, 86.8% (n = 161) of respondents identified themselves as belonging to a Christian denomination, 3.6% (n = 7) identified themselves as Jewish, and 3.1% (n = 6) indicated that they were Mormons. 8.7% (n = 17) of respondents indicated no religious preference. Regarding employment status, 47.3% (n = 96) reported that they were retired while 40.4% (n = 82) checked the employment or self-employed boxes. Since the victim's psychological/ emotional and physical health are important indicators of elder abuse, it is vital to provide frequencies in this are as well. Respondents rated mostly their physical health as good to very good [mean = 7.21 on a scale from 1 (poor) to 10 (excellent)] and their psychological/ emotional health as fair to good [mean = 2.28, on a scale from 1(poor) to 5 (excellent)], (See Figure 4.3).

Figure 4.3. Physical, Psychological Health Sliced by Age



It can be concluded that in this sample older adults in general had a more positive perception of their physical health than their psychological/ emotional well-being. For additional demographicsinformation consult Table 4.1.

Table 4.1. Elderly Parent Characteristics

Demographic s	**Frequencies**	**Percentages**
Age	65-70 years old: 95	46.8%
	71-75 years old: 33	16.3%
	76-80 years old: 37	18.2%
	81-85 years old: 22	10.8%
	86 and above: 16	7.9%
Gender	Male: 75	36.9%
	Female: 128	63.1%
Race	Caucasian: 180	88.7%
	African American: 8	3.9%
	Native American: 3	1.5%
	Other: 11	5.4%
Marital Status	Married: 74	36.5%
	Not Married: 129	63.5%
Education	Not high school: 34	16.7%
	High school: 64	63%
	BA/ Masters: 37	18.3 %
	PhD or Equiv.: 4	2%

Adult Child (Caregiver) Descriptive Statistics

Although adult children (caregivers) of older adults did not complete the MIDUS II surveys, nevertheless information provided by their parents could be used to assess unique characteristics such as substance abuse, or financial the stress and burden that might play a role in the process of elder abuse, (See Table 4.2). In this dissertation sample, 24.9% (n = 43) of older adults reported that their adult children suffered from a major chronic illness during the last 12 months and 27% (n = 47) had a frequent minor illnesses. In addition, 38.3% (n = 69) of adult child caregivers suffered from frequent psychological and emotional problems that could have a negative impact on their care delivery approach and potential behavioral problems. A total of 21% (n = 38) of adult child caregivers appeared to have had a substance/ alcohol abuse problem during the last 12 months and a significant proportion, 49.4% (n = 88), had financial difficulties for the last 12 months. Regarding relationship difficulties, a total of 31.1% (n = 56) of adult care giving children had marital problems in their own homes, 15.2% (n = 27) had work related relationship issues, and 25.6% (n = 46) had difficulties in finding and or keeping an employment. Moreover, 15.2% (n = 27) of adult caregivers had significant legal and systemic problems during the last 12 months. Out of 203 elderly participants, 12.9% (n = 23) reported that their children had behavioral problems, including problems associated with others. As well, a total of 6.4% (n = 130) older adults reported that family interaction with children at home tended to be negative, (See Table 4.2).

Table 4.2. Adult Child Characteristics

Adult Child Characteristics	**Frequencies**	**Percentage**
Suffering from Major Physical	YES - 43	Yes - 24.9%
Illness	NO -160	No -75.1%
Suffering from Minor Physical		
Illness	YES -47	YES - 27%
	NO - 156	NO - 73%
Psychological/ Emotional	YES – 69	YES - 38.3%
Illnesses	NO - 34	NO - 61.7%
Substance Abuse Problems	YES – 38	YES – 21%
	NO - 165	NO - 79%
Marital Problems	YES – 56	YES - 31.1%
	NO- 147	NO - 68.9%
Financial Problems	YES – 88	YES – 49.4%
	NO - 115	NO - 50.6%
Employment Problems	YES – 27	YES – 25.6%
	NO - 176	NO - 74.4%
Total	**203**	**100%**

Finally, 12.2% (n = 45) reported that it was difficult for them to maintain close relationships, 7.2% (n = 28) indicated that they did not fit in their community, and 10.3% (n = 35) felt that they had few friends with whom they could share their concerns. In addition, 9.8% (n = 37) of elderly participants reported that they had no warm and trusting relationships with others in their family.

Manifest Dependent Variable Frequencies and Distributions: Prevalence of Physical Abuse

Of 203 respondents, 5.9% (n = 12) reported that they were physically abused and 9.4% (n = 19) indicated that they were sexually assaulted. In total, 15% (n=31) of elderly respondents indicated that they were victims of physical abuse. In the complete MIDUS II sample 6% of respondents indicated that they were physically abused at some point in time and 7% indicated that they were sexually abused. These results are in accordance with conclusions reached in historical elder abuse prevalence where physical abuse ranged from 2% to 10% (Lachs et al, 2004).

These two dependent variables are discrete thus their distributional properties are not considered norml (See Figure 4.4 and 4.5).

Figure 4.4. Elder Physical Abuse Univariate Results

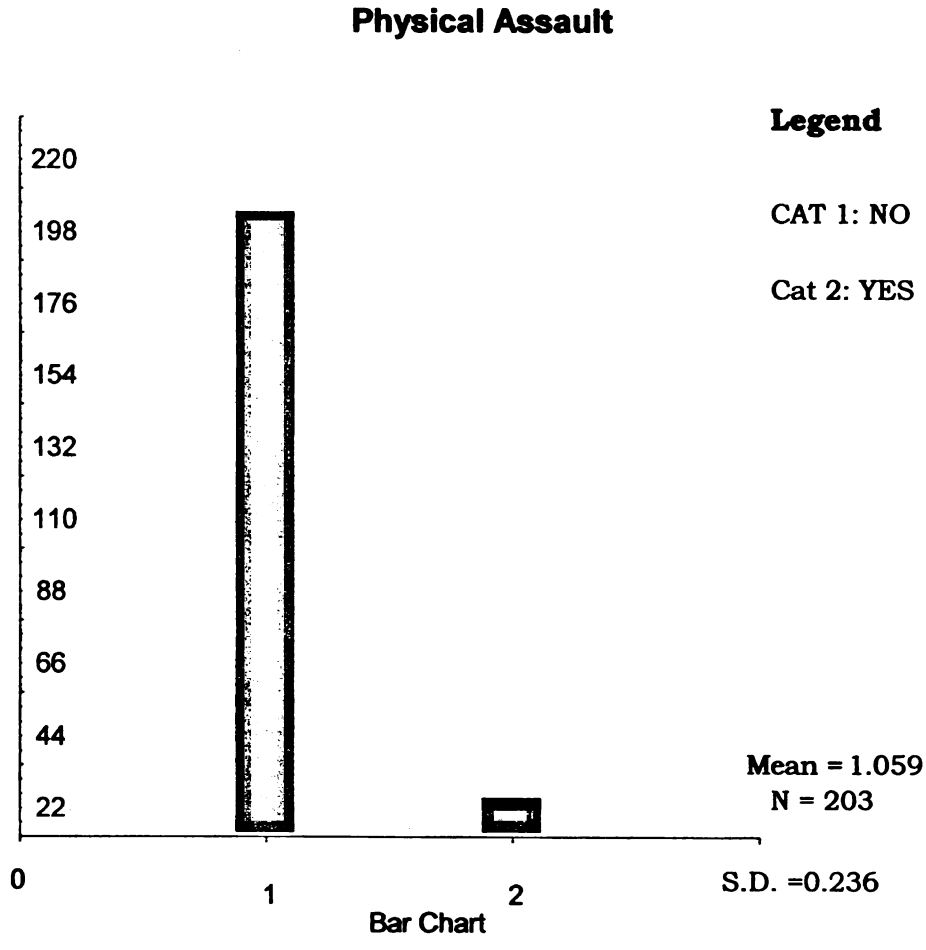
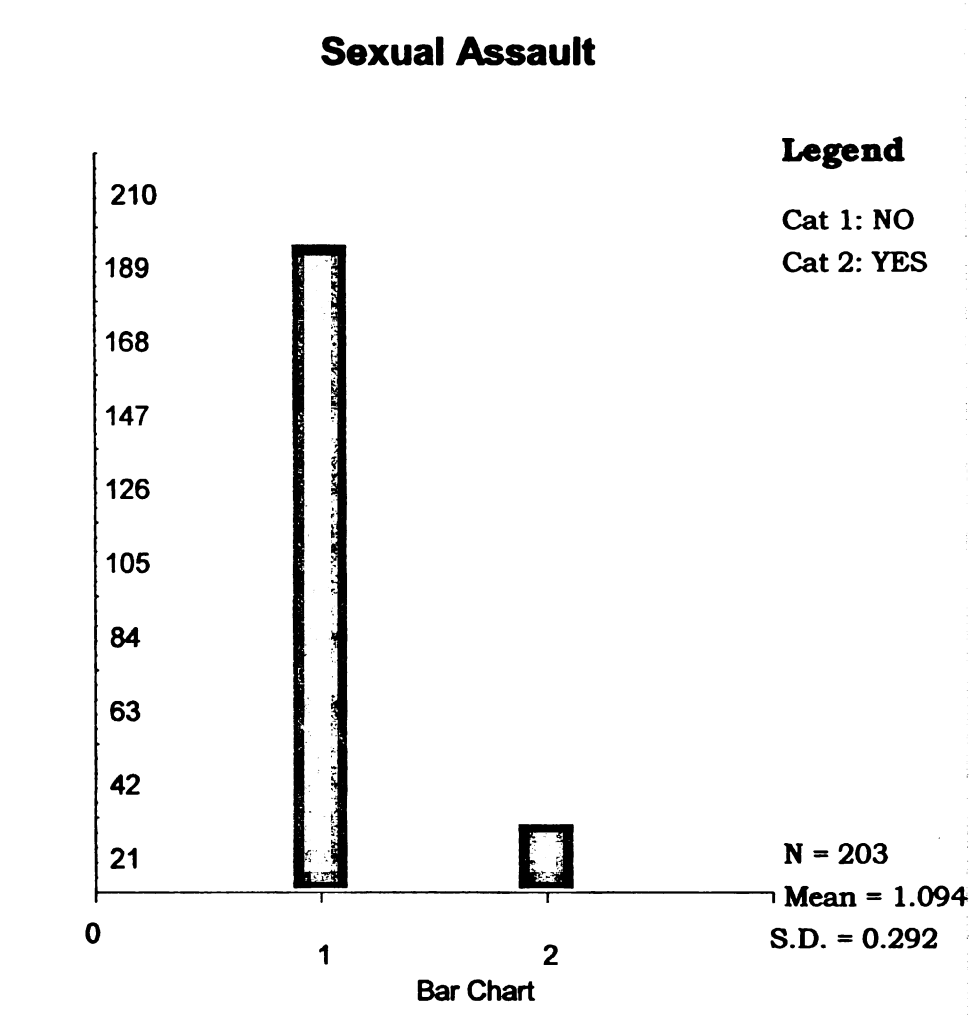


Figure 4.5. Elder Sexual Abuse Univariate Results



Both manifest outcome variables have a larger data value pile up on the left side of distribution (e.g. response No). Since the assumption of normality will not be invoked in the data analysis, dealing with data distribution skewness and kurtosis is not necessary. Specific data related information on the outcome manifest indicators is included in Table. 4.3.

Table 4.3. Univariate properties of manifest dependent variables.

Variables	Mean	Standard Deviation	Skewness	Kurtosis
Elder Physical Abuse				
Physical Abuse	1.094	0.236	3.767	9.310
Sexual Abuse	1.097	0.292	2.811	5.963

Given that both manifest dependent variables (physically and sexually abused) are discrete (dichotomous) with binary coding of (1 = No; 2 = Yes) and do not represent measurements on an interval or ratio scales, they cannot be treated as variables with interval scale properties. Furthermore, computing the appropriate covariance matrix (polychoric) and subsequently analyzing it with either the maximum likelihood (ML) or the generalized least squares (GLS) method may yield distorted parameter estimates, incorrect standard errors and goodness of fit indices in the model (Joreskog & Sorbom, 2001). Therefore the weighted least squares parameter estimator using a diagonal weight matrix (full weight matrix) with standard errors, mean, and variance adjusted chi-square test statistics was used, in addition to the delta (logit regression) parameterization option (Muthen & Muthen, 2007).

Results of Missing Data Modeling

Larger data sets such as the MIDUS II routinely have missing values due to such factors as equipment failure, fatigue of respondents, or attrition of cases. While few missing values in a large data file such as the MIDUS II might be of little concern

however a substantial number of missing observation pose a problems (Allison, 2001). For the purposes of this study, values were considered missing if they met any of the following criteria: (1) no response provided by the participant, blank space left, (2) where available the no response option was marked, (3) if more than one response was provided on a given item (Allison, 2001).

Missing data patterns were statistically modeled to determine whether data were missing at random or not (Little & Rubin, 2002). Based upon Little's MCAR test results (e.g. p-value larger than 0.05 therein rejection of the null hypothesis (H0: There is a pattern to missing data) it was determined that data were missing at random in the dissertation sample. In addition, missing data was within acceptable statistical tolerances. In this study no individual variable had more than 10% of missing values. Missing data was within acceptable statistical tolerances. In this study no individual variable had more than 10% of missing values. 95.7% (n=6219) of response values were complete and only 4.3% (n=277) of values had missing data. The univariate analysis of missing variables yielded a mean of 7.2114 and standard deviation of 1.7273 statistics. Data ranges were checked for each variable entered (n=203) to ensure that all data were entered within the prescribed ranges. Of the over 12,000 cells ranges examined, slightly over 4% of the cases had at least one value outside the delineated variable ranges. These values were marked missing and treated as such. The statistical modeling of missing data patterns and results of the Little's MCAR tests yielded highly non-significant chi-square values such that the null hypothesis (H0: data missing at random) was not rejected. Estimated new values were imputed using the SYTSTAT statistical program. Results suggest that data values were missing at random with no identifiable pattern for missing data).

Mathematical equations used to compute estimates

The structural relationships between the latent factors modeled in this study will be given by the following mathematical equations:

$P(Y = 1|X = x) = P(Y^* > \tau \mid x) = 1 - P(Y^* < \tau \mid x)$, (Raykov, 2005; Raykov & Marcoulides, 2006), where τ is an unknown threshold, Y^* is the underlying latent normal variable, Y is a random vector of criterion variables, and X is the random vector of predictor variables. Therefore the Elder Physical Abuse endogenous latent variable, modeled as a linear function of its predictors can be expressed as:

$P(Y = 1 \mid X1=x1 \text{ and } X2=x2) = \Phi(\alpha + \beta 1\, x1 + \beta 2\, x2 + \beta 3\, x3 \ldots + \beta 28\, x28)$,

where Φ is the CDF (cumulative distribution function) of the standard normal distribution, α and β's are unknown constants (parameters).

An alternative method for formally presenting the dissertation model involved taking the inverse from of both sides of the above equation (note that the inverse function of Φ exists, since the CDF's of the standard normal like of the logistic distribution are monotonically strictly increasing and invertible) and expressing the result as:

$$\Phi^{-1}[P(Y = 1 \mid X1=x1 \text{ and } X2=x2)] = \alpha 1 + \beta 1\, x1 + \beta 2\, x2 + \beta 3\, x3 \ldots + \beta 28\, x28$$

LISREL Data Modeling Results: Full and Restricted Models

The reporting of results will conform to guidelines set forth by Raykov et al (1991) and McDonald et al (2002). For example, the analysis of the MIDUS II covariance matrix reflects the theoretical framework of the Ecological Bi-Focal Model for Elder

Abuse framework (Schiamberg & Gans, 2000), in accordance with the statistical/ mathematical theories discussed above. Two LISREL data models, the full model and a restricted model, were designed to allow the empirical examination of the assumptions and conclusions of the Ecological Bi-Focal Model for Elder Abuse. The conceptualization and specification of both the full and restricted models were similar, with the exception that the latter model having four restrictions (e.g. direct paths from the exogenous variables to the endogenous factor restricted).

The restricted model, where H_0 also holds, was nested in the full fitted model. The null hypothesis, H_0, states that "There exist (admissible) parameter values with which the model reproduces perfectly the population covariance matrix." That is, in the parameter space (of all meaningful values of all parameters), there exists a point γ such that $\Sigma = \Sigma(\gamma)$; where Σ denotes the population covariance matrix; H1: $\Sigma > 0$ (e.g., Σ is positive definite). The input readings terminated normally and both models were identified and converged yielding admissible solutions. No Heywood cases (e.g. parameter estimates with illogical values such as negative variance estimates and or correlation between factor and indicator with an absolute value greater than one) were present in the covariance matrix. Weighted least square parameter estimator (WLSMV) was used. Six first order factors were extracted from the covariance matrix and all had Eigen values over 2.000 and their position were above the elbow on the scree plot. The correlation matrix of six factors is presented below (Table 4.4).

Table 4.4. Six Factors Correlation Matrix

Victim's Health	1.000					
Social Isolation	0.403	1.000				
Adult Child Behav. Problems	0.381	0.187	1.000			
Victim/ Abuser Relationship	0.567	0.538	0.405	1.000		
Victim Behavioral Problems	0.331	0.489	0.001	0.204	1.000	
Elder Physical Abuse	0.693	0.153	0.566	0.468	0.227	1.000

Attributes Loadings in Both Models

Model attributes loading on the first factor, *Victim's Health*, were: "Parkinson disease", "History of neurological disorders", "Chronic health/ medical conditions", "Anxiety disorder", "Felt sad/ depressed for over two weeks during the last year", "Mental/ emotional health self-evaluated", "Felt upset frequency", "Felt angry frequency", "More or less than usual negative feelings", and "Ever attended emotional problems group". Attributes loadings on the *Social Isolation* factor were: "Do not feel I belong to community", "Few close friends to share concern with", "Don't fit in with people and community", "Feel close to others in community", and "Frequency of contact with friends". Factorial loadings on the *Victim Behavioral Problems* were: "Sometimes just like to hit someone", "When people insult me, try to get even", and "When angry I am ready to hit someone". Attributes loadings on the *Adult Child Characteristics* were: "Children financial problems", "Children alcohol / substance abuse problems", and "Children psychological/ emotional problems". Attributes loadings on the *Victim/ Abuser*

Relationship were: "Rate current relationship with your child", "Child has difficulty getting along with others", "Rate control over the relationship with your child", "Rate thought/ effort put into relationship with your child", and "Family life with your child is more negative". Finally, both the physical abuse and sexual abuse variables loaded on the dependent latent variable, *Elder Physical Abuse.*

The Full Model

The full dissertation model converged after few iterations and yielded admissible estimates. The overall full model fit was adequate ($\chi 2 = 83.117$; with 69 degrees of freedom; $p = 0.1182$). Based upon the large p-value ($p > 0.05$) the model's null hypothesis [Ho: $\Sigma = \Sigma(\gamma)$] is not rejected, implying that the model fits more than adequately in the population. Since the chi-square statistics is sensitive to sample size and violations of the multivariate normality assumptions this index should be regarded as a goodness (or more accurately badness) of fit measure rather than a test statistics (Diamantopoulos & Siquaw, 2006). A rule of thumb when evaluating this measure is that a large $\chi 2$ –value corresponds to bad fit and a small $\chi 2$ –value to good fit when compared to the corresponding degrees of freedom. The full models chi-square value (83.835) is considerably less than twice the degrees of freedom (2 times 69) therefore it can be concluded that the model as a whole adequately fits the population covariance matrix.

The comparative fit index (CFI) assesses the relative improvement of the dissertation model compared with a baseline model. The baseline model assumes zero population covariances among the manifest variables. The baseline chi-square was 344.138, with 56 degrees of freedom, and a highly significant p value (p = 0 .000). If we

compare the baseline chi-square value (344.138) to the full models chi-square value (95.329), it is evident that the full model is a significant improvement over the null model. This yields a significant CFI of 0.953 which indicates a good fit.

The Tucker-Lewis index (TLI) represents the dimension at which the model being tested falls on a continuum ranging from an unconstrained null model to perfect fit of the hypothesized model while correcting for model complexity (meaning that it favors a parsimonious model). The full model had a TLI of .960, indicating a good model fit. Literature on structural equation modeling recommends relying upon the CFI and TLI for model assessment (Diamantopoulos & Siquaw, 2006). Since both indices were significantly above 0.900, therefore it could be concluded that the full model as a whole is consistent with the empirical data at hand.

The Root Mean Square of Approximation (RMSEA) is a population based index and it focuses on the discrepancy between Σ and $\Sigma(\gamma)$. The RMSEA index indicates how well the model, with unknown but optimally chosen parameter values, would fit the population covariance matrix if it were available (Diamantopoulos & Siquaw, 2006). For the full model, the RMSEA (0.032) indicates an adequate fit.

In addition, the RMSEA index can be used to assess the power of the dissertation model and answer the important question: If the fit is good for the population (RMSEA = .032) then do we have a high probability with this sample size to reject a hypothesis that is bad? Consulting the "Power of a test of poor fit and sample sizes needed for powers of .80 and .90" table provided by (MacCallum et al., 1996) it becomes evident that our sample size (203) required for 67 degrees of freedom exceeded the number of observations needed for a power of 0.80.

Measurement Dimension of the Full Model: Validity and Reliability

To evaluate the adequacy and theoretical significance of the full model was first necessary to examine the relationships between the latent variables and their indicators. Unless we are convinced that our measurements can be trusted, any assessment of theoretical and substantive relations of interest will be problematic at best. Therefore an evaluation of the measurement model must precede the evaluation of structural part. The aim here is to determine the validity and reliability of the measures used to represent the constructs of interest. The validity of manifest indicators can be ascertained by examining the magnitude and significance of the model paths between the latent variables and their manifest variables. In order to be a valid measure of a theoretical construct, the indicator must substantially load on its respective latent variable and its magnitude must significantly differ from zero. The full model factorial loadings on the respective latent variables are provided below (Table 4. 5).

Table 4.5. Full Model Factor Loadings

Manifest Variables Measuring Exogenous Variables	Loadings Estimates	T-Values	Statistical Significance
	Victim's Health		
History of Parkinsons	1.000	N/A	N/A
History of Neurological Dis.	0.439	2.329	0.020
Chronic Medical Conditions	0.710	2.247	0.025
Anxiety Disorder	0.926	3.886	0.000
Emotional/ Psychological Measures			
Felt Depressed for 2+wks	0.383	5.116	0.000
Mental Emotional Health	-1.340*	-5.396	0.000
Felt Upset Frequency	0.788	5.455	0.000
Felt Angry Frequency	-0.502*	-4.612	0.000
Negative Feelings	-0.503*	-4.151	0.000
Ever Attended Emotional Group	-1.130*	-6.125	0.000
	Victim's Behavioral Problems		
Sometimes Just Like to Hit Someone	1.000	N/A	N/A
When insulted I Try to Get Even	1.192	4.587	0.000
When Angry I am Ready to Hit	-0.319	-3.249	0.001
	Victim's Social Isolation		
Do Not Feel I Belong to Community	1.00	N/A	N/A

Table 4.5 Continued

Manifest Variables Measuring Exogenous Variables	Loadings Estimates	T-Values	Statistical Significance
	Social Isolation		
Few Close Friend	1.505	4.349	0.000
Don't Fit in with People and Community	1.213	4.815	0.000
Feel Close to Others in Community	-0.489*	-3.697	0.000
Frequency of Contac with Friends	0.376	2.750	0.006
	Adult Child Charater.		
Children Emotional/Psych Problems	1.00	N/A	N/A
Children Alc./ Substance Abuse Problems	0.864	13.797	0.000
Children Financial Problems	0.929	11.303	0.000
	Victim/ Child Relat.		
Rate Relationship with your Child	1.00	N/A	N/A
Child Difficult to Get Along With	-0.247*	-2.007	0.048
Rate the Thought/Effort you Put into Relationship	1.661	7.625	0.000
Rate Control over Relationship w. Child	0.354	1.966	0.050
Family Life with Child is More Negative	-0.308*	-6.659	0.000
	Physical Abuse		
Ever Physically Abused	**1.00**	**N/A**	**N/A**
Ever Sexually Abused	**1.154**	**14.412**	**0.000**

* Reverse coding

Inspection of Table 4.5 reveals that all parameter estimates are significantly different from zero in the population as indicated by their t-values (greater than the absolute value of 1.96). Therefore all 28 manifest indicators appear to be valid measurements of their specific latent constructs.

The manifest indicators of the *Victim Health* latent variable all loaded robustly (T value over 1.96 and two tailed p value less than .05) and their sign was as expected. The "Mental/ emotional health self-evaluated" manifest variable (coded from negative, low numbers to positive, higher numbers) had the highest loading (λ = -1.340, t-value= -5.396, $p < 0.000$). The presence of a diagnosis of neurological disorders manifest variable had the weakest loading (λ = 0.439, t-value= 2.329, $p < 0.013$) on the *Victim Health* latent variable. The negative signs before the four emotional/ psychological health variables are due to reverse coding (See Table 4.4).

The attributes loadings on the *Social Isolation* factor loaded significantly with "Few Close Friends to Share Concerns with" having the highest values (λ = 1.505, t-value = 4.349, $p < 0.000$) and "Feel Close to Others in Community" had the lowest value (λ = -0.489, t-value= - 3.697, $p < 0.000$). The negative sign for this loading is due to reverse coding (See Table 4.4) and in accordance with the hypothesized relationship.

Factorial loadings on the *Victim Behavioral Problems* were high, ranging from the lowest "When angry I am Ready to Hit Someone", (λ= -0.319, t-value = -3.249, $p < 0.001$) to the more robust "When People Insult Me I Try to Get Even" (λ= 1.192, T value=4.587, $p < 0.000$). The negative sign for this indicator is due to reverse coding (See Table 4.4)

Attribute loadings on the *Adult Child Characteristics* were robustly high indicating good psychometric properties and unidimensionality. Loading values ranged from the lowest, "Children financial problems", (λ= 0.864, t-value= 13.797, $p < 0.000$) to the highest, "Child Substance Abuse Problem" (λ = .929, t-value = 11.303, $p < 0.000$). The signs for the loadings were as hypothesized. In fact, child substance abuse problems were the strongest predictors of the likelihood elder abuse in the model.

Attribute loadings on the *Victim/ Abuser Relationship Quality* endogenous factor yielded robust scores, ranging from the lowest, "Children Had Difficulties Getting Along with Family Members" (λ = -.247, t- value = 2.007, $p < 0.000$) to the highest, "Rate Control over Your Relationship with Child" (λ = 1.192, t-value = 4.587, $p < 0.000$). All loadings on this latent variable were different from zero in the population and were statistically significant. The negative sign for the indicators "Children Difficult to get Along with Family Members" and "Family Life with Children More Negative", are due to reverse coding therefore all signs were as hypothesized.

The reliability of the full model indicators can be examined by looking at their squared multiple correlations. The model estimated individual R-squares indicate the proportions of variance in an indicator that is explained by its underlying latent variable. In the full model the most reliable indicators were as follows: (1) "Children psychological/ emotional problems", R^2 - 0.915; (2) "Children alcohol/ substance abuse problems", R^2 - 0.798; (3) "Ever sexually abused", R^2 - 0.711; and (4) "Children financial problems", R^2 - 0.696. The least reliable indicator in the model was the "Rate

thought/ effort put into relationship with your children" (R^2 = 0.028) variable. The most reliable latent variable was the *Elder Physical Abuse* (R^2 = 0.725).

Restricted Model (Mediator): Testing the Mediating Effects of Victim/ Abuser Relationship Factor

The restricted model converged after few iterations and yielded admissible estimates. The overall model fit was adequate ($\chi 2 = 84.834$; with 67 degrees of freedom; $p = 0.0697$). Although the full model's fit is more robust, nevertheless results suggest that the restricted model adequately fits in the population. Based upon the relatively high p-value ($p > 0.05$) the restricted model's null hypothesis [Ho: $\Sigma = \Sigma(\gamma)$] is not rejected, implying that the there exist admissible parameter values with which the model reproduces perfectly the population covariance matrix. In addition, the restricted model's chi-square value is considerably less than twice its degrees of freedom (2 times 67) consequently it is safe to conclude that the model as a whole adequately fits the population covariance matrix.

The next measure to consider in evaluating the restricted model's fit is the RMSEA, estimate which did not exceed 0.036, confirming that the restricted model fits acceptably in the population. Consequently the discrepancy between Σ and $\Sigma(\gamma)$ is close enough to yield accurate model parameter estimates.

In addition, the restricted model had a CFI of 0.941 and a TLI of 0.948, suggesting once again a good model fit. The baseline model chi-square in this study came to 361.938, with 59 degrees of freedom, and a highly significant p value ($p = 0.000$). If we compare this baseline chi-square value to the restricted model's chi-square value (84.834.329), it is

evident that the restricted model is a significant improvement over the null model. In summary, it can be concluded that the restricted models as a whole fits adequately in the population.

Measurement Dimension of the Restricted Model: Validity and Reliability Results

There are no conceptualized and or practical differences between the full and the restricted models in regards to the measurement side psychometrics. Thus, the evaluation of the measurement part of the model is fairly straightforward and results are not unlike the ones discussed in previous subsection. The restricted model's factorial loadings on the respective latent variables are provided below (Table 4. 6).

Table 4.6. Restricted Model Factor Loadings

Manifest Variables Measuring Exogenous Variables	Loadings Estimates	T-Values	Statistical Significance
	Victim's Health		
History of Parkinsons	1.000	N/A	N/A
History of Neurological Dis.	0.776	4.664	0.000
Chronic Medical Conditions	0.699	2.225	0.026
Anxiety Disorder	0.909	3.747	0.000
Felt Depressed for 2+wks	0.270	4.950	0.000
Mental Emotional Health	-1.346*	-5.282	0.000
Felt Upset Frequency	0.785	5.405	0.000
Felt Angry Frequency	-0.488*	-5.363	0.000
Negative Feelings	-0.694*	-4.891	0.000
Ever Attended Emotional Group	-1.153*	-5.986	0.000
	Victim's Behavioral Problems		
Sometimes Just Like to Hit Someone	1.000	N/A	N/A
When insulted I Try to Get Even	1.366	3.639	0.000
When Angry I am Ready to Hit	-0.617*	-2.762	0.006
	Victim's Social Isolation		
I Do Not Feel I Belong to Community	1.00	N/A	N/A

Table 4.6 Continued

Manifest Variables Measuring Exogenous Variables	Loadings Estimates	T-Values	Statistical Significance
	Social Isolation		
Few Close Friend	1.621	4.159	0.000
Don't Fit in with People and Community	1.278	4.838	0.000
Feel Close to Others in Community	-0.535*	-3.979	0.000
Frequency of Contac with Friends	0.403	2.130	0.033
	Adult Child Charater.		
Children Emotional/Psych Problems	1.00	N/A	N/A
Children Alc./ Substance Abuse Problems	0.864	13.981	0.000
Children Financial Problems	0.937	11.678	0.000
	Victim/ Child Relat.		
Rate Relationship with your Child	1.00	N/A	N/A
Child Difficult to Get Along With	-0.480*	-2.086	0.037
Rate the Thought/Effort you Put into Relationship	1.890	6.950	0.000
Rate Control over Relationship w. Child	0.436	1.990	0.050
Family Life with Child is More Negative	-0.390*	-5.789	0.000
	Physical Abuse		
Ever Physically Abused	**1.00**	**N/A**	**N/A**
Ever Sexually Abused	**1.193**	**14.267**	**0.000**

* Reverse coding

Inspection of Table 4.6 reveals that all of the parameter estimates are significantly different from zero (at $p < 0.05$ or better) as indicated by t-values well in excess of 1.96 in absolute terms. This provides validity evidence in favor of the 28 manifest indicators used to represent latent variables of interest. The measurement error variances of these 28 indicators were within normal ranges (e.g. zero/ close to zero measurement errors) suggesting no model specification problems. A closer look at the indicator loadings on the *Victim Health* latent variable reveals that every directly measured manifest variable loaded robustly (t-value greater than the absolute value of 1.96) and their sign were as hypothesized at the model conceptualization stage. The unstandarized loading of indicator "Ever Attended Emotional Support Group" had the greatest loading value ($\lambda = -1.153$, t-value = -5.986, $p < 0.000$). "The presence of depressive thoughts for the last two weeks" indicator had the weakest unstandardized loading value ($\lambda = 0.270$, t-value = 4.950, $p < 0.000$) on the *Victim Health* factor. The negative signs before the four emotional/ psychological health variables (see Table 4.6) are due to reverse coding, as discussed in the full model section. Inspections of standardized loading values reveal a similar trend. The "Ever attended emotional support group indicator" had largest standardized value (0.737) and the "Presence of depressive thoughts for the last two weeks" had the smallest number (0.305). "Ever attended emotional problems group" ($R^2 = 0.543$) variable was the most reliable indicator of the *Victim Health* factor and the "Felt sad/ depressed for the last two weeks" was the least reliable ($R^2 - 0.093$).

Every manifest indicator of the *Social Isolation* factor loaded significantly and appeared to measure a unidimensional construct. The "Contact with friends frequency" had the lowest loading estimate ($\lambda = 0.403$, t-value = 2.130, $p < 0.000$) and the "Few

friends to share concerns with" manifest indicator had the highest estimate value (λ = 1.621, t-value = 4.838, $p < 0.000$). The negative sign before the loading of "Feel close to others in community" is due to reverse coding (See Table 4.6), thus in accordance with the hypothesized relationship. Inspections of standardized loadings reveal a similar picture. The "Few close friends to share concerns with" indicator had a robust (0.836) loading whereas the "Contact with friends frequency" had the weakest loading value (0.184). In regards to reliability, the "Few close friends to share concerns with" variable was the most reliable, (R^2= 0.699), and the "Contact with friends" was the least, (R^2= 0.034).

The unstandardized loading estimates on the *Victim Behavioral Problems* were all robust ranging from the lowest, "When angry I am ready to hit someone", (λ= -0.617, t-value = -2.762, $p < 0.001$) to the highest, "When people insult me I try to get even" (λ = 1.366, t-value = 3.639, $p < 0.000$). The negative sign before the former indicator is due to reverse coding (Table 4.3). The standardized loadings follow a similar trend. The lowest loading (0.369) belongs to "When angry I am ready to hit someone" and the highest (0.437) to "When people insult me I try to get even". The "When people insult me, I try to get even indicator was the most reliable, (R^2= 0.191), while the "When angry I am ready to hit someone" was the least, (R^2= 0.136).

The *Adult Child Characteristics* factor had the greatest loading values in the model. Although the Children financial problems indicator had the lowest value, (λ = 0.866, t-value = 13.981, $p < 0.000$) within this dimension, nevertheless the loading estimate was only second to the "Children alcohol/ substance abuse problem" variable (λ

= .937, t-value = 11.678, $p < 0.000$) in this model. All loadings signs were as hypothesized. Standardized estimates of these variables follow a similar trend. All three indicators had a very high degree of reliability ranging from the lowest, "Children financial problems", (R2 = 0.696) to the highest, "Children psychological emotional problems", ($R^2 = 0.910$).

Attribute loadings on the *Victim/ Abuser Relationship* endogenous construct yielded unidimensional and relatively high estimate values, ranging from the lowest, "Family life with children more negative" ($\lambda = -0.390$, t-value = 5.789, $p < 0.000$) to the highest, "Rate control over your relationship with child" ($\lambda = 1.890$, t-value = 6.950, $p < 0.000$). All loadings on this latent variable were definitely different from zero in the population and were statistically significant. The negative sign before indicators "Children difficult to get along with family members" and "Family life with children more negative" are due to reverse coding therefore all signs were as hypothesized. The standardized estimate of "Rate control over your relationship with child" had the highest value, (0.656), for the relationship construct and the "Family life with children more negative" had the lowest value, (0.240). The most reliable indicator of the relationship quality was the variable "Children difficult to get along with family members", ($R^2 = 0.605$).

Finally, both the Ever physically abused" and "Ever sexually abused" manifest variables loaded highly on the dependent latent variable, *Elder Physical Abuse*. The loading of the physical abuse variable was set equal to one (requirement of factor modeling). The sexual abuse manifest indicator robustly loaded on its latent factor

($\lambda = 1.193$, t-value = 4.267, $p < 0$ .000) and the sign was as hypothesized. The most reliable measure of *Elder Physical Abuse* factor was the "Ever sexually abused" manifest indicator, ($R^2 = 0.732$).

Summary Results for Both Models

Having evaluated the fit of both models, including individual factor measurement dimensions and their squared multiple correlations, we can safely conclude that: (1) the relationships between the latent variables and their respective indicators are robust and statistically significant (e.g. all indicator loadings are significant at $p < 0.05$ and t-values in excess of absolute value of 1.96), (2) the validity of measures used to represent constructs of interest are within acceptable and safe limits (e.g. t-values larger than absolute value of 1.96), (3) the reliability of indicators are high (e.g. the high squared multiple correlations), and (4) there is no excess of residuals on either tail of the normal distribution (e.g. no measurement errors with values of zero or few SE over 2.58). In conclusion, since both models adequately fit the population matrix and the measurement dimensions are robust, the evaluation of the structural models (hypothesis testing) can safely proceed. Finally, the squared multiple correlations for the two endogenous variables are quite impressive; for the *Elder Physical Abuse* ($R^2 = 0.725$) and for *Victim/ Adult Child Relationship Quality* ($R^2 = 0.797$).

Hypothesis Testing

The purpose of this section is to evaluate the structural parts of the full and restricted models by focusing on the substantive relationship of interests as described in the Ecological Bi-Focal Model for Elder Abuse and hypothesized in the methods section of this study. Three relevant factors for this analysis will de addressed: (1) the signs of parameters representing the paths between the latent variables are as hypothesized, (2) magnitudes of estimated parameters reflect the strength of hypothesized relationships, and (3) the amount of variance in the *Elder Physical Abuse* factors is accounted for by the exogenous latent variables as indicated by the squared multiple correlations.

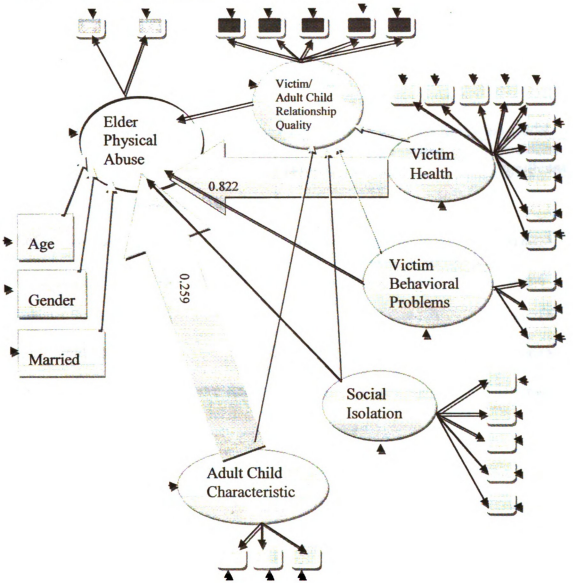
The *Elder Physical Abuse* latent endogenous variable regressed on the Victim/ Adult Child Relationship Quality secondary endogenous factor and on the four exogenous variables in the full model yielded the following substantive results (See Table 4.7).

Table 4.7 Structural Relationships amongst Latent Variables in the Full Model

Latent Variables	**Factor Estimates**	**T-Values**	**Statistical Significance**
Elder Abuse ON:			
Victim's Health	0.822	2.759	0.006*
Victim's Behavioral Problems	-0.472	-1.058	0.290
Victim's Social Isolation	-0.343	-1.529	0.126
Adult Child Characteristics	0.259	2.704	0.007*
Victim/ Adult Child Relationship	-0.124	-0.858	0.290
Victim's Age	0.000	-0.006	0.995
Victim's Gender	0.246	0.780	0.436
Victim's Marital Status	**-0.372**	**-1.711**	**0.087**

* Statistical significance

Figure 4.6. Structural Relationships in the Full Model



Note: Statistically significant paths signified by wide arrows

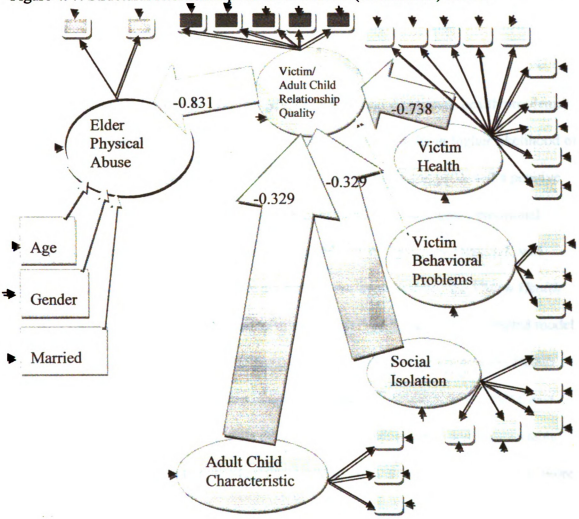
In the restricted model, structural loadings of the four exogenous variables on the *Elder Physical Abuse* factor were mediated by the *Victim/ Adult Child Relationship Quality* secondary endogenous variable. Therefore both the magnitude of estimates and their signs were different, as expected, from previous findings (See Table 4.8).

Table 4.8 Structural Relationships amongst Latent Variables in the Restricted Model

Latent Variables	**Factor Estimates**	**T-Values**	**Statistical Significance**
Victim/ Adult Child Relationship ON:			
Victim's Health	-0.738	-3.072	0.002*
Victim's Behavioral Problems	-0.541	-0.820	0.446
Victim's Social Isolation	-0.329	-2.157	0.041*
Adult Child Characteristics	-0.270	-3.422	0.001*
Elder Abuse ON Victim/Abuser Rel.	-0.831	-3.908	0.000*
	Demographic Variables		
Victim's Age	-0.014	-1.357	0.175
Victim's Gender	0.358	1.825	0.068
Marital Status	**0.229**	**1.244**	**0.213**

* Statistical significance.

Figure 4. 7. Structural Relationships in the Restricted (Mediational) Model



Note: Statistically significant paths signified by wide arrows

Immediate Elderly Parent/ Adult Child Context (microsystem level/ bi-focal directional approach)

Hypothesis #1:

Victim health factors (physical, psychological, and emotional, health problems) are positively related to (more severe health problems will results in higher likelihood of physical abuse) elder physical abuse (Figure 3.1). Hypothesis one predicted a positive relationship between *Victim Health* factors (physical and psychological/ emotional health) and *Elder Physical Abuse* in the full model and, as shown in Table 4.7, was supported (γ= 0.822; t-value = 2.759; p = 0.006). As hypothesized, the *Victim Health* construct was significantly associated with *Elder Physical Abuse* in the restricted model as well (γ= -0.738; t-value = -3.072; p = 0.002). The opposite sign before the Health constructs in the two models is due to the meditational effects of *Victim/ Adult Child Relationship Quality* factor. The scale on the meditational variable measures variable dimension from worst relationship to best. As such, findings are logical given that more health problems appear to be associated with worst relationship quality between the elderly parent and her/ his adult child. Results confirm that the presence of various physical, psychological, and emotional illnesses in the victim will directly increase her/ his risk of physical abuse regardless the meditational presence of the relationship construct. The measurement part of this model suggest that emotional issues such as feeling upset, irritable, angry, or anxious have a greater impact on the likelihood of elder physical abuse than the presence of certain medical diagnoses.

Hypothesis #2:

Victim Behavioral Problems positively correlate with (increase) *Elder Physical Abuse*, (see Figure 3.1). Hypothesis two posits that victim behavioral problems will directly predict elder physical abuse. Analyses results do not support this hypothesis. In the full model the loading estimate of the *Victim Behavioral Problems* to *Elder Physical Abuse* path came to (γ= -0.472; t-value = -1.058; p = 0.290) whereas in the restricted results yielded an even worst loadings (γ=-0.541; t-value = -0.820; p = 0.446). Although it is uncertain why the loading signs were negative in both models, the fact is that the effects of victim behavioral problems on elder physical abuse were not different from zero in the population. This could be due to several reasons such as a lack of precise definition of what constitute elder behavioral problems. For example, it is not clear what Kosberg (1988) and Lachs and Pillemer (1995) meant with ungrateful, demanding, and otherwise unpleasant behaviors. Vague concepts do not yield precise operationalization and consequently clear (e.g. unidimensional) measurements. It could be that thus victim behavioral problem dimension was captured instead by the victim's health latent factor (e.g. behavior exhibited due to feelings such as anger, anxiety, and panic).

Hypothesis #3:

Victim/ Adult Child Relationship Quality latent variable is positively correlated with elder physical abuse when allowed to mediate between the model's exogenous latent factors (*Victim Health, Victim Behavioral Problem, Adult Child Characteristics,* and *Victim's Social Isolation*) and the *Elder Physical Abuse* construct. Worst relationship will increase the likelihood of physical abuse. In addition, more serious victim health

problems and victim social isolation will correlate with worst victim/ adult child relationship quality (negative relationship), (see Figure 3.2).

Thus, hypothesis three predicted that the *Victim/ Adult Child Relationship Quality* construct will predict elder physical abuse if and only if it is allowed to mediate between the model's exogenous latent constructs and the main endogenous latent variable, otherwise its impact will be insignificant. Accordingly when the *Victim/ Adult Child Relationship Quality* factor was not allowed to mediate (e.g. full model) then its path to Elder Physical Abuse was not different from zero in the population (γ= -0.124; t-value = -0.858; p = 0.290). However when the relationship construct was allowed to mediate between the four exogenous variables and the elder physical abuse factor then the path from *Victim/ Adult Child Relationship Quality* to *Elder Physical Abuse* became statistically significant (γ= -0.831; t-value = -3.908; p = 0.000). The sign before the structural estimate is negative, suggesting that worst (negative) relationship quality corresponds to an increase in elder physical abuse. In addition, the exogenous constructs; *Social Isolation*, (γ= -0.329; t-value = -2.157; p = 0.041), *Victim Health* problems, (γ=-0.738; t-value = -3.072; p = 0.002), *Adult Child Characteristics*, (γ= -0.270; t-value = -3.422; p = 0.001) changed signs direction. Specifically, a negative relationship (worst relationship quality) between the elderly parent and her/ his adult child will increase in the older adult's health problems, social isolation, adult child problem, and consequently in elder physical abuse. In addition, the strength of all exogenous paths mediated via the relationship construct to elder physical abuse has increased in magnitude. Final conclusion: results support hypothesis three in entirety (all parts).

Contexts beyond focal older adult/ caregiver (ecological model testing)

Hypothesis # 4:

Social isolation will positively co-vary with elder physical abuse when mediated by *Victim/ Adult Child Relationship Quality* otherwise its predictive effects will be non-significant. The term social relations, (Antonucci, 2001) describes a broad array of factors and interpersonal interactions, including the relationship between the elderly parent and adult child in addition to the victim's social isolation , that characterizes social interactions among people. As such, the victim's social isolation construct together with the relationship factor (e.g. social relations) represent an exosystem level influence on elder physical abuse. Consequently it is reasonable to assume that the mediation model tests elder physical abuse from an ecological perspective. When not mediated (full model), results indicate that this hypothesis was not support by data (γ = -0.343; t-value = -1.529; p = 0.126), as expected. However when the path to elder abuse was mediated by the *Victim/ Adult Child Relationship Quality* factor (restricted model), social isolation of the elderly parent was a strong predictor of elder abuse, (γ = -0.329; t-value = -2.157; p = 0.041). The negative sign before the structural estimate indicate that worst elder parent/ adult child relationship is associated with greater victim isolation and a greater likelihood of elder abuse.

Hypothesis #5:

Adult Child Characteristics (psychological/ emotional, alcohol and substance abuse, and financial problems) will directly correlate (positive relations) with elder physical abuse. Although hypothesis five appears to operate at the immediate ontogenic

level (microsystem), a closer examination suggests that it has distal repercussions as well. It is evident that the adult child's psychological, emotional, and substance abuse problems are microsystem level factors that directly influence the risk of elder abuse. However, we could consider the adult child's financial problems (e.g. lack of income-no employment, real estate foreclosure, vehicle repossessions) an ecological factor (adult child-mesosytem/ aging parent exosystem) that influences elder physical abuse. For example, the adult child's home foreclosure does not contain the elderly parent, nevertheless will affect elder abuse in the immediate setting. A similar argument could be made regarding the adult child's substance abuse problems.

Hypothesis five was supported by empirical evidence in both the full model (γ= 0.259; t-value = 2.704; p = 0.007) and the restricted model (γ=-0.270; t-value = -3.422; p = 0.001). A closer look reveals that when the *Adult Child Characteristics* factor was mediated by the relationship latent variable both the sign (from positive to negative) and the magnitude (increased) of the gamma loading has changed. When mediated by the relationship variable both the magnitude and sign before the *Adult Child Characteristic* construct changes. Consequently the bi-focal factors (victim health construct and adult child health constructs) do predict elder physical abuse at the microsystem level with distal contexts repercussion.

Power Assessment

An important part in the model(s) evaluation process is the examination of the statistical power associated with testing that model. In the previous sections, both the main and nested models were evaluated based upon their specific chi-square tests,

whether to reject or fail to reject the null hypothesis, and in both cases the null hypotheses (model fits correctly in the population) were retained. These results suggest that the probability of incorrectly retaining the null hypothesis (perfect fit) in both instances were very low (less than .05). To account for a Type II error a power analysis must be undertaken for the following reason: if the power is low it is hard to tell whether the low value of test statistics reflects to correctness of the models or the lack of sensitivity to specification error. Two options are available to assess the powers (both models) associated with testing for exact fit: (1) consult a useful power table compiled by McCallum et al, (1996) or (2) use the SAS program routine developed by these authors for analyzing power. Since I have no access to SAS statistical program, I will use option the first option which is to get the respective power estimates for both models from Table 2 of MacCallum, Browne, and Sugawara (1996) .

For a model (main model) with 69 degrees of freedom and a sample size of 203, the power estimate for the test of exact fit is 0.801 and that that for close fit is 0.877. Thus both power estimates indicate that the analysis in the main model is sufficiently powerful.

For a model (nested model) with 67 degrees of freedom and a sample size of 203, the power estimate for the test of exact fit is 0.827 and that that for close fit is 0.854. Thus, both power estimates indicate that the analysis in the nested model is sufficiently powerful. In sum, the likelihood of rejecting the hypothesis of close fit when the true fit is mediocre is in excess .08. Thus it is closed to certainty that serious misspecifications would be detected if they were in either of the models.

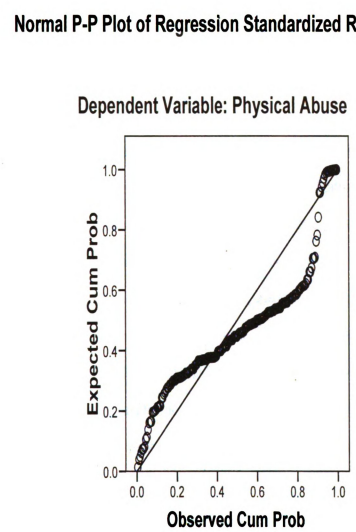
Additional Model Diagnostics

Further model diagnostic information can be obtained by: (1) examining the data correlation matrix for values outside the range from – 1 to +1, (2) negative variance estimates and (3) standardized residuals with absolute values greater than 2.58.

Both models yielded admissible solutions meaning that covariances did not contain negative variance estimates or a correlations larger than 1. Visual inspection of variance estimates and correlation estimates supported the admissible solutions Mplus message.

If the distribution of standardized residuals is approximately normal then about 95% of the standardized residuals should be between -2 and +2 and 99% of residuals between -2.58 to +2.58. The dissertation model had 0.06% of cases (cases #: 2;3; 19; 20; 36; 48; 69; 108; 121; 158; 163; 171; and 195) with standardized residuals outside of the normal range (absolute value 2). The largest standardized residual value came to 4.064 (case 20). Even if the model fits well, we expect to see about 6% of the cases with standardized residuals greater that 2.56 in absolute value. In addition, a normal P-P plot (Figure 4.5) reveals a normal residual distribution (data points arrayed along the 45 degrees line in the plot). In addition the distribution of residuals appears decidedly linear and steeper than or 45 degrees angle (See Figure 4.6). In summary, the model diagnostics provide evidence that all statistical assumptions have been reasonable meet which in turn inspire confidence in the fitted models. This confirms the conclusions drawn from both the examination of models fit and the residuals analyses.

Figure 4.8. P-P Plot of Standardized Residuals



CHAPTER V: DISCUSSION

Guided by the Ecological Bi-Focal Model for Elder Abuse theoretical framework (Schiamberg & Gans, 2000), the purpose of this investigation was to empirically examine various risk factor dimensions and their interactions during the process of elder abuse at various ecological systemic levels. Although past research advanced the understanding of risk factors in elder abuse, there are important limitations in these studies as documented by officials at the National Research Council (NRC, 2003; Acierno, 2003).

First, previous studies on elder abuse prevalence relied on small and often unrepresentative samples that limited the generalizability of findings (Cooper et al., 2006; Lauman et al., 2005; Acierno, 2003; NRC, 2003). In contrast, the data for this study came from a representative subsample of adults surveyed in a nationwide study on Midlife in the United States (MIDUS). Second, previous empirical studies of elder abuse have typically examined a limited source of variability in certain risk factors such as the elderly victim's health problems (e.g. dementia, Alzheimer, etc) as it increase the risk of abuse. This dissertation study, in contrast, uses data on a wide array of health variables, such as physical, psychological, and emotional indicators, that capture the unidimensional latent construct of elderly victim's health. Third, previous studies typically have relied on self-administered checklists of elder abuse risk factors that only indicate whether or not a given stressor has occurred. This study used both structured and semi structured telephone and personal surveys to measure several aspects of risk factors dimensions, including their objective characteristics as rated by expert coders (e.g., content, severity) and their subjective appraisals by study participants. Finally, previous

studies mainly relied on simple data analysis methods (e.g. using descriptives only, simple regression analyses) (Acierno, 2003). In contrast this study has employed a complex and data relevant mathematical modeling that captured associations at various levels and in various directions simultaneously. In conclusion, this study was innovative due to its advanced scientific scope, its diverse and representative large sample base, creative use of in-depth survey assessments in key areas, LISREL data modeling, and ecological perspective.

Discussion of Results

Sample Based Description (Prevalence) of Elder Physical Abuse

Overall, the proportion of elderly Americans that reported physical or sexual abuse experiences in the MIDUS II sample was not extensive and did not exceed 15% (n=31). Although this statistics does not appear striking at first glance, the problem of elder maltreatment becomes critical if we consider that by 2030 the number of elderly individuals will have reached over 70 millions in the United States, (United States Administration On Aging, 2002). Accordingly, in a population of 70 million over 10 million elderly persons would be at risk of physical abuse. This public health epidemic would impact almost every aspect of the US society and radically transform it. For example, the astronomical financial cost of providing physical and psychological treatment for 10 million physically abused older adults could push the Medicare program closer to bankruptcy. Furthermore, bankrupt Medicare/ Medicaid programs could usher in serious economic, social, and political instabilities into our society. Consequently the epidemic of elder physical abuse warrants our utmost attention.

Background Variables

For the purposes of this study three victim demographic background variables were examined as they influenced elder physical abuse and the relationship between the elderly parent and her his adult child. These variables had no significant influence on the endogenous latent variables in either of the models. Although the Gender background variable had the strongest influence on both latent factors its effects were not significantly different from zero in the population. Previous studies in the field of elder abuse have documented either no effects or contradictory findings in regards to these very important victim background variables. Historical study findings imply that both men and women could be victims of elder abuse and that the issue of gender is not that important when attempting to predict the phenomenon of elder abuse (Pillemer & Finkelhor, 1988; Kosberg & Nahmias, 1996; Schiamberg et al., 2009). Similarly, findings on chronological age as a predictor of elder abuse are contradictory and its effects obfuscated. Some researchers found a direct positive linkage between age and physical abuse (Kosberg, 1988; Kosberg & Nahmias, 1996) whereas others suggest that the influence is negative (Schiamberg et al., 2009). The issue appears to be similar with marital status as well. This uncertainty and contradiction regarding the effects of these three background variables on elder physical abuse is mirrored by this study's results as well (See Tables 4.7 and 4.8). LISREL modeling found no relationships between these three background variables and elder physical abuse in the full model (See Table 4.7) and in the restricted models (See Table 4.8).

Risk Dimensions of Elder Abuse at Microsystem Level: Immediate Older Adult/ Caregiver Context (microsystem level/ bi-focal directional approach)

In this study three hypotheses (#1; #2; and #3) examined elder physical abuse risk factor dimensions from a bi-focal perspective at the immediate/ ontogenic level. The ontogenic level (microsystem) consist of activities and interaction patterns in the older adult's immediate surrounding that affects the process of elder physical abuse (Berk, 2008, Schiamberg & Gans 2000). To understand risk factors at this level we must consider that all relationships are bi-directional (Schaimberg & Gans, 2000; Bronfenbrenner, 1979, 1986, 1997). In addition, activities and interaction patterns at this immediate ecological level might result either in an increase (risk of elder abuse) or a decrease (protective factors) in the likelihood of elder physical abuse. Although the focus in this study was on the risk factors, inference to protective factors can be discussed in the context of absence or minimal levels of negative risk dimensions.

Four latent exogenous constructs measured via 21 manifest indicators captured relevant risk factor dimensions operating and impacting elder physical abuse at microsystem level in both (full and restricted) models in this study. These risk factor characteristics and dimensions were all identified and discussed in the "Elder Abuse by Adult Children: An Applied Ecological Framework for Understanding Contextual Risk Factors and the Intergenerational Character of Quality of Life" by Schiamberg and Gans 2004). The risk dimensions (captured by latent variables in this study) operating at the microsystem level and identified as affecting elder physical abuse were:

Victim's Health

Hypothesis one tested the victim's health risk dimension and its affects on elder physical abuse. The *Victim Health* construct includes: (1) the presence of certain physical illnesses (mainly neurological in this study) and (2) the accompanying negative psychological/ emotional states. The logic behind creating such an overarching risk construct instead of separating physical illnesses from the psychological/ emotional part was: (1) the existence of physical illnesses robustly increases the presence of negative emotional states (e.g. feelings and moods) (Hysing et al., 2007, Bolger et al., 1989) and (2) separating the physical dimension from psychological/ emotional could be impossible or even counterproductive. In accordance with the literature, victim's health related problems significantly increased the risk of elder physical abuse, [e.g. the latent variable *Victim Health* robustly predicted (γ = - 0.738; t-value = -3.072, and $p < 0.000$) elder physical abuse both when mediated by the *Victim/ Adult Child Relationship Quality* factor and when not mediated (γ = 0 .822; t-value = 2.759, and $p = 0.006$)]. Therefore it is safe to conclude that health related problem dimensions directly increase the likelihood of elder physical abuse.

Studies often report this relationship from a one-dimensional and linear perspective and do not examine the possibility of a bi-directional aspect and consequence. Study results suggest that interactional effects between victim's health dimensions and physical abuse are circular and simultaneous. Once this interaction began it is hard to predict the direction of cause and effect and possible outcome results. Health problems increase in the presence of physical abuse (e.g. broken bones, depression, self-neglect) whereas an increase in illnesses may result in an increase in physical abuse

likelihood. This bi-directional interaction between health problems dimension and physical abuse could potentially result in an avalanche of unintended consequences. For instance, co-existing biological and psychological/ emotional conditions can potentially lead to critical outcomes for older adults who are abused. The elderly have a decreased ability to heal after injury and may experience greater trauma from physical injuries than do younger adults. Consequently their tissue and internal organs can be lacerated, bruised, and damaged faster with minimal trauma and their bones easier fractured. This could lead to an increase in the elderly mortality rates. Although it is not immediately evident the psychological/ emotional trauma can be as devastating as any physical trauma for the elderly. Physically abused older adults may often engage in self-destructive acts (e.g. refusing to eat or take prescribed medication) and hasten their own death (Kennedy & Tannebaum, 2000). In addition, as health problems worsen and feelings of hopelessness, helplessness, and fear of being assaulted deepen elder active suicide rate will increase (Kennedy & Tannebaum, 2000).

The bi-directional influence between the victim health factors and physical abuse could be further clarified by examining the influence of individual physical and psychological illnesses on the likelihood of elder physical abuse. Results from this study linked the presence of various neurological disorders (e.g. Alzheimer disease, Aphasia, Parkinson illness) to an increased risk of physical abuse ($\lambda = 0.776$; t-value = 4.446; $p = 0.000$). The literature on elder physical abuse contains several studies that document various individual neurological disorders as a component factor in the process of physical abuse, (Schiamberg et al., 2009; Suitor & Pillemer, 1993). The etiology of neurological disorders suggest three types of clinical syndromes: (1) diffuse and multifocal brain

disorders affecting cognition and behavior (e.g. dementia), (2) neuro-behavioral syndromes linked with focal brain lesions (e.g. aphasia, amnesia, apraxia), and (3) neuropsychiatric manifestations of neurological disorders (e.g. depression, anxiety, psychoses), (American Psychiatric Association, 2005). Symptoms of various neurological disorders gradually lead to behavior and personality changes, a decline in cognitive capabilities (e.g. language skills or sound decision-making), difficulties in recognizing family and friends, and aggressive and disruptive behaviors in the elderly (American Psychiatric Association, 2005). Talerico et al. (2002) found a strong correlation between impaired communication and difficulties in recognizing relatives with elder aggression. Stressed out and often threatened caregivers may find the task of caring for an aggressive and dependent older person too difficult and in some situations the process of physical abuse can develop and take place. In addition, if the relationship quality between the elderly parent and the adult child has been negative for several years or even decades the often aggressive and threatening behavior of the older parent might elicit a response of "in-kind" from the adult child thus sparking a violent confrontation in which the older adult could be hurt.

This study confirmed that the presence of chronic health conditions (e.g. rheumatoid arthritis, multiple sclerosis, diabetes) will significantly increase ($\lambda = 0.699$; t-value= 2.225, $p < 0.000$) the risk for elder physical abuse (See Tables 4.5 and 4.6). Elderly people in poor health due to one or more chronic health related conditions may require around the clock help and extensive coordination of care, including symptom management, disability, and help with mobility related challenges (Kosberg & Nahmias, 1996). In the face of these increasing responsibilities and challenges adult child

caregivers often feel tired, overwhelmed, and probably isolated as well. In addition, caring for a disabled parent may require missing workdays, often taking personal days, or even quitting employment to provide care. This in turn may increase the levels of physical, emotional, and financial stress in the caretaking adult child. If in addition the elderly parent displays an aggressive behavior due to other medical condition (e.g. neurological disorders) that might overwhelm the already stressed out caretaker's coping mechanism which in turn will increase the potential of elder abuse.

The presence of recent depressive thoughts and feelings (neuropsychiatric manifestations of neurological disorders) in the elderly parent substantially increased (λ= .270; t-value = 4.495, $p < 0.000$) the risk of potential elder physical abuse (See Tables 4.5 and 4.6). These findings are in accordance with the existing literature on risk factors for elder physical abuse, (Kossberg & Nahmias, 1996; Cooney & Mortimer, 1995). For instance, Talerico et al. (2002) found that higher levels of elder aggression were often associated with depression, impaired communication, low dose of antipsychotic drug use (inadequately treated depression). Given the common neurotransmitter basis for both aggression and depression, untreated depression will definitely increase the aggression level in older adults (Ryden et al., 1999). Displayed irritable and aggressive behavior may again overwhelm the adult child's capacity to manage stress which in turn could lead to violent behaviors.

In this study the presence of anxiety disorder (neuropsychiatric manifestations of neurological disorders) in the older adult directly and very robustly increased the likelihood of elder physical abuse (λ= 0.909; t-value= 3.747, $p < 0.000$). Although several psychiatric disorders, including depression, post traumatic stress disorder, and

personality disorders, mimic the diagnoses on the anxiety continuum, none is as closely linked to aggression as anxiety disorder (Zohar, 2003; Hoffman, 2005). Anxiety is a mood state and is regarded as a warning signal that alerts an individual to impending danger thereby enabling the person to deal with that threat or harm of threat (Zide el al., 2001). Although a certain level of anxiety might be beneficial to an elderly individual, it becomes problematic when it is not within normal parameters. The perceived impending doom will activate the flight or fight response mechanism in people (Zide & Gray, 2001). Since all too often the "threatened" elderly perceives no way out due to physical limitations, social isolation, as well as other biological conditions they might respond aggressively or even violently. Aggression exhibited by the elderly parent might evoke aggression in the adult child as well, especially when their past relationship was characterized by negativity or violence.

The elderly victim's self rating of mental and emotional well being was also closely linked with the probability of elder physical abuse (λ= 1.346; t-value = 5.282, p = 0.000) (See Tables 4.5 and 4.6). The more and higher ratings of mental and emotional health problems corresponded to an increase in the likelihood of physical abuse. The often perceived and felt negative moods, emotions, and thoughts, including the anger and fear dimensions, created a generally stressful and negative environment for the caret providing adult child. This stressful and often hostile environment could overwhelm the caretaker's coping skills to a degree where aggression would have been seen as the only plausible management technique. In addition, if the relationship history between the parent and child was already checkered with aggression and violence then elder physical abuse could be very likely.

In contrast to the above described manifest indicators that measured various mental health diagnoses that included an array of negative feelings (e.g. fear and or anger), the following two measures capture individual feelings in the category of anger that might be responsible for elder physical abuse. These two feelings were: (a) being upset or (b) the more intense anger.

The victim's feelings of being frequently upset were closely associated with elder physical abuse (λ= 0.785; t-value = 5.405, p = 0.000). In the field of human psychopathology there is an agreement about that fact that human emotions involve both a positive and negative valence. Generally speaking feelings of being upset or angry (both members of the anger category) are considered negative. In addition, the presence of negative feelings (e.g. anger) does not preclude the co-existence of more subdued positive (less than negative) feelings during the same circumstance. The victim's negative feeling state of being upset with either the adult child or with something else might be a precursor to the initiation of a violent confrontation between the adult child and her/ his elderly parent.

The frequency of victim's anger was also associated, as hypothesized, with the act of elder physical abuse (λ= 0.488; t-value= 5.363, p = 0.000). Interestingly at first glance it does not appear to make any sense why this variable had a less robust loading than the previously analyzed feeling (being upset). Common sense would tell us that since anger is a more intense feeling than being upset and it is more likely to precipitate physical hostility between the elderly parent and her/ his adult child. A closer examination of these two estimates values (5.405 versus 5.363) reveals that in the population the effects of these two feelings on elder abuse vary only a little (less than 0.042). One explanation of

why angry feelings loaded with almost half strength (.488 versus .785- compared to upset feelings) on elder physical abuse could be the social stigma associated with confessing to anger rather than to being upset. Regardless the final result is the same. Both individual feelings in the elderly victim can be a precursor to physical abuse. In closing, discussing these two feelings individually and their impact on elder physical abuse is very important for clinical reasons that will be discussed later in this chapter.

The existence of negative feelings (variable: more negative feelings than usual) in the elderly victim yields similar results as the existence of individual negative feelings discussed above. The presence of negative feelings (more than one at the same time) is strongly correlated with elder physical abuse ($\lambda = 0.694$; t-value= 4.891, $p = 0.000$). Therefore if one or more negative feelings (possible from the anger family) are present in the elderly during an interaction with her/ his adult child the likelihood of a violent encounter is more pronounced than otherwise.

Logically the variable ever attended an emotional support group is closely related to having been diagnosed with a psychopathological disorder or the existence of one or more negative feelings that appear to be precursor to elder physical abuse. The rationale behind this reasoning is that if the elderly victim had no emotional problems as measured by the lack of intense negative feelings, that were either symptoms of more serious underlying neurological disorders or not, she/ he did not need help from an emotional support group. Consequently if the elderly parent indicated that she/ he has attended an emotional support group than the presence of negative feelings preceding the act of elder physical abuse is justified. Therefore we expect that the variable attending an emotional support group directly influence elder physical abuse. In this study it was found that this

variable had a strong impact (λ= 1.153; t-value = 5.986, p = 0.000) on the outcome variable. Moreover this estimate loading was only second to the variable rate your mental and emotional health in strength which implies that if the help of an emotional support group was sought than the intensity of the existing negative emotions as a precursor to elder physical abuse were also detected by the elderly individual. Once again, this conclusion has serious clinical implications which will be discussed later in this chapter.

Victim Behavioral Problems

Another risk dimension often associated with elder physical abuse was the victim behavioral problem (Kosberg, 1988, Lachs & Pillemer, 1995). For the purposes of this study the victim behavioral problem construct was defined as overly demanding, combative, ungrateful, and otherwise unpleasant behavior of the aging parent, (Kosberg, 1988; Lachs & Pillemner, 1995). Before moving to the examination of this risk dimension, it should be noted that there is no universally accepted definition (e.g. theoretical or operational) of elder behavioral problems. The absence of acceptable definitions is due to several factors: (a) competing definitions of what constitutes elder behavior problem and non-problematic behavior characteristics; (b) significant variations among conceptual models and theories regarding behavior problems (e.g. Kosberg's model compared to Pillemer and Suitor, 1992, 1993); (c) measurement related issues (e.g. how do you measure an "ungrateful" behavior, and; (d) close relationship between behavioral problems and other psychological/ emotional impairments (e.g. anxiety disorders, personality disorders), (Pliszka et al.2000). Moreover, the correlation of co-occurring neurological disorders (e.g. depressive) and problem behavior among

adolescents is well established in the literature (Pliszka et al., 2000; Vermeiren et al., 2002). Accordingly the so called elder behavior problem could be the outward manifestation (the action) of negative internal processes such as afflictive feelings and mood (e.g. fear, anger, or rage). This appears to be confirmed by recent research studies that examined how an individual's mental health status moderates the exhibited behavior, (Nebbitt et al., 2008). Consequently it is difficult to separate the so called behavior problems from the existence of biological (e.g. neurological disorders) psychological/ emotional problems, thus a case for construct unidimensionality (e.g. biological, psychological, emotional, and behavioral factors measuring the same dimension – individual's health) could be made. This complicated issue will be clarified when we examine the loadings on the Victim Behavioral Problems factor.

Although every indicator loading on the *Victim Behavioral Problems* latent variable was robust [e.g. "When people insult me I try to get even"- (λ= 1.366; t-value = 3.639, p = 0.000) and "When angry I am ready to hit someone"-(λ= 0.617; t-value = 2.762, p = 0.000)], it did not appear to impact the *Elder Physical Abuse* endogenous variable either in the full model, (γ=-.472; T-value = -1.058, and p = 0.290) or in the restricted model, (γ=-0.541; t-value = -0.820, and p = 0.446). These results also confirm previous findings indicating that there is no direct association between the perceived elder unpleasant and or demanding behavior and the risk of suffering abuse. Consequently it can be concluded that the elderly parent's perceived behavioral problems did not directly or indirectly influence the likelihood of elder physical abuse.

The Victim/ Adult Child Relationship Quality

The percentage of middle aged adult children living and caring for their elderly parents have increased from 10% in the 1990's to 50% during the last decade in United States, (U.S. Census Bureau, 2006b). Furthermore about 20% of these adult children provide care for an aging parent with at least one chronic physical, neurological, or psychological illness (Vanier Institute of the Family, 2004b). As these illnesses progress both internal processes (e.g. negative emotions, moods and diagnosed psychological conditions) and behavioral changes (e.g. actions driven by internal processes) will occur (e.g. frequent and angry outbursts, physically attacking) that will increase in the difficulties of caring for an elderly parent. Consequently a worsening in the victim's health dimension will affect the relationship quality between the elderly parent and her/ his adult child. Furthermore, a strained relationship might increase stress and burden on the adult child as well. Studies consistently suggest that stressed out and overburdened adult children are more likely to abuse their elderly parents than those who are able to adequately cope with increased stress levels (Steinmetz, 1990). Moreover if the relationship between the elderly parent and adult child is primarily characterized by conflict then there will be an increase in elder abuse risk dimensions (Korbin et al., 1995; Kosberg & Nahmias, 1996; Browne & Hamilton, 1998).

In addition, there may also be a history of long-term difficulties in the relationship between the elderly parent and adult child. Several studies document a relationship between child abuse and parent abuse (Agnew & Huguley, 1989; Peek et al., 1985). The Fourth National Incidence Study of Child Abuse and Neglect (2006) for instance, estimated that between 20% and 35% of children identified as maltreated suffered a

serious injury, defined as "long-term impairment of physical, mental, or emotional capacities or requiring professional treatment aimed at preventing such long-term impairment. Children who have been maltreated may begin to show violence in the place where it was first encountered, namely in the family home (Agnew & Huguley, 1989; Peek et al., 1985). Consequently the relationship between the elder parent and adult child might be primed for physical violence given a history of violence in the family. Unfortunately, there was no direct manifest indicator available in MIDUS II data to test the connections between child abuse and subsequent elder abuse in this study. It would be a useful direction for future research.

Finally, previous research studies suggest that the relationship quality between the aging parent and her/ his adult child might be the most important factor in trying to explain why some adult children resort to violence against their parents and others not (Browne & Hamilton, 1998; Jaffe et al., 1990). Based upon these findings, it is safe to state that the relationship between the elderly parent and adult child will mediate and or moderate the likelihood of elder physical abuse. Worst relationship will increase the likelihood of physical abuse. In addition, more serious victim health problems will correlate with worst victim/ adult child relationship quality.

When mediating the four exogenous latent variables the *Victim/ Adult Child Relationship* factor robustly predicted *Elder Physical Abuser*, (γ = -.831; t-value = -3.908 and p = 0.000). However when this factor was not mediating than its predictive power of *Elder Physical Abuse* was not different from zero in the population, (γ = -.124; t-value = -0.858; p = 0.391). Findings underscore the vital importance that the relationship quality between elderly parent and adult child either triggers or dampens

aggressive feelings and actions towards the older adult. In addition, the model suggests a strong correlation between the *Victim Health* and the relationship quality between the dyad.

A lack of victim's control over the relationship is the most predictive of a negative and conflictual interaction between the elderly parent and the adult child , (λ=1.890; t-value = 6.950, p = 0.000). In fact this lack of control over the relationship appears to generate feelings of alienation, helplessness, and hopelessness in the older adult and it is the most robust predictor in the model of a negative relationship and increased physical abuse.

Based upon model results it is evident that the elderly parent clearly intends to work on and improve the relationship with her/ his child, (λ= 0.436; t-value = 1.990, p =.050). The more the elderly parent works on improving the quality of their relationship the more it improves thus there is a reduction in the possibility of aggressive and violent interaction. However it should be noted that not every relationship, especially those that were characterized by long-standing family violence, can be effectively improved (Straus et al., 1980; Jaffe et al., 1990; Browne & Hamilton, 1998). It appears conclusive that family violence teaches children to use violence themselves, both in childhood and adulthood. Therefore if a relationship has been characterized by serious violence it might not leave place for much improvement regardless of the elderly parent's efforts. Consequently the reduction and elimination of family violence (e.g. child abuse) early on will reduce elder abuse. There appears to be a clear link between child abuse and elder abuse.

The last two manifest indicators of the *Victim/ Adult Child Relationship* construct examined the adult child's negativity towards family members in general. The variable "Family life with the child more negative" was directly linked to worsening the relationship between the adult child and elderly parent, (λ= -0.390; t-value = -5.789, p =.000). Similarly, the indicator "Children have difficulties getting along with family members" negatively correlated (towards worst possible relationship) with the relationship construct, (λ= -0.480; t-value = -2.086, p =.037). If the elderly parent's perception about her/ his caregiver was not biased, the adult child's behavior towards the family was negative or even confrontational. This conclusion is logical if we consider the adult child's likely emotional, psychological, or substance abuse problems.

Finally, the *Victim/ Adult Child Relationship* factor did not appear to be influenced by the elderly parent's age, gender or marital status.

Contexts beyond Focal Older Adult/ Caregiver (Ecological Model Discussion)

Victim's Social Isolation

Antonucci's (2001) social relations construct includes an array of factors and interpersonal interactions that characterizes social exchanges among people. The social relations concept includes: (1) social networks, (2) social support, and (3) an individual's sense of control over relationships. In addition, social support can be defined as an interpersonal transaction among people that includes: aid, affect, and affirmation, (Antonucci, 2001). In this study, indictors measuring the victim's *Social Isolation* (the opposite of social support) construct include these dimensions (e.g. feel close to others in community → affect; do not fit in with people or community→ lack of affirmation)

consequently they can be used to describe the older adult's lack of social relations (isolation). Furthermore, the social isolation construct interacts with elder abuse in a context beyond the immediate elderly parent/ adult child dimension. For example, the risk of elder abuse could be minimized by close relationships the older adult has within her/ his community (e.g. the elderly could tell about the negative relationship with her/ his adult child to the family physician). They in turn must report (since they are mandated by law) the suspicion of elder abuse to government authorities such as the adult protective services (APS). APS professionals will investigate and protect the older adult if abuse is suspected. This social relations context (or lack of it in our study→ isolation) is beyond the focal elderly parent/ adult child interaction.

Research on elder abuse consistently documents the phenomenon that the victim's social isolation (the lack of social relations) positively covaries with increase in elder physical abuse. Garre-Olmo et al. (2009) reached similar conclusions and, in addition, they suggested that social relationships and networks are protective factors against elder abuse and the social isolation of the elderly increases their risk of abuse. Fulmer et al. (2005) defined social isolation as the lack of both informal (e.g. relative and friendship network) and formal (e.g. adequate community based outreach programs, government programs, and health care providers) support systems for both the victim and also the caregiver.

Social isolation of the elderly parent significantly covaried with the relationship quality between the dyad, (γ = - 0.329; t-value = -2.157, p = 0.041) as they jointly influenced the main outcome construct, *Elder Physical Abuse*, (γ = - 0.831; t-value = - 3.908, and p = 0.000). Consequently, the elderly parent became gradually more isolated

as the relationship quality worsened which in turn increased the risk of physical abuse. These findings imply that the adult child has an active role in the elderly parent's social isolation. If the relationship between the older adult and her/ his adult child is characterized by strain and abuse, it appears that the child is responsible for the isolation of her/ his parent. Fear of legal consequences, family and social ostracism, and or loss of good reputation could motivate the adult child to actively control access to her / his parent.

The victim's *Social Isolation* path to *Elder Physical Abuse* was not different from zero in the population when the *Social Isolation* factor was not mediated by the *Adult Victim/ Adult Child Relationship Quality* latent variable (γ = - 0.343; t-value = -1.529, and p =.126). If we did not take into account the relationship quality between the elderly parent and her/ his adult child then the victim's social isolation did not increase the risk of physical abuse.

The manifest indicator "I have few friends to share concerns with" loaded the strongest on the *Victim's Social Isolation* construct, (λ = 1 .621; t-value = 4.159, p = 0.000). The loss of friends could be due to several reasons including the denying access to the elderly parent, older adults' physical frailty or friends deceased or moved away. However it is likelier that the adult child denies access to her/ his parent when their relationship is characterized by strain and abuse. The above reached conclusions are further supported upon the examination of the last manifest indicator. The variable "The frequency of contact with friends" also loaded significantly on the victim's *Social Isolation* construct, (λ = 0.403; t-value = 2.130, p =.033).

The next two direct measures of the *Social Isolation* construct, "Don't fit in with people or community", ($\lambda = 1.28$; t-value = 4.838, p = 0.000) and "Feel close to others in community", ($\lambda = -.535$; t-value = -3.979, p = 0.000) (See Table 4.6), not only measure the elderly parent's social isolation but also offer a sense of how "life alienated" the older adult became. Research consistently linked social isolation to higher risks of suicide and an increase in mental/ emotional difficulties in the older population (Antonucci, 2001; Berk, 2008). Consequently, severe social isolation will directly influence (worsen) the older adult's physical, mental, and emotional health and possibly lead to an early death, due to either suicide or worsened health related complications, even if the psychical abuse experienced was not directly fatal.

Adult Child's Characteristics

The Ecological Bi-Focal Theory for Elder Abuse posits that acute stressors (e.g. within and outside of ontogenic relationship) experienced by the adult child lead to elder physical abuse (Schiamberg & Gans, 2000; Steinmetz, 1999). Examples of such stressors might be psychological/ emotional health problems (e.g. depression), caregiver substance abuse dependence (e.g. cocaine habit) and ecological financial problems (e.g. real estate repossession). In addition the stress of caring for an elderly parent can lead to worsening existing mental and physical health problems that make caregivers burned out, impatient, and unable to keep from physically lashing out against their parents. The adult child characteristic construct has both ontogenic (e.g. psychological/ emotional health and substance abuse) and distal repercussions (e.g. home foreclosure) on elder abuse. In this study, the latent variable *Adult Child Characteristics* tests risk factors in elder abuse at

the following ecological dimensions: (1) at the microsystem level (adult child's psychological well being and substance abuse problems), and (2) at the mesosystem (adult child's financial problems), and exosystem (aging parent) levels.

In accordance with previous research literature, this study found strong associations between the adult child's personal problems and an increase in the risk of elder physical abuse. In fact, the relationship was so robust that in both models the impact of the *Adult Child Characteristics* on the *Elder Physical Abuse* factor could be documented. In the full model the relationship between the exogenous and endogenous factors was as follows: γ= 0.259; t-value = 2.704 and p =.007 (See Table 4.7). In the relationship mediated model the finding was as follows: γ=- 0.270; t-value = 3.422 and p =.001 (See Table 4.8). An examination of the above relationships brings up two observations: (1) the different directions of the structural estimates in the two models and (2) an increase in the strength of the gamma loading in the mediated model. In the full model in increase in adult child's problems corresponds to an increase in the risk of elder physical abuse (positive direct relationship). In the mediated model the increase in adult child's problems is directly related to the worsening of the relationship between the elderly parent and her/ his child which in turn increases the likelihood of physical abuse. All three individual indicators of adult child problems robustly loaded on the *Adult Child Characteristics* factor.

Caring for a chronically ill and dependent parent can be highly stressful and add to the adult child's psychological and emotional strain. It can lead to role overload, an increase in depression, anxiety and feelings of hostility towards the aging parent, (Killian et al., 2005). Unfortunately the loading on this manifest indicator had to be fixed to one

(LISREL requirements) consequently we can't directly examine the influence of this variable on elder physical abuse. Although the models did not directly produce useful estimates to directly assess this risk dimension and its impact on elder abuse, several studies document higher rates of psychological/ emotional problems (e.g. depression and anxiety) in those adult children who engage in violent behaviors (e.g. elder physical (e.g., Baskin-Sommers, 2006). Given prior conclusive findings on the relations between psychological/ emotional problems and aggression in addition to the models' LISREL estimates (e.g. admissible solution and convergence) it can safely be stated that the adult's child psychological/ emotional problems directly increases the risk factors of elder physical abuse.

The caretaker's ongoing substance abuse problem has been identified as a characteristic of some elder abusers and the level of addiction directly linked to an increase in elder physical abuse, (Kratcoski, 1984; Kosberg & Nahmias, 1996; Hamilton, 1998). The role of controlled substances and alcohol abuse in aggressive behavior (e.g. elder physical abuse) has been researched extensively. Studies have consistently found relationships between physical aggression, alcohol, and cocaine use (see MacDonald et al., 2003). Alcoholism was also associated with family violence against the elderly, (Anetzberger et al., 1994). In this study, the adult child's substance abuse problem was robustly linked to the deterioration of the relationship between the older parent and her/ his child and to a strong increase in the risk of physical abuse, ($\lambda = 0.937$; t-value = 11.678, $p = 0.000$) (See Table 4.6).

Caregiver's financial problems, including financial dependence on the older adult (ontogenic level), has exosystem/ macrosystems repercussions as well. Accordingly,

repossession of the adult child's car or home foreclosure can intensify her/ his stressors including a worsening of psychological/emotional internal processes, which in turn can increase the risk of aggression against the elderly parent.

In this study the adult child's financial problems were directly related to the worsening of relationship between the victim and her/ his child and a direct increase in risk of elder physical abuse, (λ= 0.866; t-value = 13.981, p =0.000) (See Table 4.6). As the elderly parent's physical and mental health increasingly gets worse the care giving tasks and their costs are likely to escalate. Conflicts are likely to arise over excessive financial burdens on the adult child which in turn might create an unstable and dangerous living environment for the elderly parent. Findings in this study are in accordance with conclusions reached by other researchers in the field of elder physical abuse (Pillemer, 1986; Kosberg & Nahmias, 1996).

Theoretical, Research, and Clinical Implications

The overarching goals of this study were to: (1) empirically examine the assumptions, tenets, and conclusions of the Ecological Bi-Focal Model for Elder Abuse as developed by Schiamberg and Gans (2000) and (2) offer useful clinical suggestions on risk and protective factors involved in elder physical abuse. Study findings will contribute to the scholarly literature on elder abuse by establishing the Ecological Bi-Focal Model for Elder Abuse as a preeminent framework that both theoretically and empirically explain the dynamics and various risk dimensions of elder physical abuse. In addition, the study's findings have important practical implications as well that can guide clinicians working with older adults and their families.

Theoretical Implications

NRC Panel to Review Risk and Prevalence of Elder Physical Abuse (2003) called for the development of theoretical elder abuse models that: (1) are based upon a representative national random sample, (2) use standard definition of a specific type of elder abuse, (3) clearly identified abuse measures based on these definitions, and (d) the utilization of research methods and statistical modeling that is based upon sound mathematical principles that can yield generalizable results. For the purposes of this study a nationally representative random sample was used with cases in excess of 200 (large sample). Furthermore, all variable definitions and their measures in this study were based upon standard and generally accepted definitions and guidelines. Both research methods and statistical analyses used in this study were based on sound and robust mathematical modeling which resulted in generalizable results and conclusions. Finally, this study results reflected and confirmed previous elder abuse prevalence research findings and in addition expanded the theoretical framework in this field by the following contributions:

1. *The established the usefulness of the Ecological Model for Elder Abuse*: Empirical results of this study indicate that the ecological perspective for elder abuse framework offers a valid and useful theoretical explanation for elder abuse. Risk factors of elder abuse by adult children were examined from a bi-focal perspective (e.g. focusing simultaneously on the aging parent and adult child as a dyad) embedded within a larger social context. Study results suggest that elder physical abuse risk factors are nested in three levels of environment or contexst of

development. At the ontogenic level the victim's health factors, the relationship quality of the dyad and, to some extent, certain abuser characteristics appear to play a significant role. Social relations and certain abuser characteristics such as financial problems (e.g. lack of employment, home foreclosure, etc.) robustly impact elder physical abuse at higher systemic levels (e.g. mesosytem/ exosystems). In our study the construct social relations included: (1) the victim's social isolation (lack of social networks), (2) social support (e.g. study construct elderly parent/ adult child relationship quality), and (3) sense of control over the relationship, (e.g. manifest indicator control over the relationship). When the social relations construct included all three dimensions, the construct had a robust mediating effect between the immediate context's risk factor dimensions and elder physical abuse. The abuser's characteristics construct both at the immediate level and at context beyond the focal relationship, robustly impacted physical abuse of the older adult. Study limitations: given the characteristics of the MIDUS II data set, constructs at chronosystem level could not be examined.

2. *Offered a holistic approach to conceptualizing the victim's health dimension*: A novel approach was followed when the victim's health construct was conceptualized and then operationalized for data analyses purposes. This latent factor combined the presence of diagnosed physical illnesses with the existence of negative emotional/ psychological problems. I contend that chronic and debilitating physical illness factors cannot be separated from the accompanying (intertwined) psychological and emotional dimensions. This assumption was based upon both clinical mental health experience and newly emerging research

findings. Chronic and serious physical illnesses are among the strongest risk factors for late-life depression and other related emotional/ psychological problems (Geerlings et al., 2002). This study results and findings clearly indicate that examined chronic physical illnesses and psychological/ emotional indicators measure one and only one factor dimension (in this case the *Victim's Health* latent factor) and their presence robustly increase the likelihood of elder physical abuse. Moreover the stronger loadings of psychological and emotional health indicators suggest that the presence of these dimensions is the main and more robust risk factors associated with physical abuse of the older adult. In addition, mental and psychological health problems in the elderly population are strongly correlated with elder suicide (Heisel, 2006), thus elder abuse might also be robustly related to elder suicide. More ecologically focused studies are needed in this area in order to better understand the effects of physical abuse on the elderly and society.

3. *Elder behavioral problems and physical abuse: a problematic factor:*

   Literature on elder abuse contains definitional and conceptual contradictions in regards to the concept of "elder behavioral problem". The first issue with the *Elder Behavior Problems* construct is that the there is no unique and generally accepted definition for it. Thus, it is hard to operationalize the construct in order to measure it. For example, ungrateful behavior could mean different things to different people. It is unclear how ungrateful a behavior has to be in order to elicit physical abuse. Second, this definition (behavior problems) was often operationalized into one manifest indicator that yielded mixed results in previous studies. In this study, the victim behavioral problem's effect on elder physical

abuse was not different from zero in the population. At this point it appears that what was conceptualized in previous research studies as victim behavioral problem is not different from emotional factors (e.g. upset, angry, hostile, scared) present during the process of elder physical abuse. In sum, the behavior problem variable and psychological/ emotional indicators are a one dimensional construct and do not measure separate factors.

4. *Social relations (victim's social isolation, dyad's relationship quality, and the elderly parent's control over the relationship) as a mediating factor*: Study results indicate that a robust one-dimensional relationship exists between the *Victim's Social Isolation* and *Elderly Parent/ Adult Child Relationship Quality* constructs. In addition, when separated neither construct impacts the elder abuse latent variable in any significant way. Consequently, these two factors will have to be combined into one overarching construct (e.g. Social Relations, Antonucci, 2002) to gain the desired explanatory influence in future research. Study findings also suggest that the victim's social isolation is due to the adult's child's effort to prevent the elderly parent from maintaining close community based relationships in order to conceal various forms of abuse, neglect, and financial exploitation.

Clinical Implications for the Marriage and Family Therapist

Results of this study and the identification of the ecological etiology of elder abuse might be useful for clinicians in the field of marriage and family therapy for several reasons:

1. In accordance with previous research findings this study also documented that relationship factors (e.g. relationship quality, coping habits, social networks) were strongly correlated with late-life physical and psychological well-being (Vaillant & Mukamal, 2001), that in turn were associated with change in elder abuse dimensions (Zide et al., 2001; Zohar, 2003; Hoffman, 2005). In addition, an improved relationship between the dyad might mean a reduction in the older adult's social isolation thus more social oversight and better protection of the older adult. Given the contextual, systemic, and relationship oriented approach of marriage and family therapists, they could be at the forefront in providing clinical treatment to older adults and their families. However, although family and marriage therapists have well established therapy intervention methods to help young and middle aged couples and families in improving their relations and balancing the power and control in relationships, there is paucity in ecological therapy models that could guide clinical work with physically abused older adults and their families. Consequently this study's results and findings could be useful in developing comprehensive clinical assessment, intervention, and follow up methods that would guide clinicians in their work with elderly clients and their families.
2. To reduce elder physical abuse and suicides, clinicians must assess for several risk factor dimensions at patient intake. Since there is a strong correlation between elder abuse and control over relationship, the elderly client must be interviewed alone. For various reasons (e.g. loss of control, fear of retaliation, shame) the older client might not be willing to disclose abuse in the presence of

her/ his adult child. Undisclosed ongoing physical abuse might have fatal consequences (e.g. active or passive suicide) for the older adult. Therefore clinicians are ethically responsible to assess the relationship for abusive practices and this assessment must take place in the absence of the adult child. Even though there are no specific elder physical abuse measurement instruments, clinicians could use the Conflict Tactics Scale (CTS; Strauss, 1979) or similar scales until such an ecological physical abuse instrument would be developed. In addition, most existing aggression/ violence related self-report measures have a number of shortcomings such as assessing only a limited set of violent behaviors (pushing, hitting, or kicking) or missing the ecological context of violence (e.g. events preceding the violent act, intentions during the incidence, or consequences of violence). Therefore I would recommend the use of measurements that assess *Social Relations, Victim's Health* (both physical and psychological) and *Adult Child Characteristics* (e.g. psychopathology, substance abuse, and financial difficulties) in addition to the Conflict Tactics Scale as well. Untreated physical, psychological, and emotional health conditions in the elderly increase the risk for elder abuse (Kossberg & Nahmias, 1996; Cooney & Mortimer, 1995). Consequently information should be obtained in regards to the older adult's medical/ psychological background history and treatment interventions received (e.g. physical and psychotropic medications regimens). In addition, signed permission must be obtained from the patient to initiate and maintain ongoing contact with the elder's medical and psychiatric physicians. Failing to gather a complete health related history might prevent the detection of abuse and suicidal

thoughts and ideations. The victim's fear for her/ his immediate and long term safety should be assessed in addition to the adult child's willingness to acknowledge that she/ he has anger/ physical aggression problems and take responsibility for her/ his violent actions. If the clinician determines that ongoing violence between the dyad could not be eliminated or lethality is present, the clinical focus should shift to safety planning and resource mobilization. As part of the safety planning protocol the case must be referred to Adult Protective Services and or local law enforcement agencies in order to ensure the safety of the older adult. Furthermore, information on local resources and support networks should be provided to the older adult in addition to obtaining permission and referring the abused individual to appropriate community based agencies. If the marriage and family therapist determines that the safety of the older adult is not in jeopardy and dyad appears willing to work on their relationship then providing conjoint therapy is appropriate and beneficial to parties.

3. The primary goal of a conjoint therapy should be to build solutions that would successfully stop every form of violence in the dyad's relationship. The ideal clinical intervention method to attain this goal (e.g. eliminating elder physical abuse) would be a family centered therapy approach that focuses on the dyad as the target of intervention rather than the adult child or the older adult separately. Strengthening the existing elderly parent - adult child bond is the most effective and least intrusive way to protect the older adult. After the assessment stage is completed, clear treatment goals must be set, sound implementation plans should be jointly formulated, and a termination plan outlined. To accomplish the above

mentioned goals in a relatively short time frame we could consider the use of the brief solution-focused family therapy model as developed by de Shazer and Insoo Kim Berg (1997) and expanded on by Hoyt (2000). The logic for using the brief solution focused therapy approach is threefold: (a) constructing solutions are faster than dissolving problems (especially when child abuse was an issue while adult child was growing up) and success based upon brief therapy is of essence for older adults (given the possibility of fast deteriorating medical conditions and the approach of the dead drop stage), (b) it is preferable to repeat already successful behavior patterns and build on them to improve relationships rather than to teach and practice new models given the short timeframes available for therapy, and (c) activities that center around finding solutions (e.g. mainly to protect the older adult) are different from problem solving activities where the focus is to build safety for the elderly. Since the focus of this study was not to design new therapy interventions, for more information on how to provide brief solution focused therapy the works of de Shazer, Insoo Kim Berg, and Hoyt should be considered.

4. If either the elderly parent and or the adult child exhibit symptoms of psychopathology, the marriage and family therapy clinician should consider referring the individual(s) to a psychiatrist or mental health professional for those problems. The issue is not whether the marriage and family therapist can provide individual mental health therapy rather splitting up the dyad and providing them with individual sessions while conjoint therapy is in progress could present unforeseen difficulties (e.g. re-defining the problem and focus on individual

mental health issues instead of building solutions). A team approach (e.g. coordination between marriage and family therapist, psychiatrist, family physician, etc.) could help and support the difficult decisions that clinicians must continually make to ensure the safety of the older adult as well as to improve the dyads relationship. Being up to date with information on the client's medications, "recent meltdowns", or physical pain and suffering is not optional but a must when dealing with older adults. Since human systems are fluid, changing, and continually evolving, the therapist needs the opinions and information obtained from other team members to continuously adapt the therapy process to fit the dyad's situation and to achieve optimal results. Finally, since the focus of this study was not on how to establish and maintain profitable social networking, professional information on how to create such networks should be consulted.

5. Recent trends in U.S. health care systems indicate that older adults with long-term, chronic health problems are increasingly being cared for at home by family members such as an adult child (Lim & Zebrack, 2004). Elder abuse prevalence studies suggest that caring for a chronically ill family member impacts multiple dimensions of caregivers' lives such as physical, psychological, social, and financial aspects that might result in increased stress, psychopathology, and drain in finances (Steinmetz, 1990). Because of these increasing challenges and responsibilities, caregivers may feel overwhelmed, tired, isolated, and concerned for their own financial survival. The financial burden (e.g. missing work, taking personal days, and quitting or retiring early to provide care) due to caring for an elderly parent with chronic and severe physical and psychological illnesses could

be crippling to most middle class families. US news media consistently reported over the last few years that an increasing number of elderly suffering from chronic and severe disabilities were abandoned ("granny dumping") in addition to possibly being abused by family members usually at hospital emergency rooms (Berk, 2008). Marriage and family therapist should possess up to date and accurate knowledge about the enormous toll (e.g. physical, psychological, and financial) it takes to care for a severely disabled older adult and refrain from judging or blaming an adult child caregiver who might be experiencing anger, anxiety, and distress. Instead the client must be compassionately helped. Helping might take the form of providing information on community resources, completing referrals, and actively advocating on behalf of the client.

6. Finally, clinicians should known the physical (visible) signs of elder abuse and the elderly patient must be re-assessed for the potential of physical abuse if signs are present, at any stage of therapy. Michigan laws (Public Act 519 of 1982, commonly called the APS law) require that physicians, therapists, and certain public officials report all suspected cases of elder abuse to proper law enforcement authorities. It is within the jurisdiction of Michigan APS to decide whether elder abuse has taken place and not the role of clinicians.

Strengths, Limitations, and Directions for Future Research

There are several strengths in this study worth mentioning. First, the measurement instrument used to collect elder abuse relevant information was validated and calibrated in a pilot study and based upon a large sample. By employing the random digit dialing sampling method the study sample was as close to a nationally representative random sample as possible. To add refinements to MIDUS II and create a relatively proportional sample, males and certain ethnic groups were oversampled. Although most cases did not meet this study's eligibility requirements (65 years or older and living with an adult child) and, nevertheless a large sample (over 200) was available for statistical analyses. The latent variables used in this study were well defined (exiting and accepted definitions used) and substantively more meaningful in their own right and their interrelationships than simple manifest indicators overwhelmingly used in previous studies. Both the measurement and structural parts of the models were based on the substantive relationships of interest as set forth by Schiamberg and Gans (2000) in their "Ecological Bi-Focal Model for Elder Abuse". Data analysis was based upon a large national random sample, sound mathematical equations, and carried out with the aid of LISREL modeling. Therefore results obtained are generalizable. The empirical evidence provided by this study, including the moderate or non-significant estimate loadings and paths, suggest that the Ecological Bi-Focal Model for Elder Abuse framework was soundly conceptualized, (Schiamberg & Gans, 2000) and provide a useful explanation of ecological risk and protective factors involved in the process of elder physical abuse. In addition, our findings have successfully broadened the way we conceptualize specific latent risk factors, such as the *Victim Health,* and clarified how exactly it influences and or predicts

elder physical abuse. Finally, the importance of the relationship quality between the elderly parent and adult child was examined and findings suggest that it definitely functions as a mediator and to some extent even as a moderator (e.g. increased the magnitude of estimates and changed their sings). In sum, empirical evidence confirmed the accuracy and relevance of the Ecological Bi-Focal Model for Elder Abuse theoretical framework in describing the ecological risk dimensions of elder physical abuse (Schiamberg and Gans, 2000).

This study has several limitations that highlight opportunities for future research directions. The MIDUS II surveys obtained answers for the risk dimensions and elder physical abuse prevalence from one source, the physically abused older adult. Therefore the veracity of answers could not be verified. As such, intervention methods (e.g. crisis and long term therapy) developed based upon this study have a limited scope and might not be applicable until further research confirmed findings.

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Since the aim of the MIDUS research was not specifically directed towards measuring elder physical abuse, several limitations attributed to the MIDUS II research design have to be considered. First, for this study archival and legal (e.g. police reports) files were not available to confirm the accuracy and veracity of respondents indication of

physical abuse in the self-report instrument. Second, the use of self-report in the MIDUS II questionnaires might have limitations such as over-reporting or under-reporting along ethnic and gender lines (e.g. due to overrepresentation of the female gender and Caucasian race in the dissertation sample the physical abuse distribution might be skewed) (Griffin & Williams, 1992; Shaughnessy et al., 2006). Third, the direct manifest outcome variables (e.g. ever physically abused and ever sexually abused) did not specifically measure or refer to physical abuse occurring after age 65 and committed by adult children. Finally, shame, dependency, and unwillingness to admit abuse due to concerns for themselves as well as the abusive adult child might have resulted in serious under-reporting (Griffin & Williams, 1992; Quinn & Tomita, 1986) of physical abuse.

The MIDUS II project was designed to examine the role of behavioral, psychological, and social factors in understanding age-related differences in physical, emotional, and mental health, (Ryff et al., 2007). Although the MIDUS II data collecting instruments were pilot tested for reliability and validity, it was not developed to specifically measure ecological risk factors during the process of elder physical abuse. Therefore the next step in establishing the Ecological Bi-Focal Model as the preeminent theoretical framework for elder physical abuse would be the creation of a specific measurement instrument that would capture and measure several ecological dimensions of elder physical abuse. This instrument could be made available to researchers, APS workers, physicians, and clinicians treating physically abused elderly patients and their families.

Another limitation was the fact that both manifest dependent indicators of the elder physical abuse dimension were discrete and dichotomous with very unique

distribution properties. Consequently these measurements might not have captured as many dimensions of the elder abuse construct as a continuous variable. It would be advisable to develop a continuous measure for the elder physical abuse manifest indicators and re-run the LISREL models on the MIDUS II data set. Consequently the elder physical abuse measurement instrument will have continuous outcome direct indicators with normal distributions properties.

The existing literature on elder physical abuse lacks models that tested the mediating/ moderating role of the relationship between the elderly parent and her/ his adult child. Therefore this study appears to be the first that examined the influential aspects of this relationship construct in the process of elder abuse. Findings emerged from this study suggest the *Victim/ Adult Child Relationship Quality* construct might constitute a partial dimension of the *Social Relations,* (Antonucci, 2001) latent ecological factor. As such the Social Isolation and *Victim/ Adult Child Relationship Quality* latent variables should have been combined into one factor (*Social Relations*) and the models tested again. Future research could use the *Social Relations* ecological construct to test correlations between ecological risk dimensions and elder physical abuse.

This study had no available measures to test how societal ageism (macrosystem) and life transitional phases (chronosystem) would influence elder abuse and its risk dimensions. A consideration of ageism as it affects elder abuse is important because it facilitates a contextual understanding of economical, political, and social dimensions of society within which elder abuse occurs. Devaluing the elderly (e.g. greedy senior citizens) covertly justifies certain discriminatory behaviors as well as abusive activities (e.g. financial exploitation and elder abuse). In addition, transitional phases in life (e.g.

terminal decline) and its effects on elder abuse are also missing from this study due to unavailable measures. A complete ecological model on elder abuse will have to include these two dimensions as well. The testing of these two systemic levels as they influence elder abuse would be a very important contribution to scholarly literature hence a future research direction in the field of elder abuse.

Finally, to examine the extent to which this study would replicate in a non MIDUS II sample, a model cross-validation might be required in order to select the "best" model among a set of alternatives to avoid the possibility of the accepted model only fitting the data-base for which it was developed. Given the limited scope this study, models cross-validation was not possible at this time.

Concluding Thoughts

This study provided a window into the interactions of several ecological risk factor dimensions and their individual and interactional effects on elder physical abuse. The novel approach to conceptualizing the *Victim Health* construct offered a holistic view of how various sub dimensions (e.g. physical illness and psychological/ emotional problems) of this construct interact with each other and influence in turn elder physical abuse. Findings suggest that negative human emotions such as anger, anxiety, and fear are the strongest predictors of elder abuse and not the diagnoses attached to the presence of certain illnesses such as Alzheimer. In addition, this study's results confirm the vital significance the relationship quality between the elderly parent and adult child plays in the process of elder abuse. Finally, this study proved to be a useful first step in

confirming the assumptions and conclusions of the Ecological Bi-Focal Model for Elder Abuse as developed by Schiamberg and Gans (2000).

While far from comprehensive, this study provides important and novel contributions to the theoretical literature on elder abuse because: (1) there is a paucity of research, especially with a quantitative designs, on elder abuse in the field of marriage and family therapy, (2) it is the first study that empirically examined the Ecological Bi-Focal Model for Elder Abuse, (Schiamberg & Gans, 2000), (3) provided empirical data that confirmed the robust significance of victim/ abuser relationship as a mediator between risk factors and elder abuse, and (4) suggested useful marriage and family therapy implications when working with the elderly, (5) recommended new areas of research programs in the field of elder abuse.

APPENDIX A

Survey Protocol

1. An advance letter was sent to all respondent with all information necessary to know about the MIDUS research.
2. A week later respondents were called and the phone survey process completed.
3. When the telephone interview was completed, a check for $25.00 was sent out to the respondent within one week.
4. A week after checks were sent out a packet was mailed to participants containing the followings: (a) a letter explaining how to complete the mail surveys, (b) two SAW booklets, (c) a tape measure to be used in providing body measurements, (d) a survey reply envelope with postage paid, (e) and a pre-incentive of ten dollars for completing the survey.
5. One week after the SAQ surveys were mailed out, a postcard was sent to encourage participants to complete and mail back the surveys. If a respondent did not return the SAQ within five weeks of receiving it, another packet was mailed out – without the ten dollars incentive.
6. If a respondent did not return the SAQ within the next three weeks of receiving it, another packet was mailed out – without the ten dollars incentive.
7. If three months have elapsed from the initial mail (first packet), a phone call was made to the respondent to encourage them to mail back the survey, and to provide information about the cognitive survey.
8. When the completed SAQ's were received by MIDUS staff participants were sent a check for 25 dollars.

9. One week after the payment for the mail survey was sent, cases were fielded for the Cognitive telephone survey.
10. Before the fielding of Cognitive surveys another packet was sent to participants contacting: (a) a package of post it note with the MIDUS logo, (b) a letter of request for participation, and (c) a check for 25 dollars.
11. Two weeks later the fielding of Cognitive surveys started even if the respondent had not mailed back their SAQ's.
12. Before concluding the survey process a telephone version of the SAQ was developed by the MIDUS researchers which contained approximately 25% of the items in the original SAQ. These questions reflected the areas that investigators believed to be the most valuable questions from the SAQ, but were limited to this number to create a viable telephone survey length for what came to be called the SAQ By Phone effort.
13. Respondents that failed to mal back the SAQ's were fielded for this effort in the summer of 2006, and nearly half of them completed the telephone version of the SAQ surveys.

APPENDIX B

MIDUS Sample

The initial MIDUS sample was composed of the four specific subsamples: (a) a national RDD (random digit dialing) sample of (N=3,487), (b) oversamples from five metropolitan areas in the U.S. (N=757), (c) siblings of individuals from the RDD sample (n=950), and a national RDD sample of twin pairs (N=1,914). Theoretically every adult, who was non-institutionalized and English language speaking, within the perimeters of the United States were eligible to participate in the MIDUS research project. Oversampling of elderly and of men was achieved by altering the likelihood of completing the interview as function of sex and age and then randomly selecting from sample acquired. The purpose of this type of oversampling was to advance targeted research agendas. If these targeted respondents did not complete the interview the household was dropped from eligibility. Selected respondents were invited to complete a phone interview of approximately 30 minutes in length followed by two mailed self-administered questionnaires (SAQs), each approximately 45 pages in length. Once the two SAQ questionnaires were completed, respondents had to mail them back in a self addressed and stamped envelope. Financial incentives were used to maximize participation and respondents who completed all phases of data collection received $20. Of respondents who reported having one or more siblings, 529 individuals were randomly selected. Only siblings that shared the same biological mother and father were selected for sampling purposes. This method yielded 1, 480 eligible participants. Out of this sample 950 respondents successfully completed the phone interview, some of whom (678) came from the same family. In order to recruit twin pairs for this study a two

pronged sampling design was employed. First a national sample of 50,000 households was screened for the presence of a twin. Then 14.8% of respondents, that identified a twin, were asked for permission to contact their sibling to solicit their participation as well. 60% of the eligible recruits gave permission to contact their twin sibling. In addition, the twin subsample was administered a short screener to assess zygosity and other twin-specific information. In conclusion, this study was groundbreaking due to its broad scientific scope (age related differences in mental and physical health due to psychological, behavioral, and social factors) its large and diverse samples, and its creative use of both phone and mail surveys.

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