

**Trusting the Con Man:
The Role of Social Networks in the
Diffusion of Fraud**

by

Rebecca M. Nash

M.Sc. (Criminal Justice), California State University (Long Beach), 2009
B.Sc. (Criminal Justice), California State University (Los Angeles), 2002

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Approval

Name: Rebecca M. Nash
Degree: Doctor of Philosophy
Title of Thesis: Trusting the Con Man:
The Role of Social Networks in the Diffusion of Fraud
Examining Committee:
Chair: Ted Palys
Professor

Martin Bouchard
Senior Supervisor
Assistant Professor

Martin Andresen
Supervisor
Associate Professor

Aili Malm
Supervisor
Associate Professor
Department of Criminal Justice
California State University (Long Beach)

Nilesh Saraf
Internal Examiner
Associate Professor
Beedie School of Business

Robert Faulkner
External Examiner
Professor Emeritus
Department of Sociology
University of Massachusetts (Amherst)

Date Defended/Approved: August 15, 2013

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Abstract

This dissertation is focused on the social structure of a Ponzi scheme, and the consequences of that structure on various phenomena associated with it. A central assumption of this dissertation is that the social structure of a pre-planned fraud has consequences for understanding how and why such a fraud spread to such a large number of victims, and the implications for the nature of the investment that victims made, or the harm they suffered after it was revealed that they were involved in a fraud. Using data from a detailed survey of 559 victims of Eron Mortgage, a fraud which deceived 2,285 investors for \$240 million between 1993 and 1997, this dissertation draws from social network analysis, diffusion theory and models of trust, adding to the body of literature on white-collar crime in the context of fraud victimization.

Results show that characteristics of social ties within the structure of the Eron network were responsible for the successful spread of the fraud: 1) Eron principals and Eron employees invested their personal time and effort recruiting investors; 2) independent brokers actively spread the fraud to their clients; and 3) investors themselves, unknowingly spread the fraud through their social networks by recruiting their friends and family to invest in Eron. Findings also show that trust in specific types of social ties is associated with increased initial investments and different types of harms experienced by victims (emotional, financial, and harm to friends and family relations). Respondents who reported having been influenced to invest by multiple types of sources however generally reported lower levels of loss of capital and harms suffered. The social chain element inherent in the structure of Ponzi schemes plays a dual role in either protecting against or being the cause of malfeasance, having implications for fraud victimization and making it an important factor to integrate in future studies on white-collar crime.

Keywords: White-collar crime; Ponzi; fraud; diffusion theory; social networks; trust

Dedication

To Martin Bouchard and Aili Malm, you are my family and your support is priceless.

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Chapter 1.

Introduction

The extant literature on crime victimization focuses predominantly on victims of violent and/or street crime not on victims of white-collar crime yet, the costs of white-collar crime on society far outweigh that of violent and street crime (Croall, 2007; Deem, 2000; Kerley & Copes, 2002; Moore & Mills, 1990; Titus, Heinzelman, & Boyle, 1995). Moreover, while many studies on victims of white-collar crime have been conducted, the fraud victimization literature that exists often focuses only on the demographic and socio-economic characteristics of individual victims and their reporting behaviours. Deem (2000) argues that victims of white-collar crimes are often relegated to second-class status within the criminal justice system because victims of violent crime take precedence. Deem (2000) suggests that we must also uncover the reasons for which these victims are appointed this second-class status. The lack of data presently available on white-collar crime compared to violent crime however, and the lack of in-depth studies on victims of white-collar crime, particularly in examining the issues of influence and trust which so often are incumbent in market transactions is evidence that future research must be conducted. Furthermore, the lack of research on victims of white-collar crime using applications of social network analysis justifies the necessity to undertake the research presented in this dissertation.

One major type of crime that falls under the umbrella of white-collar crime is corporate fraud. Corporate fraud encompasses all actions of deceitful or deceptive conduct designed to manipulate another person to give something of value (Barnett, 2009). More specifically, Berger (2011) defines corporate fraud as “the deliberate misrepresentation of truth or fact by which someone attempts to induce another into taking action that is financially disadvantageous to them” (p 76). A subcategory of corporate fraud known as securities and investment fraud is defined as “fraud that

encompasses a variety of illicit activities and strategies which generally include the deception of investors or the misrepresentation by capital market participants.” (Royal Canadian Mounted Police [RCMP], 2010, para. 1) Deceptions may include Ponzi and pyramid schemes, insider trading, illegal distribution of monies, registrant misconduct (includes brokers and investment advisors), and market manipulation among others (RCMP, 2010).

The investment fraud Eron Mortgage Corporation executed falls under the definition of a “Ponzi” scheme. The specific case under study is a large-scale Ponzi scheme in the form of a pre-planned mortgage fraud perpetrated by Eron Mortgage Corporation in British Columbia, Canada, from 1993 to 1997. When the fraud was detected by the authorities in 1997, Eron had raised over \$240 million from investors, which at the time made it the largest fraud ever detected in the country. According to the Canadian Securities Administrators (CSA, 2002) and the United States Securities Exchange Commission (USSEC, 2010), a “Ponzi” scheme is investment fraud in which payments of “promised” returns are paid to existing investors from funds obtained from new investors. The payment of returns gives the illusion that investments are paying off and adds to the credibility of the fraudulent company. The first successful “Ponzi” scheme, and thus the name, was carried out by Charles Ponzi in 1919. Charles Ponzi promised his unwitting victims high returns for false investment opportunities using word-of-mouth to spread the fraud (Bhattacharya, 2003; USSEC, 2010). The initial scheme was successful because Ponzi delivered to his initial investors. Bhattacharya (2003) explains that there are three main components to a Ponzi scheme: 1) convincing a group of people that you have an innovative idea; 2) the promise of high returns with little or no risk to the principal investment; and 3) making initial payments to early investors which come directly from the victims’ principals (p.3). These three components require diffusion through word-of-mouth in order for the Ponzi scheme to remain successful. Word-of-mouth occurs within trusted relations embedded in social networks.

This dissertation examines in detail the pre-planned securities fraud perpetrated by Eron Mortgage Corporation. During the period January 1993 to October 1997, Eron Mortgage Corporation, a mortgage brokering company for commercial real estate in Canada and the United States, defrauded 2,285 investors of \$240 million by promising

low risk, high return investments on commercial properties. Eron president Brian Slobogian and vice president Frank Biller paid existing investors' returns with money gained from new investors (British Columbia Securities Exchange [BCSE], 1999). The Eron Mortgage fraud to date is the largest Ponzi scheme to have transpired in Canada; the size of the fraud being unprecedented such that numerous theoretical, empirical, and practical issues are raised regarding the factors which made this fraud a reality. The principals of Eron blatantly misused investors' money in which many investors lost their life savings, homes, and even suffered long-term physical and emotional harms (Boyd, Malm, Kinney, 2005). This dissertation examines specific elements of this pre-planned fraud which made it possible for Eron to spread it to so many victims and in so doing, we pay particular attention to the Eron principals who initiated the fraud and the strategies they used to convince victims to invest in their fraudulent scheme. At the same time, a fraud of this magnitude can hardly be made possible without the implicit contribution of the victims themselves, spreading what they considered to be a sound, financial investment opportunity that would benefit them and their friends and family.

Notions of trust are vital in understanding how this fraud was made possible however, it is important to distinguish between trust victims placed in the "con man" and trust victims placed in friends and family when influenced to invest in Eron. The diffusion of innovations theory and theories on trust will provide the theoretical framework to determine how the fraud perpetrated by Eron spread through a population of Eron victims, much like a legitimate innovation spreads through a population of consumers. Social network analysis will provide the ability to map the underlying structure of the Eron victim network, identify relationship ties and pinpoint key players to determine the role of trusted social ties in the spread of fraud on outcome predictors of decision-making, loss of capital and harm experienced by Eron victims. Applications of social network analysis will allow us to bring to light network characteristics such as centrality, opinion leaders, change agents and other relational and structural attributes embedded in the structure of the Eron network. These attributes of networks greatly influence adoption rates over time, through word-of-mouth affecting how the fraud spreads through a population of investors.

The studies presented in this dissertation focus on the social structure of the Eron fraud, and the consequences of that structure on various phenomena associated with the fraud. In the tradition of the literature on social networks, a central assumption of my work is that the social structure of Eron has consequences for understanding how and why such a fraud spread to such a large number of victims, and the implications for the nature of the investment that victims made, or the harm they suffered after it was revealed that Eron was a fraud. What makes these questions particularly intriguing in the case of Eron is the very “social” nature underlying the spread to investors where friends and family members unknowingly participate to the victimization of their loved ones. The paradoxes inherent to the core of this case are a driving force motivating this study.

This dissertation fills the gap in knowledge by contributing to new studies on victims of white-collar crime and more specifically, addressing the knowledge gap and the implications inherent in the social structure of a pre-planned fraud to describe in detail how an illegal innovation (mortgage fraud) successfully spread through a population of victims. To address these gaps in the literature, three separate, but overlapping studies will be presented. In the first study, the characteristics of the innovators (sellers of the fraud) and victims of the fraud, including relationship ties, opinion leaders and change agents, network bridges and information channels are of particular interest. The literature on diffusion theory and social networks implies that one cannot happen without the other; it is through a social system that diffusion takes place (Rogers, 2003; Valente, 1995). Drawing from diffusion theory and applying social network analysis methods, the first study will describe in detail the social structure of the Eron network and how it contributed to the successful diffusion of the fraud through a population of victims. The first study will also address the relationship between victims and their social ties who influenced them to invest to determine if sociometrically identified *opinion leaders*, industry professionals acting as *change agents* and *impersonal information channels*, typical elements of a successful diffusion, were integral in spreading the fraud to Eron victims. This study adds to the current literature by applying social network analysis and diffusion theory to a pre-planned fraud. The only other study that exists on the diffusion of fraud is that of the Fountain, Oil and Gas fraud studied by Baker and Faulkner (2003), an intermediate fraud that started out as a legitimate business in which a diffusion effect was not found.

The second study is an extension of the first, utilizing the social structure of the Eron network to determine if investor decisions are embedded in their social relations. In other words, this study is looking to uncover whether or not different types of trust in one's social ties and conducting due diligence played an integral role in shaping the decisions investors made at two different time periods over the course of the fraud (in the beginning of the fraud when investors chose how much to invest in Eron and after initial investments had been made up to the end of the fraud when they were informed of their losses). This study will apply Zucker's (1986) typology of trust to uncover whether or not different types of trust in social ties affect the amount of an investor's initial investment in Eron and their loss of capital due to involvement in the fraud. The body of literature on trust and economic transactions is clear, people often substitute trust in place of conducting due diligence (Baker & Faulkner, 2004; DiMaggio & Louch, 1998; Stolowy, Baker, Jeanjean, & Messner, 2011) therefore, the second study will also address whether or not performing due diligence affects the amount of an investor's initial investment and loss of capital in the Eron fraud. This study adds to the literature on fraud victimization by providing a more in-depth understanding of the effects of the social structure of the Eron network on investor decision-making and the embeddedness of trust within social relations and how these concepts come together to form a successful, pre-planned fraud that spread through a population of victims.

The third study in this dissertation is supplemental to the second study, extending the idea of trust embedded in social ties within the structure of the Eron network and applying Zucker's (1986) typology of trust to determine their effects on the harms experienced by victims of fraud. More specifically, this study is looking to uncover the effects of trust in one's social ties embedded in the Eron network on four different types of harm victims of Eron suffered after they were aware of their victimization. The extant literature on harms suffered by victims of white-collar crime confirms that victims of fraud suffer many types of harm besides financial loss, including emotional and psychological harm, harm to relationships, and even physical and medical conditions related to their financial and emotional loss (Ganzini, Bentson, McFarland & Cutler, 1990; Deevy, Lucich, & Beals, 2012; Lewis, 2010; Shover, Fox, & Mills, 1994). Research has also shown that trust placed in certain types of social ties (trusted friend or loved one) causes

feelings of betrayal leading to emotional suffering (Koehler & Gershoff, 2003). This study addresses the overarching gap in the literature on the causes of harm to victims of white-collar crime by applying social network analysis to fraud victimization studies. More specifically, the third study focuses on trust in social ties as a cause for the different types of harm experienced by Eron victims, as well as addressing how different types of trust affect the degree of harm suffered.

The theoretical framework for this dissertation begins with an examination of the structure of the Eron network, drawing from diffusion of innovations theory and social network analysis to answer the research questions for the first study presented here. We then examine theories of trust and the importance of trust embedded in the Eron network on financial decision-making to answer the research questions in the second and third studies of this dissertation. The theoretical framework offered in this dissertation will set the stage in describing how a fraudulent scheme spread through a population of unsuspecting victims for over six years from trust embedded in victims' social networks. Following the theoretical framework, we offer an explanation regarding how this study fills the necessary gaps in the literature on white-collar crime and social networks. In a broad sense, this dissertation fills the need for more literature on white-collar crime, particularly research aimed at victims of white-collar crime. In a specific sense, I address the gaps by uncovering the social structure of the Eron network utilizing social network analysis in the context of diffusion of innovations theory and trust embedded in the social ties present in the Eron network to better understand how a Ponzi scheme perpetrated by Eron Mortgage successfully spread through a population of victims.

Diffusion of Innovations and Social Networks

The diffusion of innovations is most fittingly studied as phenomena embedded in the structure of social networks (Valente, 1995). Social networks are especially relevant in the uncertain and risky environments inherent in investment decisions (Baker &

Faulkner, 2003) because trusted social ties tend to reduce information asymmetry¹ by providing an avenue of information to buyers and investors; however, such relationships may also create opportunities for malfeasance (Baker & Faulkner, 2004; Granovetter, 1985; Pack, 2002). Rogers (2003) defines diffusion as "...the process by which an innovation is communicated through certain channels over time among members of a social system" (p. 11). An innovation is "...any idea, practice, or object perceived to be new by an individual or other potential source of adoption of the innovation" (Rogers, 2003, p. 12). The importance of social networks is obvious in considering the mechanisms of diffusion. The literature reveals three models of diffusion: 1) Contagion – diffusion occurs when people come into contact with others who have adopted the innovation; 2) Social influence – diffusion occurs when enough people in the group have adopted and conformity is desired; and 3) Social learning – diffusion occurs when people see enough evidence to support adopting the innovation, and this evidence comes from prior adopters (Rogers, 2003; Valente, 1995). Each of these models exhibits a different diffusion curve when adoption of an innovation is measured over time.

Wejnert (2002) presents a conceptual framework of the diffusion of innovations theory as having three major components: 1) characteristics of innovations; 2) characteristics of innovators; and 3) an environmental context. These components interact with each other and produce a diffusion of a certain magnitude, speed, and orientation. For instance, the environmental context may determine which characteristics of an illegal innovation will be emphasized by offenders (Bouchard, 2007; Tremblay, Talon, & Hurley, 2001, p. 563). The relative complexity of the innovation may also influence the type of innovators who will successfully adopt it. Mativat and Tremblay (1997) showed for example, how a particularly sophisticated and highly rewarding credit card fraud scheme in Montreal did not diffuse past the limits of a specific ethnic group. Analogous findings were found by Baerveldt and Snijders (1994) for the speed of diffusion of deviant practices among students of different school levels.

¹ Information asymmetry occurs when market information tends to be on the side of the seller and is generally present in most market transactions.

Valente (1995) describes two types of diffusion networks, both containing elements that can affect how an innovation spreads through a population; relational diffusion networks and structural diffusion networks. Relational diffusion networks posit that direct contacts between individuals influence the spread of an innovation (Valente, 1995, p.31). Within the relational context are opinion leaders, individuals who are the most influential players in the network. These are the individuals with the most nominations from other members in the network. Because opinion leaders are earliest to adopt an innovation for example, the risk and uncertainty prevalent beforehand decreases and thus, more people are likely to adopt at which time the innovation spreads to early and early majority adopters (Valente, 1995). Important to note is that opinion leadership is related to centrality. Positions of centrality within a network are defined by positions of power and influence and these central or key players greatly affect how innovations spread (Valente, 1995). Central players can also be a sign of weakness in that they are the most visible members of the network (Morselli, 2009). Structural diffusion networks on the other hand can affect the rate and character of diffusion and include the element of network bridges (weak ties), individuals who connect otherwise unconnected people or groups. The presence of network bridges accelerates the diffusion process (Valente, 1995). For example, Patacchini and Zenou (2008) found that an increase in weak ties within adolescent relationships between delinquents and non-delinquents increased the transition between non-crime to crime and thus increased the overall rate of crime in the economy (p. 229).

Baker and Faulkner (2003) propose that a fraud spreads through a population of perpetrators and victims much like any new innovation. They specify two methods of diffusion used to propagate a fraud - social networks and impersonal methods. They construct a four-model typology of fraud diffusion based on these two methods. The first two models focus on the perpetrator: 1) whether they learn about fraudulent techniques through interpersonal communications; or 2) through impersonal methods such as written documents and observations. The last two models focus on the victims of fraud: 3) how victims are influenced through social ties and prior investors; and 4) how victims who are influenced through mass media such as mailing, television, newspapers, and telemarketing (p.1604-1605).

These models emphasize the method by which individuals first hear about an innovation; mass media or interpersonal channels. Mass media channels can reach a large audience and quickly spread information through a population. They are also particularly adept at changing weakly held opinions and attitudes (Rogers, 2003). As argued by Rogers (2003), mass media channels are especially useful in spreading information to early adopters at the beginning stages of the diffusion process (p. 204-205). Interpersonal channels include face-to-face interactions and offer a two-way information exchange among the individuals sending and receiving messages. Interpersonal channels have a greater power of persuasion than mass media in changing attitudes and beliefs, and thus, are more important at the later stages of diffusion when dealing with late adopters or laggards (Rogers, 2003, p. 205). There are five categories of adopters within the diffusion literature: 1) innovators (opinion leaders), or those who start the word-of-mouth diffusion process; 2) early adopters; 3) early majority adopters; 4) late majority adopters; and 5) laggards. Adopter categories are based on their degree of innovativeness, or how likely an individual will be an early adopter (Rogers, 2003, p. 22). Early adopters have been shown to be involved in trusted social relations, such as friends and family members with the opinion leaders who influenced them to adopt the innovation through word-of-mouth (Rogers, 2003; Nooy, Mrvar, & Batagelj, 2005; Valente, 1995). Adopter categories are also relevant in uncovering important demographic and socio-economic characteristics which play an important role in tie formation within social networks (McPherson, Smith-Lovin, & Cook, 2001).

These general principles about the importance of social ties also emerged in prior literature on investment decisions, whether such opportunity ended up being legitimate or not. For example, examining what convinced stock purchasers to buy, Shiller and Pound (1989) found that it was mostly because some of their trusted friends had done it already. This finding has been partially replicated by Baker and Faulkner (2003) in the context of an intermediate fraud, fraud performed by a business after having established a solid legitimate foundation for its activities. The authors, however, discovered that impersonal methods of diffusion (such as hearing about the investment through advertising, mailings, telemarketing, and cold calls) were just as important in spreading the fraud as personal methods of influence. From interviews with investors, they discovered that the principals tried to induce diffusion, inciting victims in spreading the word about the investment opportunity. When the majority declined, they relied on impersonal methods. This result emphasizes the fact that investors will not automatically spread the word about an opportunity, especially so in the case of an investment opportunity that carries a significant amount of risk and uncertainty. In the Baker and

Faulkner (2003) example, the relative reluctance of investors to spread the word may have prevented the emergence of a “diffusion effect” driven by social networks. The diffusion curve showed that the fraud spread linearly, instead of the classic logistic curve (S-shaped).

Models of Trust

Trust plays an important role in financial decisions of any kind (Burt & Knez, 1995; Coleman, 1990; Granovetter, 1985), as such; it is an important aspect of corporate fraud victimization cases such as the fraud perpetrated by Eron. When making financial decisions, people often rely on trusted social ties such as family members and friends, or on others through which their family and friends recommend (Baker & Faulkner, 2004). However, relying on trusted social ties to make decisions, particularly financial decisions where loss has the potential to be great can, as Granovetter (1985) explains, lead to opportunities for misconduct by the trustor. It is in this vein that an introduction and explanation of trust and its many manifestations is warranted in understanding how fraud occurs. Rationalizations of trust reveal how it is embedded in social ties and that risk and uncertainty is at the very core of trust, like the risk and uncertainty encountered when making investment decisions.

The extant literature on trust suggests that there are many differences in how trust is defined and theorized. Couch and Jones (1997) provide several of these differences found in the literature: trust is expected, it is a human characteristic or trait, an attitude, it is situational, relational and it is based on social relationships and specific relationships (p. 319). Hill and O’Hara (2006) conceptualize trust as cognitive and behavioural, they argue that the decision to trust is made both consciously and subconsciously, and that cognitive factors of trust are confidence, reduction of uncertainty, reduction of risk-taking and vulnerability while Castelfranchi and Falcone (2001) believe that trust is both cognitive and social and define trust as “the subjective probability by which an individual A, expects that another individual B, performs a given action on which its [A] welfare depends” (p. 59). They believe that trust consists of beliefs, evaluations and expectations about the other actor, the actor’s capabilities, self-confidence, willingness, persistence, motivations, goals and beliefs – these factors, Castelfranchi and Falcone (2001) argue are the mental, or cognitive ingredients of trust

while the social aspect of trust is based on morality, reputation and authority (p. 58). Hill and O'Hara (2006) define trust as "A state of mind that enables its possessor to be willing to make herself vulnerable to another-that is, to rely on another despite a positive risk that the other will act in a way that can harm the trustor" (p. 1724) while Burt (2005) posits that "trust is a relationship with someone...in which contractual terms are incompletely specified...the more unspecified the terms, the more that trust is involved (p. 93), thus mitigating the risk and uncertainty present in trusting relationships.

Researchers also see trust as having levels or degrees. For example, Hill and O'Hara (2006) suggest two types of trust, "trust that" trust and "trust in" trust. *Trust that* trust is based on predicting a person's future behaviour from their past behaviour and thus, regardless of a person's character, you trust them, but only in situations that do not require a high degree of trustworthiness. *Trust in* trust is a deeper level of trust and is an actual attribute of a person based on the values of the trustee and their motivation to do the right thing; their trustworthiness stems from their actions to maximize the well-being of others. *Trust in* trust is that which is bestowed upon long-term relationships including business relations, intimate relations, and family relations (Hill & O'Hara, 2006).

Burt (2005) argues that levels of trust are based on strong and weak relationships within an individual's network structure; closed networks consisting of strong ties including third-party ties, embody a better environment to trust the individuals around you (if an individual is untrustworthy in this network, word will spread quickly). Trust in this type of environment occurs because, as Burt (2005) posits, "people move to familiarity and from there to more significant exchanges" (p. 99). In other words, people trust those with whom they share close ties such as intimate partners, friends, and family, and perhaps business associates through which an accumulation of successful transactions have already taken place. However, in an open-network where ties are weak, distrust is more likely to occur and thus, fewer transactions which require some form of trust will take place between these types of ties (Burt, 2005). Burt's arguments are reminiscent of Bernard Madoff who, for all intents and purposes, created a closed network from strong ties within the wealthy, Jewish subculture in which trust was implicit. Madoff skillfully manipulated the trust embedded within the social ties of this community

to spread the word about his “investment opportunity” which turned out to be the largest Ponzi scheme in history.

Further, Couch, Adams, and Jones (1996) also contend that levels of trust exist. In the first instrument created to measure trust, the Trust Inventory – a 40 item measure of trust in different types of relationships, Couch et al. (1996) break trust down into three levels: generalized trust, partner trust, and network trust. Generalized trust or global trust is trust in human behaviour in relation to personality and the generalized belief that people are basically good – human nature defaults to trustworthiness. Relational trust is trust in your intimate partner relationships and is based on past as well as current experiences with intimate others, while network trust is trust in friends and family members. In their study on the validity of the Trust Inventory, Couch and Jones (1997) found that each was a distinct type of trust (they claim more research is needed however in further distinguishing generalized trust). The authors argue that all three forms of trust are essential for effective communication and social functioning in everyday decision-making (Couch & Jones, 1997; Couch, et al., 1996). These explanations of trust reveal that distinctions can be made in how we trust others based on our relationships to them however Zucker’s (1986) typology of trust is specifically aimed within an economic setting, breaking trust into relationships based on market transactions. Zucker (1986) makes a distinction between three types of trust: 1) process-based trust which is trust in past or expected exchange or reputation; 2) characteristic-based trust which is based on the social characteristics of individuals and groups; and 3) institutional-based trust where individuals trust in formal institutions to avoid risk and uncertainty inherent in making investment decisions.

Trust theorists concur that trust most often occurs in an environment of some form of risk and/or uncertainty where the trustee is placed in a vulnerable position and thus, trust becomes necessary to form relationships and make transactions (Castelfranchi & Falcone, 2001; Guiso, 2009; Hill & O’Hara, 2006). According to Hill and O’Hara (2006), “Trust reduces the assessor’s sensation of uncertainty and complexity by enabling her to believe that the possibility of harm is lower and the likelihood of beneficial conduct is high” (p. 1735). In other words, risk and uncertainty are essential for creating positive relationships and transactions. Castelfranchi and Falcone (2001)

argue that no matter the situation, decisions based on trust always imply the acceptance of some form of risk. They claim that with trust, there is never certainty (p. 81) and within the context of a risky situation, the higher the level of risk present, the greater level of trust is necessary for the relation or transaction to take place (p. 60), however, Castelfranchi and Falcone (2001) contend that trust can be irrational when the perceived risks are too high or if trust is based on poorly-received information on the trusted actor. Irrational and misplaced trust can cause us to make hasty decisions that may not always be in our best interests. For instance, trust is dependent on the ratio of utility to risk, when utility is high, people tend to take more risks and thus, rely on trust more heavily, thus constituting irrational trust. If irrational trust is misplaced, the decision to trust can lead to malfeasance (p. 61).

Game-theoretic models of trust, particularly the trust game and investment game, describe trust simply as decisions based on perceived risk and emphasize the importance of trust in an economic realm where both trustee and trustor (the two actors in the trust and investment game) are better off if trust is given rather than if the trustor decides to withhold trust (Buskens & Raub, 2008, p. 9). In the first scenario where trust is placed in the trustee, both receive payoff, if however, no trust is placed, the transaction does not take place and neither trustee nor trustor receive anything. These theoretic games model trust based on one's willingness to take the risk that the trustee may have incentive for abusing trust and thus, not following through with the transaction (Buskens & Raub, 2008, p.7). The above conceptualizations in the trust literature reveal the differing definitions and concepts of trust however, there is an overall acceptance among trust scholars that trust is an essential aspect of human behaviour and our ability to enter into various types of trusting relationships throughout our lives (Burt, 2005; Guiso, 2009; Hill & O'Hara, 2006; Couch & Jones, 1997; Castelfranchi & Falcone, 2001). While trust is the backbone of human relations (Couch et al., 1996; Hill & O'Hara, 2006), trust can also have negative consequences if it is misplaced or in the form of overtrust. For instance, overtrust can minimize negotiating and monitoring in the trustee, maximize the occurrence of fraud and can easily cause harm to the trustor (Hill & O'Hara, 2006, p. 1720).

Overtrust can also have negative consequences when the willingness to trust is high which generally occurs within familial relationships, is highly interdependent and if misplaced, can be very costly to the trustor (Hill & O'Hara, 2006, p. 1762). Moreover, individuals will tend to look for external sources in the face of harm even before the consideration that a member with whom they are in a *trusting* relationship caused the harm, placing the trustor at great risk (Hill & O'Hara, 2006, p.1763). In other words, the negative impact of overtrust in relationships is two-fold; the individual is automatically trusted without question and is also the last to be suspected when something goes wrong. Castelfranchi and Falcone, (2001) argue that overtrust causes reduced control in decision-making, inaccurate and careless decision-making, and higher risk and greater cost to the individual (p. 86), all of which can lead to fraudulent behaviour on the part of the trustee whom, lacking morals, incentives or the motivation to maximize the well-being of others, will take advantage of the trustor. Overtrust can also impact an individual's decisions when conducting due diligence. The implication of overtrust in making investment decisions is that trust is often used as a substitute for conducting due diligence, often times leading to fraudulent behaviour on the part of the trustee. For instance, Baker and Faulkner (2004) found that investors in the Fountain, Oil and Gas fraud substituted trust in place of conducting due diligence when making the decision to invest.

Trust as a Cause of Malfeasance

Pressman (1998) offers three effects that fraudsters use to capture the trust of potential investors in manipulating their decision to make an investment; the framing effect, the recency effect, and the halo effect. The framing effect occurs when fraudsters, in the initial stage of a Ponzi scheme, pay out the promised high returns to initial investors, thereby providing "proof" to potential investors that their investments will pay off. The recency effect is directly related to the decision-making processes and trust incurred from framing effects; we are influenced by and make decisions upon the most recent information available to us. The halo effect occurs when positive personality traits of the fraudster induce and persuade others to immediately trust and like them (p. 416). For example, "John Bennett... had the upbeat and outgoing personality that caused people to immediately trust him" (Pressman, 1998, p. 417). John Bennett founded New

Era Philanthropy, a business which offered financial and investment advice to non-profit organizations. Manipulating trust based on his Christian community ties, Bennett turned New Era Philanthropy into a Ponzi scheme (Pressman, 1998).

Two of the largest Ponzi scammers in Jamaica used trust to manipulate their victims by establishing themselves in the community as experts in financial trading, specifically for overseas ventures. They established trust with potential victims by donating large sums of money to charitable organizations and by using high profile investors as bait to lure in new investors. These techniques affect our capacity to trust and our capability to judge the trustworthiness of others, often in favor of the fraudster (Tennant, 2011). For instance, these Jamaican fraudsters used popular, trustworthy media outlets to spread their fraud and according to Tennant (2011), their viral media campaign also helped crush the efforts of the Jamaican government's attempt to spread public education advertisements and awareness of potential red flags and Ponzi schemes to the public.

Bernard Madoff used similar techniques by manipulating the trust his victims placed in him in order to continue his fraud for more than two decades. Kramer (2009) argues that as humans we often rely on the trust we place in others to verify the trustworthiness and reliability of other people. He explains that Madoff was extremely skillful at manipulating social relationships based on trust, hence why many of his victims were from the tight-knit Jewish social community where relationships are based on trust, reputation and word-of-mouth (p.5). Vinod (2009) argues that Madoff surrounded himself with high status persons, portraying himself as a well-to-do individual to the people in his social circles thus, creating a positive, trustworthy self-reputation.

Like the Jamaican fraudsters mentioned prior, Madoff contributed large donations to well-known charities and used his professional status and occupation as the chair of NASDAQ, an advisor for the Securities Exchange Commission [SEC], and as a member of the board of directors for several prominent Jewish institutions to manipulate his victims by establishing trust. As an added bonus, Madoff's position and status from within these trustworthy institutions made him impervious to whistleblowers and regulatory agencies (Dorn, 2010, p. 26; Vinod, 2009). As Vinod (2009) explains, "He

[Madoff] carefully cultivated the trust of several key people and organizations” (p. 3) and according to Van de Bunt (2010) Madoff’s successful Ponzi scheme came from his ability to manage his social circles and gain people’s trust (p. 441). Over the decades-long Ponzi scheme, Madoff slowly built deep-rooted, trusting relationships with his victims. For example, about one third of Madoff’s victims who wrote a victim impact statement said that they had an account with Madoff for over 20 years and they trusted him to make their investments increase. Madoff manipulated the trust people place in their social ties for his own personal gains and manipulated his victims by taking advantage of the trust they placed in him, in some cases causing life-altering, irreparable damage to not only the victims, but to their families across generations (Lewis, 2010).

Comet (2011) examined the link between trust and social networks within the Santa investment fraud, a fraud that persisted for over ten years (1986 – 1999), targeting military officers in Greenland and found that the “confidence men” manipulated trust by presenting themselves to potential investors on behalf of their mutual friends who had already invested (p. 46). Important to the context of this dissertation is that Comet (2011) found that the type of social tie (rank in the military) with whom potential investors trusted mattered in convincing others to invest; higher ranking officers were more persuasive to the majority of Non-commissioned Officers (NCOs) and junior officers and officers of equal rank were more persuasive for senior officers.

The above situations are evidence of Coleman’s (1990) classic example of trust he calls “trust in a confidence man” in which the confidence man, the trustee, offers to the potential trustor a prospect through which the trustor will receive incredibly high gains that are larger than the potential for loss – elements of a typical Ponzi scheme. Because the possibility for gain is so high, the trustor makes a decision to trust due to the prospect of making such a profit even though the potential for misplaced trust is high. Here Coleman (1990) suggests that a confidence man has the ability to manipulate those who already have an overestimate of trustworthiness with the prospect of high gains, taking the trustor then, little to no time in which to trust. This is contrary to the long-term investment in time it takes to trust those individuals who will eventually be friends or intimate others. This scenario suggests that a confidence man has great power in manipulating the trust people place in others. Trust is an essential component in designing a successful fraud to increase the number of investors needed for it to

endure. Along with word-of-mouth through social ties and impersonal methods of dispersion, trust is a powerful force of influence in financial decision-making.

Financial Decision-making embedded in Social Networks

Classical and neoclassical economists argue that economic transactions are independent of social relations however Granovetter (1985) contends that economic behaviour is heavily embedded in social ties. Granovetter's work was part of a research movement examining the embeddedness of economic transactions within social networks (Baker, 1984; White, 1981). For instance, DiMaggio and Louche (1998) argue that the structure of our social relationships is crucial in determining our choices of economic trading partners, how we interact with them, how we use our social networks to gather information about future transactions, and how we choose our transaction partners (p. 619 - 623). Granovetter (1995b, 2005) warns that excluding social relations from economic models is risky if prediction is the goal (p. 47).

One of the first demonstrations of the importance of social networks in market transactions is Baker's (1984) study of trading stock options. While standard economic behaviour would have predicted a more rational search for optimal transaction prices, he found that stock brokers searched to trade or deal in stocks based on their known social ties. Known as search embeddedness (see Baker & Faulkner, 2004; DiMaggio & Louche, 1998) searching within one's network of ties caused many competitive cliques to form, creating greater volatility in stock prices. Interestingly, price volatility creates more opportunities for trading which in turn attracts more actors engaging in market transactions (see Granovetter, 2005, p. 41).

Another example of market transactions embedded in social networks is described by MacKenzie and Millo (2003) who examined the effects of social networks on the diffusion of financial derivatives. Around the early 1970s, financial derivatives were so unimportant that they played no part in market transactions. However, when a closed network of insiders, armed with emerging economic theories on the valuation of derivatives began lobbying through a word-of-mouth campaign, this innovation, once thought of as nothing more than a gamble, began diffusing through the market. By 2000,

financial derivatives were in excess of \$100 trillion (see Granovetter, 2005, p. 45). Diffusion of innovations is a classic example of the power of social networks in promoting the adoption of a new innovation.

Baker and Faulkner (2004) posit that many investors rely on their social ties to obtain information about important financial decisions when investing. DiMaggio and Louch (1998) argue that “interpersonal relations play a crucial role in many consumption decisions – not only in the search process, but also in the choice of transaction partners.” (p. 623). Thus, for risky or uncertain, one-time transactions, individuals are more likely to be influenced by close social ties rather than by financial professionals or impersonal methods of influence such as mailings, cold-calls, and advertisements (Baker & Faulkner, 2004; DiMaggio & Louch, 1998). In fact, trust in one’s social ties plays a crucial role in financial decision-making because most investors rely on family and friends for information regarding purchasing decisions and are often influenced by family and friends when making investment decisions (Baker & Faulkner, 2004; Gaston & Bell, 1988; Shiller & Pound, 1989). Trust in our social ties can help protect us against malfeasance but we must be aware that trust may also be the cause of malfeasance and thus, trust in our social ties may actually increase the opportunities for fraud, especially if the victim knows the potential offenders (Baker & Faulkner, 2004; Granovetter, 1985; Titus, et al., 1995). In fact, Baker and Faulkner (2004) reason that fraudulent attempts are more likely to occur through close-knit social ties because victims become more vulnerable to fraud through trust in these situations.

Applying the diffusion of innovations theory to the pre-planned fraud perpetrated by Eron allows us to ascertain how the fraud spread through a population of victims much like a legitimate innovation spreads through a population of consumers. Using sociometric data and social network analysis we can map the overall structure of the Eron victim network and measure the centrality of actors within from which point we can identify opinion leaders, change agents and other central actors influential in the spread of fraud. Theories of trust reveal its importance in investment decisions specifically, and market transactions in general and provide the impetus for this dissertation, uncovering the effects of trust placed in social ties on the spread of fraud through a network of victims and the impact trust has on investment decisions, loss of capital and harms

experienced by the victims of Eron. Finally, the typologies of trust permit us to measure trusted relations on a constituent level, providing a clearer picture on the effects of trust on fraud victimization.

Research Contributions

It is evident that the structure of social networks and trust in social ties play an imperative role in fraud victimization. Trust in social ties plays a dual role when making investment decisions, either protecting against malfeasance as in the case of the Fountain, Oil and Gas fraud (Baker & Faulkner, 2003; 3004) or being the cause of fraud victimization as is seen in the pre-planned fraud perpetrated by Eron Mortgage. However, there are a number of gaps in the literature dealing with the importance of social networks and the study of victims of white-collar crime. First, little research has examined the diffusion of illicit innovations, particularly pre-planned securities fraud, through a network of fraud victims using applications of social network analysis. As such, we do not know how an illegal, pre-planned fraud diffuses through a social system in relation to legitimate innovations. Second, there has been minimal research on the dual effects of trust and due diligence when making investment decisions and how manipulation of trust by a con man affects financial decision-making and loss of capital to victims of fraud. Only one other study has looked at the dual role of trust and due diligence within economic transactions using data from an intermediate fraud (Baker & Faulkner, 2003, 2004) and they found that trust played a protective role against fraud victimization. Third, there has been no empirical research on the social causes of harm to victims of fraud using sociometric data and applications of social network analysis. Social ties play a significant role in both the type of harm and degree of harm suffered by victims, yet harm studies have largely ignored the impact of social networks, focusing more on financial causes of harm. This dissertation presents three separate studies to address the above research gaps as well as add to the body of literature in the field of victims of white-collar crime in specific and the lack of research on the social structures of fraud networks in understanding white-collar crime in general.

Study #1: Investing in People: The Role of Social Networks in the Diffusion of a Large-scale Fraud

The first study provides a structural analysis of the Eron network and how the fraud successfully diffused through a population of investors using social network analysis to map the Eron victim/influence network and identify key players of influence. In other words, this study looks to find the structural characteristics of the Eron network to determine if the pre-planned fraud spread through a population of investors much like a legitimate innovation spreads through a population of consumers. Using diffusion theory, the cumulative percent of adoptions over time are calculated and the diffusion curves plotted for: 1) the overall network; 2) for professionals vs. friends/family categories; and 3) for information channels using data provided by victims who answered the sociometric question “Who was most influential in persuading you that Eron was a legitimate investment?” to determine whether or not diffusion by contagion occurred, modeled by the logistic S-curve function.

I also consider the central players of the network, such as opinion leaders, change agents and network bridges that were responsible for the spread of fraud. The sociometric data is also used to identify relational ties and calculate network measures of density and centrality. Central players are those individuals who were repeatedly identified as a main source of influence to invest in Eron by respondents. A measure of out-degree centrality is used to identify the number of victims who mentioned others as a source of influence. Exploring out-degree centrality scores provides an indication of the presence of key players within the network. In a directed network, this statistic looks at pairs of actors and counts the number of ties flowing toward a selected node (Freeman, 1979). This form of degree centrality is generally interpreted to measure the popularity or receptivity of a member of the network in comparison to all others (Wasserman & Faust, 1994). I hypothesize that a successful large scale fraud like Eron is not spread solely through word of mouth but instead requires direct participation among the principals and employees of Eron, as well as victims themselves who unknowingly spread the fraud via word-of-mouth and became key players and “brokers” of the fraud in the their own victimization networks.

This study uses data drawn from a survey designed to obtain information on victims of the Eron Mortgage fraud provided by the Eron Lender's Committee and the British Columbia Securities Commission². This study addresses the gaps presented in the literature by the only other social network studies conducted on fraud in the field of white-collar crime; Baker and Faulkner's (2004) Fountain, Oil, and Gas study and Comet's (2011) Santa fraud strategic case study in which sociometric data were not available nor social network measures applied in either study. By applying the theoretical framework of diffusion theory and social network measures to sociometric data, this study uncovers the specific elements within the Eron network that successfully spread the fraud to unsuspecting fraud victims.

Study #2: Twisting Trust: Social Networks, Due Diligence and loss of capital in a Ponzi scheme

The second study applies theories of trust in social relations embedded in the structure of the Eron network and the due diligence paradox at two different time periods of the Eron fraud, the initial investment stage and at the end of the fraud when victims discovered they were unknowingly participating in a Ponzi scheme. When making investment decisions under risky and uncertain conditions, potential investors rely on two forms of information gathering to make decisions; trust in social ties and performing due diligence (Baker & Faulkner, 2004; Buskens, 2002; DiMaggio & Louche, 1998). Two time periods were chosen to examine whether or not trust and due diligence influences an investor's decision-making at different stages of the fraud. Prior studies have found that both trust and conducting due diligence play a dual role when making investment decisions. For example, Baker and Faulkner (2004) found that trust protected investors against opportunistic behaviour while Stolowy, et al. (2011) found that trust was the

² For detailed information on the survey design see Boyd, N., Malm, A., and Kinney, B. (2005). Eron Mortgage study: Final Report. Simon Fraser University or http://www.investright.org/uploadedFiles/resources/studies_about_investors/Eron_Research_Study_with_content_page_links.pdf

cause for malfeasance. Baker and Faulkner (2004) and Pressman (1998) assert that performing improper due diligence can lead to fraud victimization, particularly if information and documentation have been falsified (Rosen & Rosen, 2010). However, conducting proper due diligence can also protect against fraud victimization (Pack, 2002).

Further, by applying Zucker's (1986) typology of trust and breaking down trust into constituent parts, including process-based trust, characteristic-based trust and institutional-based trust, this dissertation attempts to uncover the specific effects different types of social ties have on investing decisions and loss of capital, whether it be a trusted con man, a loved one such as friends and family, or a trusted social institution designed to protect against fraud. Second, because due diligence also plays a dual role in investment decisions, this dissertation will uncover the due diligence paradox, whether performing due diligence hinders or protects against fraud, particularly within the context of relying on trusted social ties. This second study is particularly important because it can uncover the potential harmful effects of relying on trust when making investment decisions under risky and uncertain environments.

By addressing such issues of trust embedded in social networks and performing due diligence when making potentially life-altering investment decisions, the findings of this dissertation offer empirical evidence which can help aid in educating future investors in the dual role that trust and due diligence can play in fraud victimization. Pressman (1998) suggests that while proper due diligence is helpful, it may not be able to account for our reliance on modeling our behaviour after others we trust, especially when we are faced with a risky and uncertain situation with the added incentive of potentially large profits with little to no risk "guaranteed". This second study also has the potential to help educate industry insiders and government regulatory agencies by making them aware of how investors rely so heavily on trust within their social networks to make such important, life-altering decisions.

To test the assumptions of the second study in this dissertation, whether or not trust embedded in social ties and performing due diligence will affect an investor's initial investment and total net loss, three models are analyzed: 1) I model the effects of initial

investment on trust and due diligence; 2) I model the effects of net loss on trust and due diligence; and 3) I model the effects of due diligence on trust. While sociometric data is not used in this study, we can determine how trust in social ties affected the above outcomes by using respondents' answers to the survey question: "Who was most influential in persuading you that Eron was a legitimate investment?" taken from the Eron victim survey.

Study #3: Social Networks as Predictors of Harm Suffered by Victims of a Large-scale Ponzi Scheme

The third study addresses the harm victims of Eron suffered from their involvement in the Eron fraud through trusted social ties embedded in the Eron network. This study presents the most neglected gaps in the literature as little to no empirical research has been done on the causes of harm to victims of fraud. A continuing theme throughout this chapter is the importance of trust embedded in social ties within the context of financial decision-making. The central issue here is that trust in others is a starting point for fraud victimization and can also engender harm when victims realize they have been deceived. We argue that the trust placed in one's social ties may directly influence the level of harm suffered by victims. To examine the harm experienced by victims of Eron, five separate models are analyzed on the full sample of victims (n = 559) looking at the effect of a general measure of influence through trusted social ties and information channels on: 1) the full spectrum of harm; 2) harm to friend/family relations; 3) financial harm; 4) emotional harm; and 5) physical harm. This examination allows us to measure whether or not social ties are responsible for the harms experienced by victims of Eron.

Because the social structure of the Eron network is based on the relationships between the victims and those who influenced them to invest, this study will extend applications of social network analysis to the network sample of respondents (n = 331) to model the effects of centrality on the five types of harm mentioned above. Actors with high centrality scores occupy important positions of trust within social networks and are influential in changing behaviour and spreading ideas to others in the network, particularly in the diffusion of innovations where word-of-mouth is dependent on the trust

placed in the opinions of these influential people (Valente 1995; Rogers, 2003). As such, it is important to identify these actors who are most influential in spreading the fraud to others via word-of-mouth. Out-degree and betweenness centrality (Freeman, 1979) measures are used to identify these trusted individuals and examine whether or not they influence the harm suffered by victims. I will also apply Zucker's (1986) typology of trust to allow for a more detailed understanding of the effects of trust on the harms incurred by Eron victims and whether or not different types of trust cause specific types of harm and affect the degree of harm experienced by victims.

The third study will fill the overarching gap in the literature on harm to victims of fraud and more specifically, will fill gaps in this field on the role of trust embedded in networks on the harm experienced by victims of a Ponzi scheme. It is expected that people who were influenced by and trusted loved one (family and friends) to invest in Eron will experience more harm than victims who trusted professionals or Eron principals/employees. Sociometric data provided by respondents who answered the question "Who was the most influential in persuading you that Eron was a legitimate financial venture?" is used to model Zucker's (1986) typology of trust measures and for identifying the central actors of the network using out-degree and betweenness centrality.

Summary

Overall, this dissertation will provide an in-depth assessment of the Ponzi scheme perpetrated by Eron to discover how their principals, Brian Slobogian and Frank Biller were able to successfully spread their fraud through a network of victims. Drawing heavily on the application of social network analysis, diffusion theory and models of trust, this dissertation uncovers the underlying network structure and how trusted relationships embedded within the Eron network were responsible for the spread of fraud. It also examines the consequences of the social structure to be uncovered, first on the investment decisions made by Eron victims, but also on the various types of harm they suffered. This dissertation contributes to the research literature by establishing that social networks and trust are key factors in the spread of an illicit innovation (mortgage fraud) through a population of victims much like legitimate innovations spread through a

population of consumers. The first study will address the structural and relational components of the network and how these elements of the Eron victim network affected the diffusion process to create a successful fraud. The second study will address trust embedded in social ties and conducting due diligence to uncover whether or not these factors play an integral role in shaping the decisions investors make when they chose to invest in Eron and their impact on loss of capital. The third study extends the idea of trusted social ties on the harms incurred by victims and examines specifically how different types of trust cause different types of harm and to what degree.

A common implication across all three studies is that people rely on trust in their social networks to make potentially life-altering investment decisions which ultimately causes them to become victims of fraud. While Pressman (1998) believes people will continue to make poor financial decisions based on human traits such as trust, risk and overconfidence, Tennant (2011) argues that addressing the issues of human traits and frailties and identifying the characteristics of people who are more likely to invest in Ponzi schemes will help prevent future fraud. He believes we should look at the motivations, specific personality traits, willingness to trust, gullibility, risk tolerance, and typical demographic variables common in fraud victim literature to better understand why people invest in Ponzi scams. He believes this may counter the “demand for offers that are too good to be true” (p. 330). This dissertation provides empirical evidence of the misuse and abuse of trust by both victims and con men within the risky and uncertain realm of investing. By doing so, this dissertation adds to the literature on fraud victimization by providing an in-depth understanding of the inner workings of trust propagated through social networks and how unwitting investors become victims of fraud when placing trust in the con man or a trusted loved one.

Chapter 2.

Investing in People: The role of social networks in the diffusion of a large scale fraud

Introduction

The diffusion of innovations is most fittingly studied as phenomena deeply rooted in the structure of social networks (Valente, 1995). Social networks are especially relevant in the case of illegal innovations where legal, impersonal information channels are generally unavailable, and where uncertainty and risk are at their highest (Baker & Faulkner, 2003). Trusted relationships tend to reduce information asymmetry³ by providing an avenue of information to buyers and investors; however, such relationships may also create opportunities for fraudulent behaviour (Baker & Faulkner, 2004; Granovetter, 1985; Pack, 2002).

This paper draws from social network analysis and diffusion theory to study the case of Eron Mortgage Corporation, a fraud that spread undetected for five years in British Columbia Canada, defrauding 2,285 investors out of \$240 million dollars (details on the case can be found in Appendices 2.1.). Eron was a mortgage brokering business primarily in the market of selling syndicated mortgages in real estate development projects. Formal charges against Eron include: 1) trading securities without being registered; 2) not filing a prospectus on said securities; misrepresenting the intention to

³ Information asymmetry occurs when market information tends to be on the side of the seller and is generally present in most market transactions.

sell securities, and 3) perpetrating a fraud (*Eron Mortgage Corporation et al.*, 1999a). This case is a classic example of a Ponzi scheme⁴.

The diffusion of fraud in our case is studied from the point of view of victims who invested in the fraudulent scheme. Illegal innovations are typically studied from the perspective of offenders adopting novel crime techniques (Bouchard, 2007; Tremblay, 1986; Tremblay, et al., 2001; Mativat & Tremblay, 1997), not crime victims (Baker & Faulkner 2003, 2004; Comet, 2011 being notable exceptions). The purpose of this paper is two-fold. First, we assess whether there is empirical evidence of diffusion in the spread of the Eron fraud. We set out to examine how the Eron fraud successfully diffused through a population of victims compared to a classic diffusion model typical of successful, legal innovations. Perceptibly risky investment opportunities may not spread as rapidly as would be expected by the typical S-shaped (logistic) diffusion curve. In one of the rare diffusion of fraud studies, Baker and Faulkner (2004) found evidence of linear spread, suggesting that contagion within the group of investors never really occurred. Instead, personal selling and advertising were the main drivers (Baker & Faulkner, 2004: p. 108).

Second, we investigate in some detail the social structure of the Eron victim network. More specifically, we examine the nature of the relationship between victims and the individuals who influenced them to invest in order to determine the relative importance of: 1) sociometrically identified *opinion leaders*, who influenced their friends and family into investing in Eron; 2) industry professionals such as Eron principals and

⁴ Ponzi schemes have three main components: 1) convincing a group of people that you have an innovative idea; 2) the promise of high returns; and 3) initial payments to early investors (Bhattacharya, 2003). The key to a successful Ponzi scheme is the continual influx of money from new investors needed to pay returns to existing investors. The first successful Ponzi scheme was carried out by Charles Ponzi in 1919 and much like Eron, Ponzi promised high returns for false investment opportunities and delivered to his initial investors. The scheme Ponzi built promised 50 percent returns on international mailing coupons using word-of-mouth to diffuse the fraud (Bhattacharya, 2003).

employees, financial brokers outside of Eron, and industry regulators acting as *change agents* in “selling” the investment opportunity; and 3) mass media channels in spreading the fraud. In doing so, we aim to shed light on the elements that made Eron successful. Like most legitimate innovations that do not catch on, criminal innovations typically remain small-scale, local in scope, and generally unspectacular. Those that find success are the exception, rather than the norm, and the Ponzi scheme organized by Eron may very well be an exception.

To the best of our knowledge, this study is the first to use social network analysis to study the diffusion of fraud through a victimization network. Previous research (Baker & Faulkner, 2003; Comet, 2011) alludes to the structure of fraud networks through indirect evidence⁵, but are unable to make definitive statements about the central actors and other structural characteristics of the victim network. By analyzing the fraud from a social network perspective, we show how the fraud diffused through short chains from multiple anchor points, including victims who unknowingly became agents of diffusion in their own victimization network.

Conceptual Background

Rogers (2003) defines diffusion as “...the process by which an innovation is communicated through certain channels over time among members of a social system” (p. 11). An innovation is “...any idea, practice, or object perceived to be new by an individual or other potential source of adoption of the innovation” (Rogers, 2003, p. 12). Individuals learn about innovations through two general types of communication channels: 1) impersonal methods, where exposure and influence occurs through advertising and media-related channels broadly defined; and 2) social networks, where interpersonal relations play a key role in getting people to adopt an innovation. Mass media channels can reach a large audience and quickly spread information through a

⁵ Both Baker and Faulkner (2003) and Comet (2011) use geographic concentration of investors and homophilous demographic traits to assess social structure.

population. They are also adept at changing weakly held opinions and attitudes, and are especially useful in spreading information to early adopters at the beginning stages of the diffusion process (Rogers, 2003, p. 204-205). Interpersonal channels include face-to-face interactions and offer a two-way information exchange among the individuals sending and receiving messages. Interpersonal channels have a greater power of persuasion than mass media in changing attitudes and beliefs, and thus, are more important at the later stages of diffusion when dealing with late adopters or laggards⁶ (Rogers, 2003, p. 205).

The two step flow of communication, one of the earliest models of the diffusion of innovations (Katz & Lazarsfeld, 1955), treats these two sources as occurring sequentially. Opinion leaders, the most influential individuals and usually the first to adopt, learn about innovations through mass media channels and transfer their knowledge to the rest of the population through personal influence. Empirical research has since shown that this may not always be the case, especially as individuals became increasingly exposed to, and influenced directly by, the media (Rogers, 2003). Adopters may be convinced either by media or a trusted personal contact, or may need both media and interpersonal relations before being convinced to adopt. As we will explain below, Eron victims reported being influenced by each of these three possibilities.

Successful diffusion typically involves the presence of 1) change agents - professionals “outside” the social system who influence clients’ innovation-decisions in a desirable direction within the system, usually sellers of an innovation (Rogers, 2003, p. 366), and 2) opinion leaders – those individuals who are the most influential in a

⁶ Together, diffusion research recognizes five types of adopter categories – innovators (opinion leaders), or those who start the diffusion process, early adopters, early majority, late majority, and laggards. Each is categorized based on their innovativeness which describes the degree to which an individual is likely to be an early adopter (Rogers, 2003, p. 22). Early adopters have been shown to be involved in trusted social relations, such as friends and family members with the opinion leaders who influenced them to adopt the innovation (Rogers, 2003; Valente, 1995; Nooy et al., 2005). Adopter categories also reveal demographic and socio-economic characteristics of adopters which play an important role in tie formation and an individual’s social networks (McPherson, et al., 2001).

community of potential adopters (Burt, 1999; Valente & Davis, 1999; Rogers, 2003). While they are the most influential members in a community of potential adopters; however, they may not always be the first to adopt an innovation (Burt, 1999; Valente & Davis, 1999; Rogers, 2003; Kadushin, 2012). Change agents act as brokers between the creators of the innovation and the potential adopters to communicate information about the product and accelerate its diffusion (Rogers, 2003). Change agents differ from opinion leaders in that the latter are part of the social system of adopters, while the former are technically outsiders seeking to mobilize adoption. The success of change agents in diffusing an innovation depends on two factors: 1) the level of effort they invest in convincing others to adopt the new innovation; and 2) successfully identifying opinion leaders to continue the influx of new adopters through word of mouth in their own social networks (Rogers, 2003).

Opinion leaders help spread the word about an innovation, have greater influence on adoption than other actors even if they are not the most centrally connected actors, and the intentional use of those opinion leaders as a diffusion mechanism helps accelerate rates of adoption (Rogers, 2003; Valente & Davis, 1999). These individuals are crucial to investment decisions, whether legitimate or not. For example, Shiller and Pound (1989) found that when buying stock, individuals are highly influenced by the purchases of trusted friends. In the special case of a Ponzi scheme like Eron or others (Baker & Faulkner, 2003), those opinion leaders are in fact victims of the fraud. They typically invest early then turn to friends and family to spread the word about the opportunity. Because of their unique position as adopter and persons of influence, they become “bridges” in the network, unknowingly helping to maintain the fraud.

In fact, the failure of Fountain, Oil and Gas [a case study presented in Baker & Faulkner (2003; 2004)] was partially due to the relatively low numbers of such opinion leaders among investors. In other words, social contagion was minimal in that case, which prevented the scheme from catching on as would be expected if a diffusion effect had occurred. Baker and Faulkner (2003; 2004) studied diffusion in the context of an intermediate fraud – a fraud performed by a business after it had established a solid legitimate foundation for its activities. The authors, however, discovered that impersonal methods of diffusion (such as hearing about the investment through advertising,

mailings, telemarketing, and cold calls) were just as important in spreading the fraud as personal methods. From interviews with investors, it was found that the principals tried to induce diffusion by acting as change agents, inciting victims to spread the word about the investment opportunity. When numbers declined, they relied on impersonal methods. This result emphasizes the fact that investors will not automatically spread the word about an opportunity, especially in the case of an investment opportunity that carries a significant amount of risk and uncertainty. If investors themselves do not know what to expect, they may not bring others with them in the process. In the Baker and Faulkner (2003; 2004) example, the relative reluctance of investors to spread the word may have prevented the emergence of a “diffusion effect” driven by social networks. Instead, the cumulative adoption curve showed a linear increase over time, instead of the logistic curve typical of diffusion processes involving contagion.

The Current Study

The current study draws from social network analysis to study the diffusion of a fraud from the victim’s point of view. Comet’s (2011) study of fraud among military members and Baker and Faulkner’s (2003) study of the Fountain, Oil and Gas fraud are important in proposing an analytic framework where fraud spreads through a population of victims much like any new innovation through a population of consumers. Baker and Faulkner (2003), in particular, draw from the two methods of diffusion used to propagate an innovation - social networks and impersonal methods – to construct a four-model typology of fraud diffusion. The first two models focus on the perpetrator, whether they learn about fraudulent techniques through: (1) interpersonal communications, or (2) impersonal methods such as written documents and observations. The last two models focus on the victims of fraud. The third model (3) describes how victims are influenced through social ties and prior investors, and the last model (4) describes victims who are influenced through mass media such as mailing, television, newspapers, and telemarketing (p. 1604-1605). This study’s focus on victims makes the last two models particularly relevant. An important difference between this study and analogous case studies (Baker & Faulkner, 2003; 2004; Comet, 2011) is that we specifically rely on sociometric data to re-create the spread of the Eron fraud. Each victim was asked, “Who was the most influential person, if any, in convincing you to invest in Eron?” This method

allows us to detect whether change agents and opinion leaders were instrumental in spreading the fraud to the victims of Eron. Iyengar, Van den Bulte, and Valente (2011) found that sociometric methods are more accurate than self-report methods in identifying opinion leaders. Another important difference between Eron and the Fountain, Oil and Gas case (Baker & Faulkner, 2003, 2004) is that the latter began as a legitimate company that turned to fraud, whereas it is believed that Eron began as a pre-planned fraud established for the sole purpose of defrauding its victims (*Eron Mortgage Corporation et al.*, 1999a).

Data and Methods

The data for this study are drawn from a victim survey of the investment and securities fraud orchestrated by Eron Mortgage Corporation between January 1993 and October 1997⁷. The sampling frame for this study was a list of approximately 2,800 names obtained from the Eron Lender's Committee and the British Columbia Securities Commission (BCSC). Duplicate names, incomplete addresses and corporate addresses which did not refer to an identifiable individual were removed, leaving 2,285 unique names and addresses of Eron investors.

The study started in fall of 2004. Initially, three focus groups were held with Eron investors who held substantial knowledge of the fraud. These individuals were identified from the list with the help of the Eron Lender's Group and the BCSC. The focus groups helped develop questions for the survey and clarify potential recall issues. The research team was concerned that the amount of time that had passed between the end of the fraud and the study (seven years) would result in inaccurate or incomplete recall of the incident (Skogan, 1986). Participants in the focus groups stated that since the majority of the investors lost a substantial amount of money and had been interviewed by the BCSC

⁷ January 1993 is the official starting date for Eron. However, a few respondents (n = 8) reported investing for the first time in 1992. Given their status as early adopters, the year 1992 was preserved for the purpose of this study.

and the police a number of times over the past seven years, their memories regarding the fraud were clear.

Next, a survey was administered in two waves. The pilot survey was mailed to 520 randomly selected Eron investors in December, 2004. During the second phase of the survey, 1,765 surveys were mailed between February and March, 2005. Of the 2,285 surveys mailed, 438 (19%) were returned undeliverable and 559 investors responded. The total pool of respondents (N = 559) represents 30 percent of the available investors. Efforts to compare the profiles of the sample to the population of investors led the research team to conclude that the sample was most likely representative of all investors, with a slight tendency for those who returned their questionnaires to have invested in the early years of the scheme (1992-95) (Boyd et al., 2005). The survey questions were designed to obtain from respondents, a summary of their age, education, gender, income, net worth, process of involvement in Eron (including personal and impersonal methods of introduction), extent of loss, perceptions of responsibility for the fraud, personal consequences from the fraud, and possibilities for future prevention of securities fraud⁸.

Sociometric Data

Although we use the full sample (n = 559) to create the diffusion curves, the main focus of the study is on the 331 respondents who named a specific person as “most influential” in convincing them that Eron was a legitimate investment. Specifically, respondents were asked “Who played the most significant role in persuading you that Eron was a legitimate financial venture?” Respondents could name (by name) up to five discrete individuals. The mean number of influential individuals named by respondents was 1.6. The open-ended question also asked respondents to indicate their relationship

⁸ A final stage not included in this particular study included telephone interviews with randomly selected subjects from the list of investors. In all, 180 interviews were conducted. The interviews created a narrative of the individual’s involvement in Eron and asked the following specific questions: Was the person interviewed a “sophisticated” or “accredited investor”? If so, what was the definition of these terms? And was the person willing to testify against the principals? If so, what was the motivation? If not, what was the source of the reluctance?

to the individual(s) who influenced them to invest. Of importance for the current study is whether relationship ties between respondents and their sources of influence affected the diffusion of fraud through the network. Six different relationship ties were provided by respondents: 1) Eron principals, 2) Eron employees, 3) friends/family members, 4) financial brokers (outside of Eron), 5) fellow investors, and 6) industry regulators.

Eron principals are the owners of the company, particularly Brian Slobogian and Frank Biller. Eron employees are individuals used as information conduits by Eron to help increase interest in the company. Family and friends is a self-explanatory relationship. Professional brokers are the individuals not employed by Eron who work in the mortgage business and proposed the investment to the victim and provided counseling about the investment. Fellow investors are individuals who invested in Eron and propagated information about their investments to other potential investors, such as friends and acquaintances while industry regulators are entities such as the B.C. Securities Commission and B.C. Registrar of Mortgage Brokers who enforce securities laws and regulations to protect investors from potential fraudulent practices. Note that, outside of the Eron principals, nothing indicates that any of the individuals making up the other five categories of relationships were aware that Eron was not a legitimate business (*Eron Mortgage Corporation et al.*, 1999a).

The sociometric question mentioned above allows us to create the Eron network and map the social structure and social ties that link the victims to the individuals who influenced them to invest in Eron. The 331 victims who answered the question identified 162 distinct persons of influence, for a total network size of 475 individuals⁹.

⁹ Six respondents named themselves as being their own influence to invest in Eron, an answer that was preserved, where appropriate, for some analyses below.

Opinion leaders and change agents

In order to identify the *opinion leaders* among the 164 persons of influence, we took the six categories of relationship ties mentioned above, and grouped together the “friends and family” category, as well as the “fellow investors” category. This allowed us to distinguish between two types of interpersonal channels of information exchange: 1) change agents – professionals selling the mortgages as an investment opportunity, and 2) opinion leaders – influential friends and family telling others about an opportunity to invest in Eron. Important to note is that the incentives of the change agents differ from those of opinion leaders. The former directly benefit financially from each new adopter (whether or not they know what they are selling is a fraud), while the latter’s benefits are, to share a potentially profitable investment opportunity with their social ties. While central actors may be found in each of the two categories of interpersonal channels of information, only the fellow investor and friends and family categories would fit the definition of “opinion leaders” as influential community members spreading the word about an innovation. For the purpose of this study, a person of influence is labeled as “opinion leader” when he/she was nominated at least four times by our 331 respondents, a threshold selected based on the distribution of nominations¹⁰. Though we will examine the most prolific change agents, the label is not attached to a sociometric threshold. Change agents are *any* professionals who helped spread the investment opportunity.

Exposure to Eron: Personal and Impersonal Information Channels

Whereas the network could only be constructed using the 331 respondents who identified at least one influential individual, it was also important to distinguish between impersonal and personal methods of exposure to Eron. To measure exposure to Eron, respondents were asked the following question: “How did you first *hear* about Eron?” Eleven choices were provided and respondents were able to choose all that applied to their individual situation. The choices were: 1. Eron employee, 2. financial broker, 3.

¹⁰ The frequency of nominations jumps steeply when we reach 3 nominations (n = 10) or more.

Family or friend, 4. Business associate, 5. Hockey connection¹¹, 6. Eron seminar, 7. Newspaper advertisement, 8. Newspaper article or column, 9. Mail solicitation, 10. Television advertisement and 11. Other. Personal information channels were coded using respondents who chose only choices 1 – 5, impersonal information channels were coded using victims who chose only choices 6 – 10, and a variable for *both* was coded using respondents who chose both types of information channels as they method of first hearing about Eron. The four respondents who answered “other” (approximately 1%) were asked to explain how they first heard about Eron in their own words and their answers were coded to the corresponding categories above. Three out of four were coded as hearing about Eron through personal channels (one through a stock broker, two through an insurance agent) and the other through impersonal channels (fax solicitation).

Sample Comparisons

An important issue is whether the respondents who identified at least one individual by name (n = 331) are significantly different than those who have not (n = 222). While the true reasons are unknown, a reason for not answering could be that no one in particular was influential in persuading those 222 respondents to invest in Eron. If those cases are common, our network representation would over-emphasize the role of individuals in influencing investment in Eron. It is also possible that an important subset of respondents were uncomfortable in writing a name in the questionnaire. To the extent that the 331 and 222 subsamples are otherwise equivalent, this situation would not, in theory, affect our interpretation of the findings.

Table 2.2 in the Appendices compares both subsamples on socio-demographics and a number of relevant investment-related characteristics. We looked specifically for characteristics that would discriminate the network (n = 331) and non-network (n = 222) samples on personal/impersonal methods of interactions in the context of their

¹¹ It was reported at the time the Eron case emerged in the media that many local professional hockey players were among the 2,285 victims.

investment in Eron. Out of the 21 total characteristics analyzed, five were statistically significant. First, our network sample was more likely than others to report having tried to pull money out before the collapse of Eron (33% vs. 18%) as well as being more likely to have heard about Eron through personal channels of information (62% vs. 52%), the non-network sample was more likely to hear about Eron through impersonal channels (20% vs. 13%). Both personal and impersonal channels are statistically different between the network and the non-network groups. No difference between the two groups was found, however, about whether someone “talked them out” of investing in Eron (10% v. 14%).

In relation to the possibility mentioned above that the non-network sample may not have been influenced by specific persons, we note that they reported being just as likely to make their own investment decisions (27.5% vs. 27.2%) without relying on others. However, we found two significant differences between the two groups when they were asked about the steps they took before investing. The network group was more likely than the non-network group to have met the Eron principals (24.5% vs. 9.9%), and to have talked to other investors (43.8% vs. 33.3%). The two groups, however, were just as likely to have consulted friends and family before investing, or to have taken precautions such as visiting Eron’s offices, viewing pictures of properties, and reading Eron’s prospectus. In terms of socio-demographics, the two samples had the same profile: a majority of males; mean age close to 50 years old; two-thirds with post-secondary education; and currently employed with a mean household income around \$55,000. The mean initial investment was just under \$20,000, with a majority having a self-reported conservative to moderate investing style, perception that Eron was a low to medium risk investment, and having low to medium investing knowledge.

Overall, the network sample appears to have had slightly more social interactions than others, but this is mostly true for the minority who met with Eron principals. We should therefore expect the network to slightly over-emphasize Eron principals as influential agents for the purpose of this study.

Centrality

Centrality measures are calculated to uncover central players among persons of influence (n = 164). Central players are those individuals who were repeatedly identified as a main source of influence by respondents. A simple measure of in-degree centrality is used to identify the number of friends and family who nominated specific individuals as a source of influence. The use of in-degree centrality scores provides the most valid measure of the presence of opinion leaders within a network derived from sampling part of a population through a survey like we do here (see Iyengar, et al., 2011). In a directed network, this statistic looks at pairs of actors and counts the number of nominations flowing to a selected node (Freeman, 1979). This form of degree centrality is generally interpreted to measure the influence a member in the network exerts on other members compared to all others in the network. In-degree centrality is an indicator of prestige and status concerning those members with the highest in-degree scores (Iyengar, et al., 2011; Wasserman & Faust, 1994). In-degree centrality is greater when an actor is responsible for influencing more individuals to invest in the fraud. The binary, directed (person of influence to respondent) network was analyzed in UCINET 6.0 and Netdraw 2.0 (Borgatti, 2002; Borgatti, Everett, & Freeman, 2002).

Construction of the Diffusion Curves

Respondents were asked about the year of their initial investment in a project or property of Eron which allowed us to follow the diffusion of fraud over time¹². Using this data, adoption curves of the Eron fraud were constructed for 1) all respondents in our sample (n = 559), 2) those who reported an influential person (n = 331), and 3) those who did not report an influential person as a reason why they invested in Eron (n = 222). In addition, we created curves of the cumulative percent of adoptions per year for respondents who first heard about Eron through various information channels, personal,

¹² Year of investment was missing in 28 cases where we had network data. We used the full sample where we could in order to preserve as much information as possible on the network. Individuals with missing year of involvement did not differ in any significant way from those who reported this information.

impersonal, and both. The goal was to determine how the fraud diffused through each subsample. Note that a limitation in our dataset is that it does not contain the time at which the initial adoption of the fraud occurred, and when those adopters began to influence others. This prevents us from calculating threshold values helpful for determining levels of influence of Eron respondents.

After constructing the diffusion curves, we conducted logistic curve-fitting analyses to each of the data distributions discussed above in GraphPad Prism 6.0:

$$P(t) = 1 / 1 + e^{-t}$$

Where P is the population of investors, t is time, and e is Euler's number (constant).

Results

Diffusion of the Eron Fraud

One objective of this paper is to examine how the Eron fraud successfully diffused through a population of victims compared to a classic diffusion model typical of successful, legal innovations. In such classic models, the spread follows a logistic S-curve where adoptions begin slowly at first, then spread to innovators; the initial period of growth is exponential where adoption begins spreading quickly to early adopters and early majority adopters. Near the end of the diffusion process, the curve begins to slow and level out at which time the innovation spreads to late adopters and laggards. Figure 2.1 presents three diffusion curves, one describing first involvement of our network sample (solid gray line), another describing the involvement of the non-network sample (dashed gray line), and finally a curve combining both samples (dashed black line).

The first result worthy of note is that both the curves created from the network sample and the non-network samples are very similar. This gives us more confidence that the missing network data do not greatly affect our findings. All three curves illustrate the low number of adoptions during the first few years (1992 – 1993) of the fraud. In 1995 to 1997 however, we see a steep increase in the number of adoptions, as would be expected in cases where diffusion is observed. Yet, one thing missing in the diffusion of

the Eron fraud is the very last part of the classic diffusion process where the curve flattens as laggards finally begin to adopt the innovation. The curve fitting analysis confirms the finding from the visual inspection that the cumulative growth curve does not exactly fit the logistic S-curve typical of diffusion processes ($R^2 = .97$). Instead, the best fit to our data is an exponential growth curve ($R^2 = .99$) which demonstrates the growth period of any successful diffusion where the number of adoptions of an innovation takes off quickly, right before the leveling off period. While the diffusion curves presented in our study do not fit the s-curve present in successful diffusion, the exponential curve fit does not invalidate the notion that the success of Eron occurred through diffusion. In fact, we have good reason to believe that such a leveling off period would have occurred if the B.C. Commission had not intervened in 1997 to put ERON out of business¹³.

¹³ One particularity of an illegal innovation such as Eron is that such external interventions may occur and affect growth in ways that are not typically observed in legal products. Interestingly, the rate of adoptions was starting to slow down slightly between 1996 and 1997 compared to the two previous years, suggesting that a leveling off period may have occurred had Eron survived longer. The decreased rate of adoptions was observed within the entire sample as well as within the number of adoptions individually from the most central players in the network. An important caveat of this interpretation and analysis is that we rely on a sample of investors to map the spread of Eron, instead of the full population of victims.

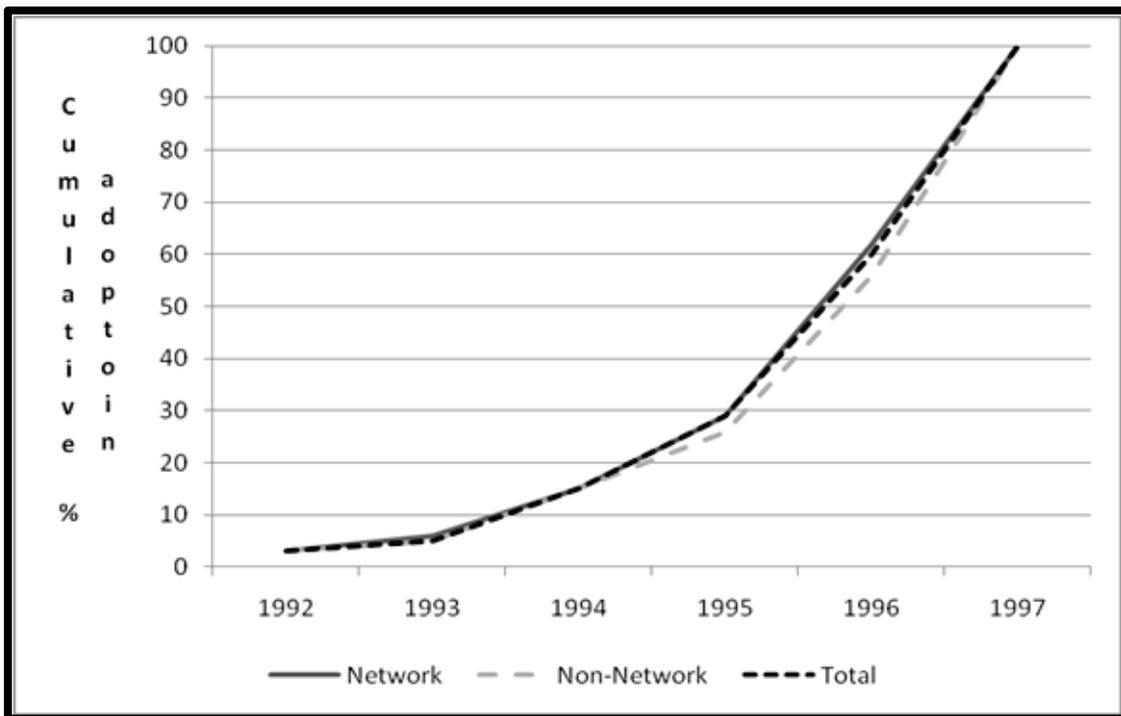


Figure 2.1. The Diffusion of Fraud through Network, Non-network, and Full Sample of Victims (N = 559), 1992 – 1997.

The Role of Personal and Mass Media Channels

Rogers (2003) argues that impersonal (mass media) channels of information are important at the knowledge stage of the innovation-decision process, or when an innovation is new, while personal information channels are important in the innovation-decision process at the persuasion stage, when word-of-mouth is needed to spread the innovation in a contagious manner so that the diffusion takes off quickly. Figure 2.2 presents the adoption curves separately for those respondents who reported personal channels as their main information source in hearing about Eron (n = 326), those who reported media channels (n = 91) as their main source of information, and those who mentioned both (n = 125). Upon examining personal and impersonal information channels we also found exponential growth curves representing the cumulative data distributions for all three channel types; personal, impersonal and both. Overall, the fraud spread quickest through personal channels of information transfer. However, the diffusion of fraud through respondents who heard about Eron through both personal and media channels is similar to that of respondents who heard about Eron through personal

channels alone. What is interesting to note is that the diffusion of fraud through mass media channels, while much slower at first than personal channels¹⁴, takes off quickly between the years 1995-1997. The number of adoptions per year reveals that both Brian Slobogian and Frank Biller slowed down their involvement in recruiting new victims in 1996, at a time where the number of new investors was at its highest. At this point, the Eron principals may have relied more heavily on their media campaign in order to continue the diffusion of the fraud. The curve representing impersonal information channels finally catches up with the other information channel curves near the end of the fraud scheme in 1997 at a time when Eron was still a major player among investors in British Columbia. The above examples reveal that the Eron fraud diffused through a population of victims via an exponential growth model suggesting the presence of word-of-mouth contagion through a large number of anchor points. The next section will reveal a more detailed analysis of the particular network elements that also helped make this fraud a successful innovation.

¹⁴ A chi-square test confirmed that the difference between the personal and media channel curves was statistically significant.

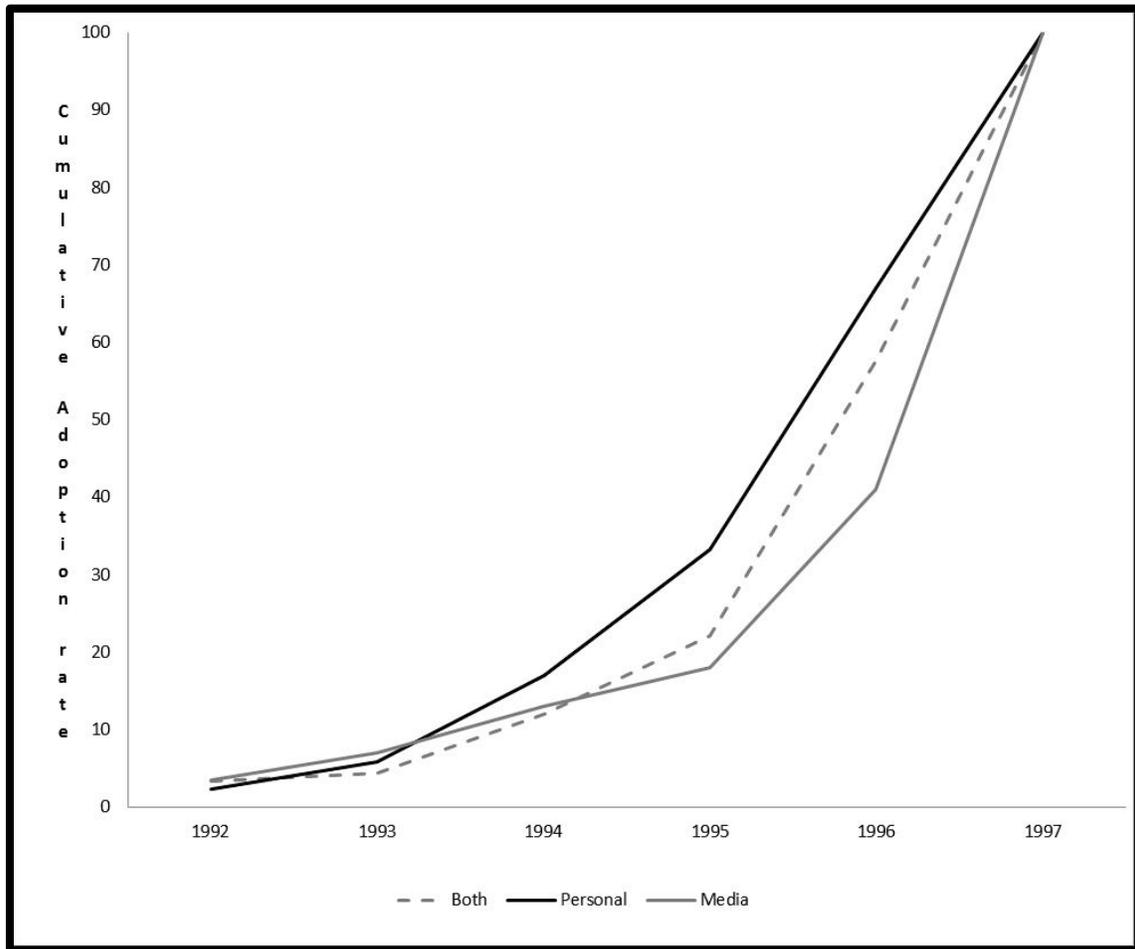


Figure 2.2. *The diffusion of fraud by type of information channel for full sample (N= 559) of Eron victims. This figure conveys the cumulative adoption rates and how victims first heard about Eron. How one first hears about an innovation is an important factor in the adoption-decision process.*

The Eron Network

The second aim of this study is to examine in some detail the social structure of the Eron network to see if we can uncover elements that explain the successful diffusion of the fraud to so many victims. Figure 2.2, after all, suggested that social ties were an important source of information on Eron. We start by introducing the network created from the 331 respondents who identified at least one person as influential in convincing them to invest. The Eron network consists of 475 individuals with 450 ties between them (described in Table 2.1). The network is constructed strictly around ties between victims

and those who influenced them to invest. As such, because we only have information on ties between victims if their source of influence was also one of the 331 respondents, we expected the sparse (density = 0.002), decentralized network we obtained. At the same time, however, the network still reveals the presence of particularly active individuals named as most influential by Eron respondents.

Table 2.1 reveals that the ratio of victims to person of influence is relatively small at 2:1, suggesting a fraud that spread from multiple anchor points. However, as shown in Table 2.2, the ratio varies according to the nature of the relation between the victim and the source of influence. The ratio of victims per person of influence is lowest (1.4: 1) in the most prevalent category, that of friends and family (named by 70% of our respondents). At the other extreme, Eron principals were much more active with a ratio of 14.5 victims per person of influence. As many as 22% of our 331 respondents identified at least one of the two Eron principals as influential in their decision to invest, suggesting a high level of involvement and influence for the individuals who created Eron in the first place. Table 2.2 also shows that financial brokers and Eron employees were relatively active as well, each category named as influential for just under 20% of respondents in our sample. However, the fact that so many distinct individuals in a relatively small sample of respondents (331 of 2285 total confirmed victims of Eron) did spread the word most certainly contributed in maintaining the fraud for so long.

Table 2.1. Eron Network Descriptives and Measures

| | |
|--------------------------------|--------|
| Total Number of Network Ties | 450 |
| Total Number of Network Actors | 475 |
| Total Victims | 331 |
| Persons of influence | 144 |
| Both Roles (network bridges) | 18 |
| Density | 0.0020 |
| Types of Adopters ^a | |
| Innovators | 8 |
| Early Adopters | 10 |
| Early Majority | 170 |
| Late adopters | 115 |

^a N = adopters due to missing data on time of first investment for 28 victims.

Table 2.2. Adoptions by Relationship

| Relationship | Total | % adoptions | Ratio of Victims |
|------------------|-------|-------------|------------------|
| Adoptions | | | |
| Eron Principal | 74 | 22.3% | 14.5 |
| Eron Rep | 61 | 18.4% | 4.8 |
| Broker | 66 | 19.9% | 7.1 |
| Family/Friends | 233 | 70.4% | 1.4 |
| Investor | 10 | 0.03% | 4.0 |
| Regulator | 15 | 0.05% | 3.0 |

^a The total amount of adoptions is higher than the total number of victims because some victims named multiple influential individuals.

Figure 2.3 provides a visual representation of the full Eron network (see Appendix 2.1 for a diagram of the Eron network containing only the central players and Appendix 2.2 for a diagram of the network without central players). Victims are denoted by dark gray circles and persons of influence by light gray squares. Individuals who occupy both roles are denoted differently. Their dual role makes them emerge as

network bridges¹⁵, the presence of which is key to a diffusion process by contagion. Here we make a distinction between the two types of network bridges present in our study, depending on whether they were part of our network sample of 331 respondents who returned their questionnaire (denoted by black triangles; $n = 18$), or if they were part of the sample of 1726 victims (labeled as non-respondent bridges, $n = 42$) who did not return a questionnaire yet showed up as being an influential person to respondents in our network sample (denoted by white squares)¹⁶. Figure 2.3 also highlights the innovators in our sample (i.e. the first victims who invested in Eron), as well as the people who influenced them to invest. White and gray squares with numeric labels are the eight individuals who were persons of influence in year 1 (1992): Actors 1, 63 and 4214 are friends/family members, actors 8 and 50 are two of the four Eron principals, and actors 75, 82 and 4170 are financial brokers not tied to Eron. The victims connected to them are labeled: 454, 708, 3346, 3451, 3716, 3797, 3820 and 4149. These individuals are the first from our sample to be persuaded to invest in Eron in 1992 (even before Eron was officially registered in January of 1993).

Figure 2.3 presents the network as it was in October 1997 from the point of view of the 331 respondents in our sample who named a person of influence, but it is useful to consider the evolution of the network over time. Table 2.3 presents data on the evolution of the network as respondents and their persons of influence were added over time. The most obvious observation from Table 2.3 is the rapid increase in the number of

¹⁵ We consciously avoid the term “broker” because the term is also used in this study to refer to ‘financial brokers’, many of whom emerged as important sources of influence for Eron victims.

¹⁶ Within the entire sample of Eron victims for which we could send a questionnaire ($n = 2,285$), each was known to the researchers by their individual name. Each victim was then coded by a discrete ID number for purposes of anonymity. However, even though a total of 1,726 victims did not return a survey, 42 of the 1,726 victims were listed as influential persons by the respondents included in our network sample ($n = 331$) thus, their ID number showed up on our list of persons of influence obtained by the network sample. We were then able to cross reference these 42 individuals as being one of the 2,285 total Eron victims identified by the Eron Lender’s Committee and the Financial Institutions Commission (FICOM). Thus, they are considered as bridges because they too shared both roles as victims who invested in Eron and then went on to influence others to invest in Eron.

respondents who adopted the fraud that occurred especially between 1995 and 1996, where 104 new respondents were added to the network from our sample of 331, as well as in 1996 and 1997 where 115 of our sampled respondents adopted. Network density expectedly followed the reverse trend, but network centralization tells a different story. Network centralization remains relatively small throughout the period where Eron was created in 1992 (10.95%) to its collapse in 1997 (8.70%). However, the trend does show an increase in centralization in the period prior to the take-off with a peak in 1995 (12.01%), followed by a decrease in centralization in 1996-1997. These data fit the typical story of diffusion where the central actors such as change agents and opinion leaders tend to be more important in the beginning of the diffusion process and increasingly less important after the innovation catches on to the masses and begins to spread more through word-of-mouth (Rogers, 2003).

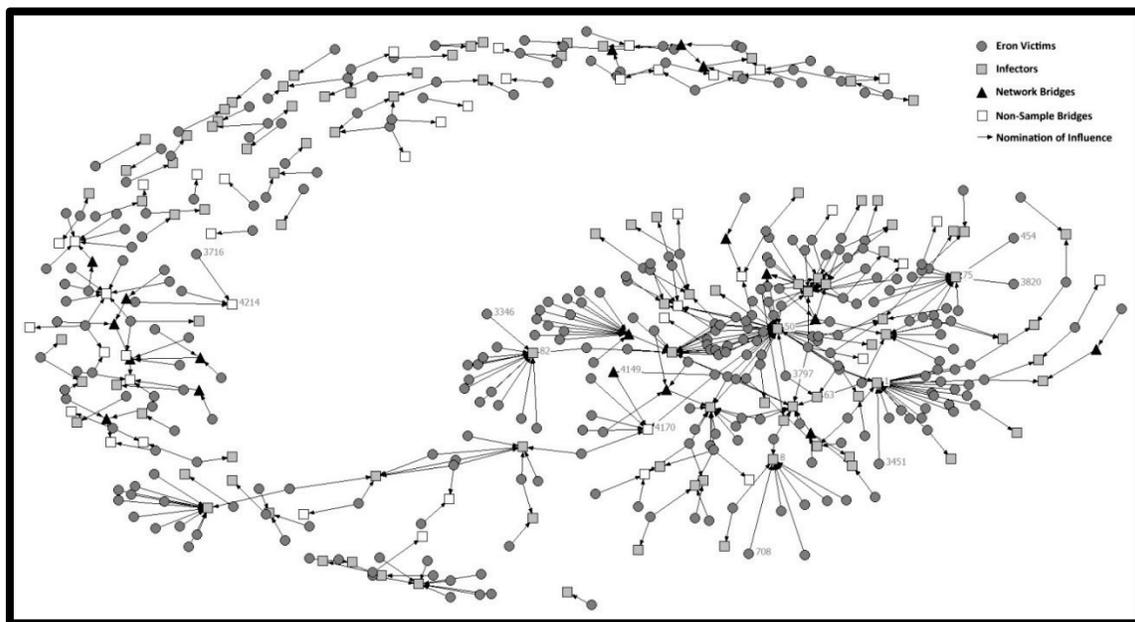


Figure 2.3. Sociogram of the Eron Network

Table 2.3. The Evolution of the Eron Network Over Time

| | Density | Network Central-ization | # Nodes in Main Component | Total # New Investors | # Dyads | # Triads |
|-------|---------|-------------------------|---------------------------|-----------------------|---------|----------|
| 1992 | 0.0375 | 10.95% | 0 | 8 | 5 | 2 |
| +1993 | 0.0237 | 11.72% | 8 | 10 | 4 | 5 |
| +1994 | 0.0108 | 11.93% | 13 | 28 | 10 | 6 |
| +1995 | 0.0067 | 12.01% | 37 | 42 | 12 | 6 |
| +1996 | 0.0033 | 10.46% | 153 | 104 | 22 | 7 |
| +1997 | 0.0022 | 8.98% | 251 | 115 | 34 | 11 |

^a The 1992 – 1997 differs from the +1997 network in that it includes individuals who adopted the fraud but did not provide an adoption date (n = 28).

The Role of Change Agents

Important factors in the successful diffusion of the Eron fraud were contingent upon the presence of change agents and opinion leaders within the network. Recall that no other individuals, outside of the Eron principals, knew that Eron was not a legitimate business thus, success of the diffusion of fraud depends on the ability of Eron principals to: 1) to act as change agents by directly influencing victims' decisions to adopt; 2) rely on word-of-mouth from opinion leaders and other investors to continue the spread of fraud; or 3) engage both of these methods.

Table 2.4. Top 11 Change Agents in the Eron Network

| Node | Role | # Adoptions | % Adoptions | nln-Degree |
|-------------|----------------|-------------|-------------|------------|
| Actor 50 | Eron Principal | 42 | 12.68% | 8.805 |
| Actor 22 | Eron Principal | 18 | 5.43% | 3.774 |
| Actor 54 | Eron Rep | 13 | 3.93% | 2.725 |
| Actor 82 | Broker | 13 | 3.93% | 2.725 |
| Actor 3397* | Broker | 13 | 3.93% | 2.725 |
| Actor 13 | Broker | 12 | 3.63% | 2.516 |
| Actor 75 | Broker | 11 | 3.32% | 2.306 |
| Actor 108 | Broker | 10 | 3.02% | 2.096 |
| Actor 12 | Regulator | 9 | 2.72% | 1.887 |
| Actor 18 | Eron Principal | 8 | 2.42% | 1.688 |
| Actor 8 | Eron Principal | 8 | 2.42% | 1.688 |

^a n = normalized scores; * = actor who occupies a bridge position; victim and change agent.

Our results show that the diffusion of the Eron fraud fit both of these scenarios. First, consider the role of Eron principals as change agents. The top 11 change agents who helped spread the fraud are presented in Table 2.4. The main Eron principals, Brian Slobogian and Frank Biller were found at the top of the most influential change agents in the network. Slobogian (actor 50), in particular, was named by 42 respondents as the person who influenced them to invest in Eron. His accomplice, Frank Biller (actor 22) was not as prolific, yet still accounted for 18 nominations by respondents, suggesting that both principals were motivated to personally convince individuals to invest in Eron. Interestingly, the majority of respondents who named Biller as influential also named Slobogian (13 of 18 in our sample), showing an important level of redundancy built into the recruitment styles of Eron principals. Details of the case reveal that both Slobogian and Biller would often host the Eron seminars that occurred about every 2 to 3 months for the purposes of recruiting new investors and to ease prior investors that their investments were safe in the hopes of appeasing them as well as securing additional investments for projects that were failing unbeknownst to the victims themselves (*Eron Mortgage Corporation et al.*, 1999a). Also telling are the last two change agents in our list responsible for recruiting 8 new investors each, Eron principals Curt Lehner and John Taylor (actor 8 and 18)¹⁷. Both assumed different roles while working at Eron which may account for the lack of redundancy among their recruiting styles. Both were also hired in 1996 which may help explain an increase in their recruitment numbers in 1997. The presence of all four Eron principals in Table 2.4 stresses the importance of Eron principals as a group acting as change agents in recruiting new investors, considerably adding to the success of Eron; together, these four individuals recruited approximately 23% of the entire network of respondents.

Table 2.4 reveals an unexpected finding that directly contributed to making Eron a popular investment venture in the early 1990s; the role of financial brokers in B.C. (outside of Eron) and industry regulators as agents of diffusion who unknowingly

¹⁷ It is unknown which principal (Curt Lehner and John Taylor) is associated with each ID number (8 and 18).

influenced new victims to invest in Eron, selling it as an investment opportunity for their clients. Of the top change agents presented in Table 2.4, positions four through nine are occupied by professionals in the financial industry outside of Eron Mortgage (82, 3397, 13, 75, 108 and 12), together responsible for influencing 20.2% of network respondents. These actors are especially important because they lend credibility to the fraud via their social status as industry professionals. Some of these industry professionals, such as actor 3397, also invested in Eron, making his/her status as change agent unclear, as change agents are generally not adopters themselves.

Examining the timing of adoptions for each of these 11 change agents reveals that Eron principals Slobogian (50) and Biller (22) carried the bulk of adoptions early on, while industry professionals and Eron principals Lehner and Taylor (8 and 18) became an important source of influence especially at the end of the process (but also its peak) in 1996-1997. Figure 2.4 shows the number of new respondents recruited to invest by year for each of the top change agents. Four change agents were active in year one of Eron (1992): two financial brokers (75 and 82), and Eron principals, Brian Slobogian (50) and Actor 8. The role of principal 50 from the start to the end is clearly illustrated. But the significance of involvement of the other actors did not emerge until the very end of the fraud in 1996-1997. The five financial brokers (82, 3397, 13, 75 and 108) only truly emerged as central in 1997 (increasing trend in the final year in Figure 2.4), right at the moment when Eron principals Slobogian and Biller and Eron employees were decreasing their activity in recruiting new investors. The start of 1997 also marks the point when Eron principal Brian Slobogian was informed that the irregularities in Eron's transactions had been noticed by the British Columbia Financial Institutions Commission (Appendix 2.3.). Although Eron was allowed to maintain their activities until October of that year, they were increasingly under pressure to normalize their activities or they would be forced out of business. We can speculate from Figure 2.4 that Eron employees, as well as Eron principals Lehner and Taylor felt some pressure to recruit new potential victims in the beginning of the fraud when the fraudulent innovation was new as well as towards the end of the fraud when Eron principals Slobogian and Biller were slowly decreasing their own activity levels.

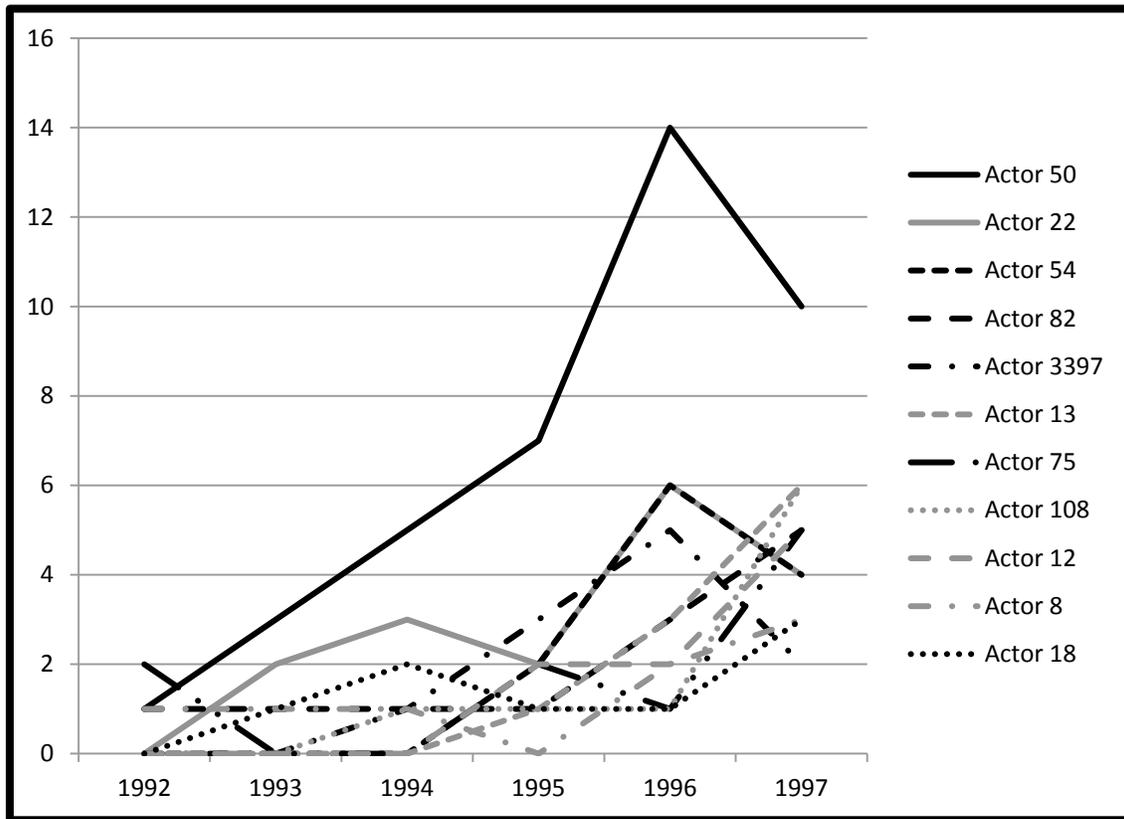


Figure 2.4. The number of annual adoptions attributable to the top 11 change agents in the Eron fraud.

The Role of Opinion Leaders and Network Bridges

Eron principals could also count on opinion leaders to facilitate word-of-mouth to additional investors. While the majority (63.1%) of the 141 persons of influence in the friends and family category were mentioned by a single individual from our sample, at least 10 individuals were named as many as four times by respondents and were considered as opinion leaders for the purposes of this study (see bottom of Table 2.5). These 10 individuals (or 7.1% of total influential individuals) were responsible for 71 adoptions, or 24.5% of the 331 adoptions reported in our sample. The most prolific opinion leader was actor 1, who was named as an influential individual by 24 respondents in our sample. He is the ultimate opinion leader for respondents in our sample. Actor 1 was not officially linked to Eron and those 24 respondents named actor

1 as “friend or family”. Yet, we cannot exclude the possibility that actor 1 was related to the Eron principals in some way, or that he may have received material benefits from spreading the word.

An important question in the literature on opinion leaders is whether they were active early on in the diffusion process, before the late majority adopts the innovation. To find out, we calculated the mean *first year of adoption* for the group of 10 opinion leaders as well as for the other persons of influence who were identified as “friends/family” by our respondents. A difference in means test reveals that the opinion leaders were active significantly earlier than others. The 10 opinion leaders were named as influential by respondents for the first time 3 years after the start of Eron compared to 4.68 years ($t = 3.8$, $p. \leq .001$, 2-tailed) for the other persons of influence.

In diffusion studies, opinion leaders are typically adopters of the innovation they spread to others. In the case of an investment fraud, this implies that those opinion leaders were most probably victims themselves who thought they were sharing a profitable opportunity with someone close. These victims unknowingly played a dual role in the diffusion of the fraud through the network - victim and person of influence. In network theory, these types of individuals are called “network bridges” – individuals who connect otherwise unconnected actors or groups in a network (Table 2.5). Because we also had the names of the 1,726 other victims who did not return a questionnaire, we were able to match 42 additional names with the dual role. We labeled this group “non-respondent bridges”. The 60 network bridges helped spread the fraud to the respondents in our sample, and this is likely only the tip of the iceberg¹⁸. We added a third category in Table 2.5 to represent all of the other individuals named as sources of influence in the friends/family category ($n = 81$). We could not locate these individuals in the list of 2,285 victims who received the questionnaire. Yet, given their familiar link to

¹⁸ Recall that those 60 victims who became inadvertent “sellers” of the fraud created by Slobogian and Biller have been identified from the questionnaires returned by 25% of the total number of victims ($n = 559$). Should the proportions be similar for the 1,726 other victims, it would mean that close to 200 victims were potentially influential in convincing friends or family to invest in Eron.

victims, it remains a possibility that these individuals were also investors whose name did not make it to our list.

Table 2.5. Bridges, Frequency Distributions of Nominations and Opinion Leaders

| # of nominations as source of influence | Bridges - in study sample ^a (n = 18) | Non-respondent bridges - not in study sample ^b (n = 42) | Other friends/family named as influential (n = 81) ^c |
|---|---|--|--|
| 1 | 8(44.4%) | 24(57.1%) | 55(70.5%) |
| 2 | 6(33.3%) | 9(21.4%) | 15(19.2%) |
| 3 | 2(11.1%) | 4(9.5%) | 4(5.1%) |
| 4+ | 2(11.1%)* | 5(11.9%) | 4(5.1%) |
| Opinion leaders (4+)^d | Actor 614 (4) | Actor 3257 (4) Actor 3091 (6) Actor 3978 (6) Actor 3834 (7) Actor 4170 (7) | Actor 60 (5) Actor 62 (6) Actor 13 (12) Actor 1 (24) |

*Includes actor 3397 who was a victim and a change agent. His role as change agent excludes 3397 from the list of opinion leaders, so only actor 614 qualifies as a bridge in study sample

^a Individuals in our network sample (n = 331) who are both victim and person of influence.

^b Individuals in our victim sample who did not return a questionnaire (n = 1,726) yet showed up as being an influential person to victims in our network sample (n = 331).

^c These individuals were named as sources of influence in the friends/family category, but we could not locate them in the list of 2285 victims who received the questionnaire. Given their familiar link to victims, we hypothesize that these individuals were also victims who didn't make it to our list.

^d These individuals are the opinion leaders who were influenced to invest and, through word-of-mouth, spread the fraud to their social networks. They are placed in the category of bridge types who influenced them to invest in Eron.

Table 2.5 presents the distribution of in-degree nominations for the three categories of bridges described above. It also presents the opinion leaders as they fit within each category. It is immediately apparent that the 18 network bridges in our sample were more likely to have been active recruiting investors than other categories, with a higher proportion of 2+ nominations per individual. Differentiating between bridges and others in the network is important. We compared these 18 individuals to the 313

other respondents in the network sample on the same characteristics we used in Appendix 2.4 to compare the network and non-network samples. The results revealed that the bridges were similar to the non-bridges on the vast majority of characteristics. They were no more likely to be male, young, to have invested early in Eron, to have met with the Eron principals, to have invested a large sum of money, or to have been influenced themselves by a personal connection, among other similarities. In part, the lack of statistical power with a sample of 18 bridges explains this result. It is nonetheless telling to look at the differences between bridges and non-respondent bridges on three characteristics used as indicators of education and knowledge on financial markets (Table 2.6): education, use of financial advisors to support financial decisions, and self-reported level of knowledge in financial markets. Although none of these comparisons achieved statistical significance, we find that 39% of bridges had a high school education or less, compared to 29% for respondents who did not spread the word about Eron. Bridges were also less likely to rely on financial advisors (44% relied only on themselves vs. 26.5%), and more likely to report high or medium levels of knowledge of financial markets (only 28% reported low knowledge vs. 46%) than those respondents who were not network bridges. Although the sample of bridges is much too small to draw definitive conclusions, these individuals felt more confident about their knowledge of financial markets, and had every intention of spreading the wealth to others. Unfortunately for them and their entourage, that confidence turned against them in this particular case.

Table 2.6. Differences Between Bridges and Non-bridges in Education and Knowledge of Financial Markets

| | Bridges n = 18 | Non bridges n = 313 | Pearson chi-square (p) ^a |
|---|-------------------|------------------------|-------------------------------------|
| Education | | | |
| High School education or less | 38.9% | 29.2% | 0.76 (.38) |
| Use of advisors | | | |
| Do not rely on financial advisors to make decisions | 44.4% | 26.5% | 2.73 (.10) |
| Knowledge | | | |
| Have low knowledge of financial markets | 27.8% | 46.0% | 2.28 (.13) |

^a Pearson chi-Square test (2-sided)

Discussion

Most criminal innovations tend to remain small-scale and local in scope; however, exceptional cases do arise that create noticeable “crime waves”, affecting a sizeable number of victims in a short amount of time (Sacco, 2005; Tremblay, 1986). This was the case with the Eron Mortgage fraud. The most obvious indicators of Eron’s success include the fact that Eron went undetected for over 5 years, defrauded over 2000 investors for over \$240 million, and convinced British Columbia regulators, as well as dozens of financial brokers, to sell it to their customers as a legitimate investment opportunity. This research sought to answer: How Eron developed, how it went undetected for 5 years, and how it spread through a population of victims. Drawing from prior work on diffusion and social network theory, we examined the social structure of the Eron network to shed light on some of the elements that made Eron a successful Ponzi scheme.

The investment and securities fraud orchestrated by Eron fared better than the intermediate fraud perpetrated by Fountain, Oil and Gas. We can offer several potential explanations for the success of this fraud. First, one of the questions at the heart of this study is how the Eron fraud successfully diffused through a network of victims.

Examining the adoption curves of survey respondents, we found that the adoption of the fraud grew exponentially, which empirically represents the core of a diffusion effect, with a slowly increasing population for the first three years (1992-1994), followed by a tipping point in 1995 through part of 1997. However, because the fraud was brought to a premature close due to law enforcement intervention before what may have been the beginning of a leveling off period in a classic diffusion model (S-curve model) our focus is on the key factors that caused the exponential growth model of adoptions in the diffusion of the Eron fraud. Analogous circumstances do exist in legal markets, such as situations of product recall, or when a break in production prevents customers from adopting. In all cases, those circumstances are exceptional, and have predictable effects on the adoption curve (from yearly increases to a sudden and complete drop to zero), such as what we observed for Eron.

The mere presence of the exponential growth model of adoptions found in our study may be represented as an indicator of success, something that was not observed in Baker and Faulkner's (2003, 2004) case study. In the Fountain, Oil and Gas fraud, the lack of social ties to spread the word led to a slower, linear spread of the fraud, never reaching the tipping point needed to successfully diffuse an innovation through a population. For example, the authors showed that the principals of Fountain, Oil and Gas tried to induce diffusion through word-of-mouth by directly asking investors to refer the company to their friends, with little success:

Many respondents said that they were actually pressured (as respondents put it) to do so. Most refused. Only 24% of our respondents referred the company to anyone else, and these did so only after Fountain made the request for referrals. Without a request by Fountain, virtually no one would refer the company to others (only 1 of our 72 respondents put someone in touch with Fountain without an explicit request by the company) (Baker & Faulkner, 2003, p. 1193).

This example illustrates that not all investors are apt to spread the word about seemingly lucrative investments, particularly those investments that are considered congestible goods such as is the case in Fountain, Oil and Gas. Incentives to do so are already small in the context of risk and uncertainty presented in investing in oil and gas wells. Add the incentive of the opportunity for monetary gain in which telling more people about a lucrative investment means less profit, investors are apt to keep it a secret.

Second, Eron principals were, from the start to the end, central in influencing others to invest in their product. Their involvement as change agents brought credibility to their business and created a climate of trust with investors. In analyzing Eron principals specifically, we uncovered a variety of recruitment styles which would either involve Biller and Slobogian trying to recruit alone, or together (Figure 2.3). The redundancy apparent when the two principals teamed together for recruitment purposes could have been seen as a waste of energy if it was found in another context. In this case, however, this redundancy was facilitating recruitment, and may have been necessary in many cases. Criminologists may see this situation as analogous to varying co-offending styles that may be adopted depending on the crime, its context, and its complexity. It may well be that the multiple sources of influence created a context of trust that led to larger investments. This is shown in the way Slobogian and Biller ran semi-monthly seminars together, bolstering their investments, reaffirming no risk and a guarantee of profits double that of the norm (*Eron Mortgage Corporation et al.*, 1999a). It is also suggestive that Eron principals focused on investors who were perceived to be opinion leaders, or more influential, having more social capital, to help secure investments and continue the spread of fraud to followers within the opinion leaders' networks.

In the Fountain, Oil and Gas fraud, principals acting as change agents were not as successful in recruiting others to invest, even though they employed some of the same techniques such as using their social capital as a form of influence, hiring experienced professionals, and targeting more affluent investors. While change agents in both frauds were actively recruiting new investors, Fountain, Oil and Gas failed to reach that tipping point needed to continue the spread of an innovation through word-of-mouth. Again, the nature of the investment may have played a role in the success of Eron reaching that tipping point and Fountain, Oil and Gas failing to do so. For instance, Baker and Faulkner (2003) describe the especially risky environment of investing in oil and gas: "only one in seven exploratory wells produces enough oil or gas to be profitable (Hodges, 1989 as quoted in Baker & Faulkner, 2003, p. 1622), yet there is potential for extremely high gains. In this sense, according to Baker and Faulkner (2003) investors in Fountain, Oil and Gas responded that they either did not trust the principals and so did

not want to get others involved, or wanted to keep the investment opportunity for themselves.

Industry professionals as a group were also highly successful in recruiting new investors for Eron. Taking advantage of personal information channels, Eron also hired over 40 employees who would work on their behalf to recruit investors in what they perceived was a legitimate and potentially rewarding opportunity. Acting as change agents, they were able to influence adoption of the fraud to unsuspecting investors. These professionals were important in: 1) creating a credible source of influence that could reach out to a vast population of investors that Eron principals could not have contacted themselves; and 2) taking over the role of Eron principals during the FICOM investigation before the collapse in 1997, thus unknowingly becoming the main change agents for Eron when the two main principals, Slobogian and Biller slowed down their involvement.

While investing in real estate still possesses some form of risk, the selling of syndicated mortgages makes it a more feasible and safe environment for investors. For example, syndicated mortgages are a more secure investment than other types of securities, because investments are in tangible property rather than unstable market securities and the potential risk is spread across multiple investors who combine their funds into one project. This multiple investor approach is also advantageous for investors with smaller amounts of capital who wish to invest in larger projects (Family Lending, Inc., 2011). In this case, it makes sense for investors to tell others about the investment opportunity from Eron so that they themselves would have a greater chance of investing in larger projects thus, having the probability of higher gains over loss – a driving force in overlooking potential risky situations (Coleman, 1990). This was not the case in the Fountain, Oil and Gas fraud where the innovation itself, congestible goods, kept investors from telling others about their investment in oil wells in order to secure more profit for themselves.

Another successful element of Eron reaching that tipping point necessary to sustain the fraud is the presence of opinion leaders. Here, Eron principals were successful in targeting several opinion leaders to recruit new investors through word-of-mouth. This was generally lacking in the Fountain, Oil and Gas fraud where change

agents tried desperately to influence prior investors to recruit new investors and failed to do so; only 24% of investors went on to tell other friends and family about Fountain, Oil and Gas, each referring only one person (Baker & Faulkner, 2003, p. 1621). The presence of network bridges – individuals who connect otherwise unconnected individuals in the Eron network were instrumental in creating a chain reaction of adoptions, helping Eron succeed in reaching previously untapped investment potential.

Within the Eron network, influential persons in the friends and family category made the most significant impact on recruiting new investors. Referring back to the idea of syndicated mortgages, their purpose gives friends and family members incentive to recruit others in order to invest in larger projects which in turn offers greater reward to investors. It is intrinsic that Eron found opinion leaders within this group as we often rely on our friends and family when making financial decisions, particularly one time, large transactions such as buying a house or an automobile (Baker & Faulkner, 2004; Buskens, 2002; DiMaggio & Louch, 1998). The most influential opinion leader within the network, actor 1, was a member of the friends and family category as well as the second most central individual in the entire network, influencing 24 fellow friends and family members to adopt the fraud. Overall, we found 10 opinion leaders who influenced a minimum of four fellow investors, collectively responsible for 81 of the 331 adoptions for which we had data.

Finally, in conjunction with the use of opinion leaders and change agents, Eron took advantage of mass media and interpersonal channels of information together to spread the fraud, including a massive media campaign through mailings, advertisements through television, radio, and newspaper sources, and seminars to spread the word about their new innovation – low risk, high returns mortgage investments. Overall, the fact that 80% of respondents first heard of Eron through social ties suggests a more important role for social networks than the 50-50 split found by Baker and Faulkner (2003, 2004).

In short, everyone performed their parts perfectly until the end: Eron principals maintained a façade of legitimacy and took advantage of every avenue of promotion available to legitimate businesses; Eron representatives and financial advisors sold the securities the way they would sell any other legitimate investment; and many investors

shared their knowledge with friends and family. Stephen Hawking summed it up best, “the greatest enemy of knowledge is not ignorance, it is the illusion of knowledge.”

Limitations

There are four main limitations in this study. First, we relied on a survey of 559 respondents that may or may not be representative of the population of 2,285 total respondents. Among this sample, most of our analyses were based on those 331 respondents who provided network data. While both samples appeared similar on a majority of characteristics, there is some indication that the 331 respondents were slightly more likely than others to have known other investors, or have met Eron principals. If that is the case, our analysis may have slightly over-emphasized the importance of personal relationships in the diffusion of the fraud. Second, there was a premature end to the spread of fraud with the arrest and indictment of Eron and its top officers. Due to this limitation, we were unable to obtain frequency tabulations and calculate adoption time data that may have allowed us to witness the gradual decline of the diffusion process. Third, the precise time of adoption data are missing for individuals who started the spread of fraud through the network. This limitation prevented us from calculating threshold and critical mass values of Eron respondents' adoption rates which may otherwise offer more insight into victim characteristics such as their innovativeness, which takes into account a single victim's personal social network and the impact of the social network on adoption time. Finally, relationship ties between the respondents and their source of influence are assumed to be mutually exclusive. For example, an individual identified by a victim as an Eron principal is assumed not to be a friend or family member, or any of the other relationship types. This limitation places constraint on the network as is often the case among individuals who start a fraudulent business who often influence friends, family, or those closest to them, first.

Conclusion

This study established that an illicit innovation (mortgage fraud) can spread through a population of victims much like a legitimate innovation spreads through a population of consumers. Eron was a successful, pre-planned fraud that essentially

diffused through investors by word-of-mouth, and change agent-opinion leader relationships. Ultimately, it was the victims' social ties that were crucial to the diffusion of fraud by word-of-mouth, particularly those victims who met with Eron principals and Eron employees, and those victims who trusted their friends and family when deciding to invest.

Baker and Faulkner (2004) argue that perpetrators of pre-planned frauds try to avoid spreading their fraud through word-of-mouth among buyers (p. 1611) and may rely more on targeting specific individuals and impersonal methods of information to keep buyers from sharing information (see Stevenson, 1998). However, due to the specific nature of the Eron fraud, a Ponzi scheme, word-of-mouth is necessary to continue an influx of new investors if the fraud is to survive. Our study adds to the criminological literature and diffusion theory in four ways. First, we have shown that an illegal innovation spreads, at least partially, through word of mouth (80% compared to 50% in the Fountain, Oil and Gas fraud) – through change agents, opinion leaders and network bridges however, impersonal media channels also played an important role in the spread of fraud, helping Eron to reach the tipping point necessary to sustain it.

Second, this study adds to the diffusion literature by introducing the diffusion of a mortgage fraud – a less risky investment opportunity compared to the investments in Fountain, Oil and Gas. As shown in the diffusion literature (Rogers, 2003), characteristics of an innovation like the uncertainty associated with adoption affect the diffusion process. The incentives to spread the word have an impact as well. For example, syndicated mortgages like Eron require groups of people in order to invest in larger products which generate potentially greater profit for the investor. The type of investment studied by Baker and Faulkner (2003, 2004) is considered *congestible goods*; if more people invest in a particular well, it can reduce the profit prior investors will receive from that well.

Third, Baker and Faulkner (2004) argue that perpetrators of pre-planned frauds may purposefully circumvent word-of-mouth through social ties to avoid the spread of illegal activities and eventually law enforcement detection. In Eron's case however, the type of fraud, a Ponzi scheme and the type of "innovation", syndicated mortgages, requires some form of word-of-mouth to occur in order to maintain that influx of investors needed to sustain it. It is possible that Eron purposefully targeted friends and family to

contain the spread of their illegal activities among investors; the trust implicit in these types of relationships as Burt (2005) argues consists of strong ties that by their very nature imply trusting the individuals around you, thus substituting trust in place of due diligence. Whether it was by design or by accident, the friends and family category played a pivotal role in spreading this pre-planned fraud. More case studies of the various types of pre-planned frauds are needed to establish how the creators of those schemes manage risks of detection, especially as the network grows and its structure evolves over time.

Finally, this study confirms the importance of applying social network methods to diffusion research, including diffusion of criminal innovations. Transaction-based crimes such as the Eron Ponzi scheme require cooperation among actors which makes the analysis of those social relations a crucial element to investigate. Social network methods are most suitably designed to investigate the social structure of those types of crimes, and they should be routinely integrated into questionnaires and face-to-face interviews in the study of white-collar crime.

Chapter 3.

Twisting Trust: Social Networks, Due Diligence and Loss of Capital in a Ponzi Scheme

Introduction

Many investments take place in an environment of risk and uncertainty; therefore, gathering information about the enterprises and their owners becomes essential when making financial decisions (Baker & Faulkner 2004; Buskens, 2002; DiMaggio & Louche 1998). In these situations, people rely on two methods to collect information, social networks and conducting due diligence (Baker & Faulkner 2003, 2004; Stolowy et al. 2011). Both methods help reduce information asymmetry¹⁹ (see Baker & Faulkner 2004).

As much as trust facilitates economic transactions in legitimate contexts, white-collar criminals can use it to potentially take advantage of the situation. Granovetter (1985) states that trust in social relations can produce opportunities for malfeasance by making one vulnerable and, thus creating opportunities for exploitation. He also suggests that opportunism through trust is dependent on how social ties are embedded in the structure of the network (Granovetter 1985). Performing due diligence is also a paradox where, on the one hand, potential investors who do not conduct proper due diligence can more easily become involved in a fraud (Baker & Faulkner 2004; Pressman 1998). On the other hand, conducting due diligence can actually lull investors

¹⁹ Information asymmetry occurs when market information tends to be on the side of the seller and is generally present in most market transactions and investments.

into a false sense of security due to easily falsified financial information (Pressman, 1998; Rosen & Rosen 2010), which may have an impact on the amount of money they invest in a venture that ends up being fraudulent.

The impetus for this study is to test whether these two opposing views can protect an investor from malfeasance (Baker & Faulkner 2004; Pack, 2002) or be the cause of malfeasance (Granovetter 1985, Burt & Knez 1995; Comet, 2011; Stolowy et al., 2011). Here we set out to examine a pre-planned fraud perpetrated by Eron Mortgage Corporation who defrauded over 2000 individuals for an estimated \$240 million in British Columbia, Canada. We aim to uncover the effects of trust in social ties and conducting due diligence on (1) an investor's initial investment and (2) their overall loss of capital. Doing so allows us to examine the effects of both trust in social ties and due diligence on two separate phases of the fraud. Because we analyze a case study where all investors were deceived, our focus is on the association between who the victims reported trusting, what they did in terms of due diligence, and the *amount* of money they decided to invest. In particular, we follow from the work of Stolowy et al. (2011) and draw from Zucker's (1986) typology of trust to examine whether specific sources of influence affect the amount of capital invested. Did victims who were persuaded to invest in this Ponzi scheme by a friend or family member end up losing more capital than those who decided to trust a finance industry professional? Were those who investigated Eron's credential via fact checking more or less prudent in their investment?

Conceptual Background

Trust and Social Ties

Many sociologists consider trust as an essential building block for cooperation within societies, engendering social relationships, and even for governing financial transactions (see Arrow, 1970; Blau, 1964; Guiso, 2009; Kramer, 2009; Parsons, 1951; Zucker, 1986). Trust is deeply rooted in social relations and embedded in financial decision-making. The importance of trust to financial transactions also makes it an important component of fraudulent transactions. Trust creates economic opportunities, but also implies a vulnerability that can be exploited against the trustor. Hill and O'Hara

(2006) define trust as “a state of mind that enables its possessor to be willing to make him/herself vulnerable to another, that is, to rely on another despite a positive risk that the other will act in a way that can harm the trustor” (p. 1724), while Burt (2005) posits that “trust is a relationship with someone...in which contractual terms are incompletely specified...the more unspecified the terms, the more that trust is involved” (p. 93). In other words, the more risk or uncertainty present, the more one relies on trust to balance information asymmetry. Whether or not the outcome of a trust relationship is favorable to the trustee is dependent on the other actors involved (Burt & Knez, 1995; Buskens, 2002; Granovetter, 1985).

Hill and O'Hara (2006) conceptualize trust as cognitive and behavioural. They argue that cognitive factors of trust are confidence, reduction of uncertainty, reduction of risk-taking, and vulnerability. Trust theorists agree that trust most often occurs in an environment of some form of risk and/or uncertainty where the trustee is placed in a vulnerable position and trust becomes a necessary ingredient to form relationships and take part in transactions (Castelfranchi & Falcone, 2001; Coleman, 1990; Granovetter, 1985; Guiso, 2009; Hill & O'Hara, 2006). While trust is implicit in most transactions, it is often taken for granted; it is not until someone violates that trust that its importance is fully realized. In this vein, while trust is protective and helps balance the information asymmetry present in risky and uncertain financial transactions, trust can also be used for opportunistic motivations in which trust in our social ties may actually increase opportunities for fraud – especially if the victim knows the offender (Baker & Faulkner, 2004; Granovetter, 1985; Titus, et al., 1995). The clearest example comes from Baker and Faulkner's study of Fountain, Oil and Gas (2003, 2004). Examining the protective versus harmful effects of social networks, Baker and Faulkner (2003, 2004) argue that fraudsters often take advantage and manipulate the word-of-mouth effect used to diffuse information through social relations within social networks. Within the intermediate fraud (a fraud performed by a business after it had established a solid legitimate foundation for its activities), they found that social ties to company owners and employees protected investors from malfeasance, particularly when investors conducted due diligence. However, they also found that investors who substituted trust in place of due diligence increased their loss of capital by 25% compared to those who conducted due diligence and trusted in their social ties to make an investment.

Coupled with what Kramer (2009) refers to as confirmation bias (we see what we want to see) and an illusion of personal invulnerability (the belief that nothing bad will happen to us), our human propensity to judge a person's trustworthiness is easily exploited by financial predators. For example, Comet (2011) examined the link between trust and social networks within the Santa investment fraud – a Ponzi scam that lasted over ten years and targeted military officers in Greenland from 1986 to 1999 – and found that the fraudsters garnered trust by presenting themselves to potential investors on behalf of mutual friends who had already invested (p. 46). Comet (2011) went on to find that the type of social tie (rank in the military) with whom potential investors trusted also mattered in convincing them to invest.

Trust can also have negative consequences when it is misplaced in the form of overtrust (trusting too much). Overtrust can minimize negotiating and monitoring in the trustee, maximize the occurrence of fraud and can easily cause harm to the trustor (Hill & O'Hara, 2006, p. 1720). Castelfranchi and Falcone (2001) argue that overtrust causes reduced control in decision-making, inaccurate and careless decision-making, higher risk and greater cost to the individual (p. 86). For instance, Guiso (2009) states that the sudden economic collapse beginning in 2008 occurred in part due to the opportunistic behaviours of financial intermediaries (brokers, bankers, financial advisors) who manipulated the public's overconfidence in financial experts.

Important for the purpose of this study, are variations in the levels and type of trust that one puts into others. Several trust typologies exist (Couch, Adams, & Jones, 1996; Hill & O'Hara, 2006), but for this study we draw from the typology of trust created by Zucker (1986), which reflects the context in which individuals make decisions when presented with an investment opportunity. Zucker (1986) distinguishes between: 1) *characteristic-based trust*, 2) *process-based trust*, and 3) *institutional based trust*. *Characteristic-based trust* is trust in others with shared traits or qualities – homophily or “birds of a feather flock together”. This is the type of trust put in social relations with no a priori formal expertise in the matter. The other two types of trust fit the generic definition of due diligence where individuals investigate a company through inquiries with industry professionals, or the owners of the enterprises themselves. *Process-based trust* comes from expected exchange through expertise, status, or reputation of the trustor. *Institutional-based trust* is trust placed in formal institutions which were created to govern

exchange in the market place. Zucker (1986) contends that these institutions first served to legitimate transactions but over time, as people came to rely on these institutions more and more, they became a substitution for trust. Trust in institutions was often taken for granted, particularly when formal mechanisms of trust had broken down. While some of these institutions were created solely to offset the breakdown in formal trust mechanisms within the marketplace and to help control fraudulent behaviour, Zucker (1986) states, “institutional mechanisms are initially imperfect, cumbersome, and inefficient substitutes for trust” (p. 65) and so we must be vigilant in whom we place trust when making financial decisions.

Zucker’s typology (1986) can be applied to the types of social ties present in our study. Our respondents were asked to report who influenced them to invest in Eron, and to specify their relationship to that person (Eron, friend/family, financial broker, etc.). When that person is a friend or a family member, we label this process as “influence through social ties” (characteristic-based trust). When that person was an industry professional (institutional-based trust), or a professional working for Eron (process-based trust), the influence is considered to occur within a context of due diligence. We label this process “professional-based” due diligence. Due diligence, however, involves more than conversations with individuals with specific expertise in the type of financial transactions contemplated by potential investors. We further develop the concept of due diligence below.

The Due Diligence Paradox

Because Ponzi schemes generally transpire within private security transactions, the responsibility to safeguard one’s investments is placed solely in the hands of the individual investors. In such cases, performing due diligence becomes a cornerstone in which investors can balance the information asymmetry in their favor. In this study we use the general definition of due diligence, where individuals gather information to obtain a level of comfort and reassurance on the accuracy of the information supplied by the seller/transaction partner (Baranick & Quraishi, 1999). This is to be contrasted with a more formal, systematic investigation often performed by professionals prior to a corporate takeover or merger (Pack, 2002). Baker and Faulkner (2004) found that

performing due diligence significantly reduces the loss investors incurred from their involvement in the fraud.

Many financial frauds rely on the fact that several investors do not conduct proper due diligence and easily pass falsified information to potential investors (Baker & Faulkner, 2004; Pressman, 1998). Pressman (1998) argues that many of the businesses and non-profit organizations that invested in New Era Philanthropy, a Ponzi scheme that lasted for six years, conducted detailed and careful background checks of financial records before investing and were lulled into a false sense of security. More recently, Van de Bunt (2010) argues that because Bernard Madoff Investment Securities (BMIC) was audited by a professional accounting company and because the SEC had given BMIC a clean bill of health, many investors were able to “manage their ignorance” through their trust in institutions (p. 445).

In this study, we distinguish between two types of due diligence: (1) *professional-based due diligence*, where potential investors interact directly with specific industry professionals, or the owners/representatives of the enterprises in which they contemplate investing; and (2) *fact-based due diligence*, where potential investors proceed by reviewing the official documentation associated with an enterprise prior to a transaction. We argue that the distinction is important, for two reasons. First, we differentiate between the level of comfort in an enterprise obtained from talking to credible industry professionals, and personal investigations into the available documentation provided on the enterprise. The social contact with a professional, especially if the contact has been labeled by investors as “influential” in their decision to invest, may be more convincing than a cold review of the documentation. Second, the distinction may help uncover investor styles where personal inclination for social interactions, or documentation checking, may have implications for investment behaviour. All else equal, variations in type and intensity of due diligence may be associated with the amount of money invested.

Due diligence is also believed to interact with trust in social ties. Because social ties play an important role when making risky and uncertain decisions, it may affect one’s inclination to perform due diligence – trust in social ties becomes a substitute for conducting due diligence (Baker & Faulkner 2004; DiMaggio & Louch, 1998; Stolowy et

al., 2011). For example, Baker and Faulkner (2004) found that investors who relied on trust in their social ties to make investment decisions were significantly less likely to perform due diligence and those investors who did not perform due diligence had a greater loss of capital. Even if due diligence is actually performed, market ignorance often keeps people from asking the questions needed to uncover fraudulent practices (Van de Bunt, 2010).

Strategic Case: Eron Mortgage Corporation

In this study, we examine the pre-planned mortgage fraud perpetrated by Eron Mortgage Corporation in British Columbia, Canada. The fraud ran from 1993 until the end of 1997. Brian Slobogian founded Eron Mortgage in January 1993 with no previous experience in the mortgage brokering business. After learning from an experienced mortgage broker, Slobogian began raising funds for Eron from investors and also began arranging loans to borrowers. Slobogian then met Frank Biller through a venture capital project in which Biller was hired to raise funds. The two consistently worked together as a team in which Slobogian would find and negotiate deals with borrowers and Biller would raise funds from investors (*Eron Mortgage Corporation et al.*, 1999a).

From 1993 to 1996, Eron grew rapidly and at one point had over 40 brokers helping to raise funds primarily from commercial real estate mortgages. Generally, in mortgage brokerage transactions, a mortgage broker will link a borrower with a single investor; at the very most, a small group of investors may join together within one mortgage transaction. However, Eron did things differently and raised funds for single mortgages from a large number of investors where each investor obtained interest in the mortgage (CBC News, 2005; *Eron Mortgage Corporation et al.*, 1999a). Eron was successful at procuring a continuous supply of capital from a constant influx of new investors. The principals constantly moved investors' funds between projects and the four businesses run by Eron Mortgage without any regard to the investor's original intentions for their investments (*Eron Mortgage Corporation et al.*, 1999a).

In 1996, the British Columbia Securities Commission and FICOM, the statutory body responsible for regulating mortgage brokers in British Columbia, began investigations into the various practices of Eron and its principals. Finally, in October of

1997, FICOM suspended Eron's mortgage broker registration, froze all of Eron's accounts and brought on board PricewaterhouseCoopers Inc. for all of Eron's businesses (*Eron Mortgage Corporation et. al.*, 1997; *Eron Mortgage Corporation et al.*, 1999b). After the closure of Eron in October 1997, both Brian Slobogian and Frank Biller were found guilty of three separate charges²⁰. Overall, Eron Mortgage Corporation swindled approximately 2,200 individuals out of \$240 million, the largest Ponzi scheme detected in Canadian history (*Eron Mortgage Corporation et al.*, 1999a).

The Current Study

In the current study we examine a pre-planned fraud and seek to uncover the effects of trust in social ties and conducting due diligence on 1) an investor's initial amount of investment and 2) their overall loss of capital. Investors had opportunities to invest multiple times in Eron, and some took advantage of this opportunity more than others. We argue that trust in social ties, and due diligence are likely to play a role in both the initial stages of the fraud, when making the decision on how much to invest, as well as the later stages, making the decision to potentially re-invest multiple times with the same company because of a build-up of confidence and trust in positive outcomes.

Our study contributes to the existing literature by: 1) Examining a pre-planned fraud established for the purpose of spreading fraud intentionally among its victims (*Eron Mortgage Corporation et al.*, 1999a), compared to Baker and Faulkner's (2003, 2004) study of Fountain, Oil and Gas, a company that started out as a legitimate business before moving to fraudulent practices; 2) Examining the effects of social ties and due diligence at both the beginning and end of the fraud instead of at a single point in time; and 3) Contrasting the effects of trust in social ties to two types of due diligence (professional-based and fact-based).

²⁰ Charges include: 1) Trading and distributing securities without being registered and without filing a prospectus on said securities, making misrepresentations contrary to section 50(1) (d) of Securities Act, 1996; (2) Perpetrating a fraud on persons in British Columbia contrary to section 57(b) of the Securities Act, 1996; and (3) Acting contrary to public interest.

Data and Methods

The data for the current study is drawn from a victim survey of the investment and securities fraud devised by Eron Mortgage Corporation between January 1993 and October 1997²¹. The survey questions were designed to obtain a summary of respondent age, education, gender, income, investing behaviour, process of involvement in Eron (including personal and impersonal methods of introduction), extent of loss, perceptions of responsibility for the fraud, personal consequences from the fraud and possibilities for future prevention of securities fraud. The sampling frame was a list of approximately 2,285 unique names obtained from the Eron Lender's Committee and the British Columbia Securities Commission (BCSC).

The study began in the fall of 2004 and the data were collected in two phases. The first phase consisted of three focus groups comprised of Eron investors who had substantial knowledge of the fraud. The focus groups helped in the development of the survey questionnaire and also helped clarify that possible memory recall issues pertaining to Eron victims would not be problematic since the majority of the investors lost a substantial amount of money and had been interviewed a number of times over the past seven years.

The second phase of data collection consisted of surveys administered in two separate waves. The first wave was a pilot survey mailed to 520 randomly selected Eron investors in December, 2004. During the second wave of the survey, 1,765 surveys were mailed between February and March, 2005. The overall response rate was 31.6 percent. Efforts to compare the profiles of the sample to the population of investors led the research team to conclude that the sample was most likely representative of all investors, with a slight tendency for those who returned their questionnaires to have invested in the earlier years of the scheme (1992-95).

²¹ While January 1993 is the official starting date of Eron as a business, several investors ($n = 8$) were induced to invest in 1992 and are included in the Eron fraud data.

Sample

Although the full sample of victims of the Eron fraud is 559, the focus of our study is on the 331 respondents who named at least one person as “influential” in their decision to invest. An important issue is whether our respondents ($n = 331$) who identified at least one individual by name as influential are significantly different than those who did not ($n = 222$). Possible reasons for not answering could be that no one in particular was influential in persuading them to invest, or they may not have felt comfortable naming influential individuals. If those cases are common, our sample would over-emphasize the role of individuals in influencing investment in Eron. To the extent that the two samples are otherwise equivalent, this situation would not affect our interpretation of the findings. Table 3.1 introduces comparisons with every attribute examined in the study, of which only three were statistically significant. First, investors in our study sample were more likely to: 1) consider lending as the initial purpose of their investments in Eron (39.1% vs. 29.9%); 2) invest in more projects overall (mean = 2.53 vs. mean = 2.07); and 3) check with the B.C. securities commission (7% vs. 3%) – a rare event for any of the respondents.

Table 3.1. Comparisons of the Study (n=331) and Non-study (n=222) Samples.

| Variables | Non-Network% (n = 222) | Network% (n = 331) |
|--|---------------------------|-----------------------|
| 1. Gender | | |
| Male (0) | 62.0 | 60.9 |
| Female (1) | 38.0 | 39.1 |
| 2. Education | | |
| Elementary School | 5.2 | 3.8 |
| High school | 28.9 | 25.9 |
| Some Post-Secondary | 33.2 | 33.2 |
| B.A. Graduate | 18.0 | 18.4 |
| Post-grad/Professional | 14.7 | 18.7 |
| 3. Perception of Eron Risk | | |
| No Risk | 16.7 | 17.6 |
| Low Risk | 48.2 | 42.4 |
| Medium Risk | 30.2 | 35.2 |
| High Risk | 5.0 | 4.8 |
| 4. Reinvested | | |
| Yes (1) | 46.0 | 49.2 |
| 5. Investment Purpose | | |
| Investing | | |
| Yes (1) | 44.4 | 39.7 |
| Lending | | |
| Yes (1) | 29.9 | 39.1 |
| Both | | |
| Yes (1) | 25.7 | 21.3 |
| 6. Due Diligence | | |
| Visited Properties | 4.5 | 7.6 |
| Confirm Eron as registered | 14.9 | 17.8 |
| Check backgrounds of Eron principals | 1.4 | 2.7 |
| Checked with B.C. Securities Commission | 3.2 | 6.9 |
| Checked with other regulatory agencies | 2.7 | 5.1 |
| Visited Eron offices | 37.4 | 39.0 |
| Viewed photos of properties/projects | 46.8 | 53.8 |
| Reviewed audited property value statements | 13.5 | 12.4 |
| Read property/project prospectus | 53.2 | 52.0 |
| | Mean | Mean |
| 7. Age at Initial Investment | 53.00 | 51.00 |
| 8. Investing Knowledge | 2.87 | 3.07 |
| 9. Investing Approach | 4.43 | 4.39 |
| 10. # projects invested in initially | 1.50 | 1.57 |
| 11. # projects invested in overall* | 2.07 | 2.53 |
| 12. Initial Investment \$ | \$17,900.00 | \$19,400.00 |
| 13. Net Loss \$ | \$21,000.00 | \$24,100.00 |
| 14. Household Income \$ | \$53,700.00 | \$57,500.00 |

Dependent Variables

We examine two main dependent variables. The first is the *initial investment ratio*, which captures the amount invested in the beginning of the fraud. In order to account for variations in investment capacity, we used the amount of an investor's initial investment in Eron as a ratio to an investor's household income (both in Canadian dollars). The second dependent variable is the *net loss ratio* which allows us to measure the overall loss incurred by investors at the end of the fraud. It is also a ratio to an investor's household income allowing us to measure the magnitude of loss incurred by investors compared to their income. Since both variables were positively skewed, log transformations were applied. The geometric mean initial investment among investors is \$19,400 while the mean percentage of investors' initial investment to their household income is 33%. The geometric mean net loss among investors is \$24,100 while the mean percentage of investors, net loss to their household income is 40.7%. The average household income among Eron investors is \$57,500.

Independent Variables

Social ties and professional-based due diligence

We constructed our main predictor variables from responses to the survey question which asked investors "Who was the most influential person, if any, in convincing you that Eron was a legitimate investment?" Respondents were asked to name up to five individuals and to indicate the relationship to each individual named. This resulted in six different types of relationships: 1) Eron principals, 2) Eron representatives, 3) Family and friends, 4) Fellow investors, 5) Industry regulators, and 6)

professional brokers.²² To capture the three types of trust distinguished by Zucker (1986), we collapsed the relationship ties from the influence data into three categories. The first category is our indicator *characteristic-based trust* where influence from friends, family, and fellow investors was collapsed. *Characteristic-based trust* is based on shared personal characteristics such as family background, ethnicity, political and religious beliefs, and many other shared traits (Stolowy, et al., 2011; Zucker, 1986). The other two categories from Zucker's (1986) trust typology capture our definition of *professional-based due diligence* where potential investors consult with industry professionals or directly with principals prior to investing. First, Eron principals and Eron representative relations were collapsed into, *Eron*, representing *process-based trust*. Zucker (1986) refers to *process-based trust* as trust where expected exchange is established through status, reputation, or expertise (Stolowy, et al., 2011; Zucker, 1986). Second, industry regulator and professional broker relations were collapsed into a single category to represent *institutional-based trust*. *Institutional-based trust* is placing trust in the power of formal institutions that function to govern exchange in market transactions (Zucker, 1986). Dummy variables were constructed for each of these categories of trust, and *characteristic-based trust* (influence from social ties) serves as the reference category against which others are compared in the multivariate model.

Overall, the 331 victims in our study identified 162 distinct influential social ties. A total of 46.6% of our sample reported having been influenced by friends/family/fellow investor ties (*characteristic-based trust*) alone when they were contemplating investing in Eron, by far the most prevalent response. Overall, 19.4% reported that Eron principals and brokers were the sole source of influence (*process-based trust*), 14.8% reported that

²² Eron principals are the owners of the company. Eron representatives are employees and brokers of Eron. Family and friends is a self-explanatory relationship where either a friend or family member influenced individuals to invest in Eron. Fellow investors are individuals who invested in Eron and then influenced other potential investors such as friends or acquaintances to invest. Industry regulators are employees of institutions such as the B.C. Securities Commission and B.C. Registrar of Mortgage Brokers who enforce securities laws and regulations and protect investors from potential fraudulent practices. Finally, professional brokers are the individuals who provided financial counseling and expertise about the investment.

industry professionals were influential (*institutional-based trust*), and 19.1% named individuals belonging to more than one of those categories (multiple relations).

Fact-based due diligence

Due diligence also involves a fact checking component that can be conducted without connecting to industry professionals, or even to Eron principals. To measure *fact-based due diligence*, we constructed a scale using the following nine items taken from a survey question which asked investors, “Before putting money into Eron, I took the following steps:” Each of the nine indicators are listed in Table 3.2 along with the percentage of investors who performed each. The items include: 1) visited properties, 2) visited offices, 3) viewed photographs of property/projects, 4) confirmed Eron as a registered mortgage corporation, 5) reviewed audited statements of property value, 6) checked background of Eron principals, 7) read property prospectus, 8) Checked with B.C. Securities Commission, and 9) checked with other regulatory agencies. Each item was added to form a scale (alpha = .628) capturing the variety of investigative actions undertaken by respondents. Respondents reported on average 1.97 fact-based due diligence actions, with the maximum being 8 items for one respondent in the study sample.

Table 3.2. Fact-based Due Diligence Performed by Eron Investors

| Type of due diligence | # Investors | % Investors |
|---|--------------------|--------------------|
| Confirmed Eron as a registered mortgage corp. | 59 | 17.8% |
| Checked with B.C. Securities Commission | 23 | 6.9% |
| Checked with other regulatory agencies | 17 | 5.1% |
| Viewed photos of property/projects | 178 | 53.8% |
| Reviewed audited statements of property value | 41 | 12.4% |
| Read prospectus about property/project | 172 | 52.0% |
| Visited Eron Offices | 129 | 39.0% |
| Visited Properties | 25 | 7.6% |
| Checked background of Eron principals | 9 | 2.7% |
| Mean: 1.97 of a possible 9 items (range: 0-8) | | |

Control Variables

We included a number of control variables in our analyses at the investor level to help predict factors influencing initial investment and net loss²³. *Age* is a continuous variable measured in years (*mean* = 51). Age is especially important here because the majority of Eron victims are middle-aged (45-60) and generally invest more and experience more financial losses than their younger counterparts (see Appendix 3.1). *Education* is an ordinal variable with five categories (1 = elementary school or less, 2 = high school or less, 3 = some college/post-secondary school, 4 = university graduate, 5 = post graduate degree/professional training). Only 30% of the sample reported having no education beyond high school. The average *investment knowledge* of Eron investors in market securities and mortgage investing was 3.07 on a scale of 1 to 7, with lower values indicating less knowledge in investing in market securities and mortgages. *Sex* is dichotomous (Male = 1), with the majority of the sample being male (61%).

Risk-taking behaviour variables are added to the analyses to control for their effects on initial investment and loss. For instance, Holtfreter, Reisig, and Blomberg (2006) found that vulnerability to fraud is compounded with routine financial risk behaviours; if an individual is wealthy, they may routinely invest more in financial ventures, or be more willing to take risks with their money thus investing more and risking substantially greater loss (see also Van Wyk & Benson, 1997). Risk variables include *investment approach* and *perception of Eron risk* in Eron. *Investment approach* is a Likert-scale variable in which investors were asked to choose the appropriate number that best described their approach to investing prior to their involvement in Eron (scored 1 – 10 with 1 being extremely conservative and 10 being extremely aggressive). The mean score is 4.39, close to the middle of the scale. *Perception of Eron risk* is an ordinal variable measuring an investors perception of Eron as a risky investment, coded 1 = No risk, 2 = low risk, 3 = medium risk, and 4 = high risk. A total of 42.4% perceived Eron to be low risk, 40% medium or high risk, and 17% thought Eron to be no risk at all.

²³ See Titus, et al., 1995; Schoepfer and Piquero, 2009 for effects of demographics and SES characteristics on fraud victimization.

We also included financial variables representing initial involvement and post-initial involvement in the Eron fraud, including the number of initial projects invested in, the number of projects invested in overall²⁴, the purpose of an investor's initial investment, and whether or not investors reinvested in Eron throughout the time of the fraud. Prior research has shown these types of variables to be significant in predicting investing behaviour and fraud victimization (Dulebohn, 2002). *Number of initial projects invested in* and *number of projects invested in overall* are both integer variables (*mean* = 1.57, range = 1 – 8; *mean* = 2.53, range = 0 – 16, respectively). *Investment purpose* is measured by two dichotomous variables “investing” (1 = yes) and “lending” (1 = yes) measuring an investor's purpose for their initial investment in Eron. The reference category for this variable is “both” (1 = yes). Generally, investing in real-estate mortgages is more risky than lending. *Reinvest* is a dichotomous variable (1 = reinvested). Overall, 49% of investors reinvested in Eron after their initial investments, which supports the separate analysis of initial investment and net loss. When considering the type of investment, approximately 39% of investors were lending, 40% were investing and 21% were both lending and investing.

Modeling Strategy

We draw from two linear regression models to test for effects of influence through social ties and different types of due diligence on an investor's amount of initial investment and their total net loss due to involvement in the Eron fraud. By using two dependent variables, we are able to examine effects of social ties and performing due diligence at the beginning stage and end stage of a Ponzi scheme. The dynamics involved in deciding on the amount to invest for the initial investment, and those involved when considering increasing that initial investment differ. As such, we do not include exactly the same set of predictors for each dependent variable. The initial investment model controls for the initial purpose of the investment, and the initial number of

²⁴ Eron Mortgage Co. offered many syndicated mortgages for real estate development projects, particularly within British Columbia, Canada in which individuals could invest in more than one property or project within their involvement in Eron.

properties respondents invested in. The total loss model controls for the size of the initial investment in the first place, the total number of properties they invested in, and whether the respondent invested more than once. We also employed multiple imputations to account for missing responses present in our income data and often present in survey questions related to income in the literature²⁵.

Results

We started the analysis of initial investment by examining the bivariate associations with our predictors. First, we found that two types of trust are significantly associated with initial investment, *characteristic-based trust*; $r = .130$, $p < .05$, and *institutional-based trust*; $r = .121$, $p < .05$. This suggests larger investments when influence comes from friends/family/investors, as well due diligence via industry professionals, but not necessarily when it comes from Eron representatives (*process-based trust*, $r = .045$). As for *fact-based due diligence*, it was significantly associated with both dependent variables: The more due diligence, the larger the initial investment ratio, and the net loss of capital ratio ($p < .05$). These bivariate results suggest that both trust in social ties and performing due diligence may have a role to play in potentially increasing the amount of capital initially invested by our respondents.

Initial Investment

Table 3.3 presents the regression coefficients for the effects of trust in social ties and the various types of due diligence on an investor's initial investment. Our set of predictors provides a reasonably good model, with an R^2 of .37. The important effect uncovered in the first model is the contrast of one type of *professional-based due diligence*, *institutional-based trust*, and the reference category represented by *characteristic-based trust*. Controlling for gender, age, education, investing knowledge,

²⁵ Using the study sample ($n = 331$), missing data for initial investment was 3.59%, 11.98% of the total sample for total net loss and 13.17% of the sample for household income.

investing approach, perceived risk of Eron, and initial number of properties invested in, we found that being influenced by industry professionals was associated with larger initial investments. It seems that individuals often do trust their friends with their investment decisions, but that trust may not be strong enough to compete with the credibility of industry professionals in financial matters.

Other factors appeared to play a role on the initial investments made by Eron victims. The investment ratio was shown to increase with age, but to decrease with the level of education of our respondents. The amount initially invested was shown to be positively associated with the number of properties targeted for investment. And finally, the more respondents perceived Eron as a risk, the smaller the amount initially invested. Note that suspicious investors were more prudent with their money, but the correlation matrix (Appendix 3.1.) reveals they did not necessarily match their perceptions of risk with increased due diligence activities. None of the correlations between risk perceptions and any of the due diligence indicators were statistically significant. Finally, because some prior literature had identified the possibility of an interaction between performing due diligence and trust in social ties, we sought to test all of the possible interaction effects between our predictors. We found that none of the interactions were associated with our dependent variables.

Table 3.3. Initial Investment and Net Loss Regressed on Social Ties and Due Diligence

| Dependent (n = 331) | Initial Investment | | Net Loss | |
|------------------------------------|--------------------|------|----------|------|
| | <i>B</i> | S.E. | <i>B</i> | S.E. |
| Independent Variables | | | | |
| Constant | -2.168 | .469 | -7.961 | .600 |
| Controls | | | | |
| Sex | -.123 | .130 | .136 | .120 |
| Age | | .005 | .010 | .006 |
| Education | - | .060 | -.124* | .057 |
| Investing Knowledge | .012 | .043 | .019 | .038 |
| Investing Approach (risk) | -.007 | .036 | -.007 | .036 |
| Perception of Eron risk | - | .077 | -.209* | .082 |
| # properties initially invested | | .070 | - | - |
| Investing | -.230 | .164 | - | - |
| Lending | -.081 | .169 | - | - |
| # properties invested overall | - | - | .118* | .048 |
| Initial Investment | - | - | | .060 |
| Reinvested | - | - | | .143 |
| Main predictors | | | | |
| (Ref = Characteristic-based Trust) | | | | |
| Process-based (Eron) | .145 | .164 | .107 | .146 |
| Institutional-based | | .174 | -.073 | .167 |
| Multiple Relations | .076 | .159 | -.432* | .164 |
| Fact-based due diligence | .031 | .038 | .031 | .040 |

^a Omitted category for social ties is influenced by friends and family.

^b Initial investment $R^2 = .370$; $F = 9.482$, $p < .001$.

^c Net loss $R^2 = .623$; $F = 25.499$, $p < .001$.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

Loss of Capital

The right side of Table 3.3 presents the regression coefficients for the effects of trust in social ties and due diligence on an investor's total net loss due to their involvement in the Eron fraud. Overall, our set of predictors provides a strong model of

net loss, with an R^2 of .623²⁶. Three new variables were added to account for events that occurred after the initial investment: 1) number of properties respondents invested overall (removed the variable “number of properties initially invested in); 2) whether respondents reinvested at least once after the initial investment; and (3) our dependent variable in the first model, *initial investment*, in order to fully control for the decisions that occurred in the initial stage of the fraud. As such, we also removed the initial purpose for investment predictor (though it made no difference in the outcome, as it was not associated with any of the investment of net loss variables). All three of those predictors proved to be significantly associated with net loss, all with positive relationships. In addition, as was found in the initial investment models, both perception of Eron as a risky investment and education were significant negative predictors of net loss.

As for our main predictors, the results for net loss reveal a different effect of trust than for the initial investment model. Here, we find that net loss ratios decrease for respondents who reported having been influenced by *multiple relations*, compared to those who were influenced solely by *characteristic-based trust*. This result is intriguing, as respondents who declare multiple sources of influence appeared to have been more prudent in their investment, as opposed to less. Instead of an increased sense of security, the extra consultation may have portrayed Eron as a more risky venture. The correlation matrix suggests that these individuals were not more prudent than others in their general approach to investment, or on how they perceived Eron (Appendix 3.1.). Here, again, *fact-based due diligence* did not appear to be a salient factor as investors progress through the fraud.

Fact-based due diligence did not emerge as a significant predictor in multivariate analyses, which prompted us to investigate this further. Because trust in social ties has been shown to be a substitute for conducting due diligence when making financial

²⁶ Checking the model for multicollinearity we find that the average VIF = 1.341 and Tolerance values fall within a range of .543 - .889, well above the 0.2 criterion thus, no multicollinearity appears to be present in the model. Similar substantive results were found for all models in the paper.

decisions (Baker & Faulkner, 2004; DiMaggio & Louch, 1998; Stolowy et al., 2011) a final model on the effects of trust on fact-based due diligence was analyzed (see Table 3.4). Table 3.4 suggests that *characteristic-based trust* and *industry-based trust* (compared to *multiple relations*) could have acted as a substitute for performing fact-based due diligence. Both predictors were negative, suggesting that some types of social interactions may have been perceived as sufficiently informative. Table 3.4 also reveals that respondents who reported more investment knowledge scored significantly higher on this type of due diligence. Education emerged as the only significant, positive predictor for the reviewing documents category of due diligence.

Table 3.4. Fact-based Due Diligence Regressed on Various Types of Trust

| Dependent (n = 331) | B | S.E. |
|---|---------|------|
| Independent Variables | | |
| Constant | 2.164 | .606 |
| Controls | | |
| Sex | -.079 | .191 |
| Age | -.007 | .007 |
| Education | .172* | .084 |
| Investing Knowledge | .219*** | .057 |
| Investing Approach (risk) | -.060 | .051 |
| Perception of Eron risk | -.159 | .113 |
| Investment Purpose | | |
| Investing | -.318 | .233 |
| Lending | .258 | .233 |
| Main predictors | | |
| Process-based trust (Eron) | -.113 | .278 |
| Characteristic-based trust (Friends/Family/Investors) | -.554* | .236 |
| Institutional-based trust (Industry professionals) | -.654* | .298 |

^a Omitted category for social ties is influenced by multiple trusted relations.

^b Due Diligence $R^2 = .156$; model fit: $F = 4.404$, $p < .01$.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

Discussion

The central goal of this study is to determine outcome effects of different types of trust and due diligence on an investor's initial investment at the beginning of a fraud, as well as their total net loss throughout the fraud. The theoretical and empirical

background on trust and due diligence did not help us establish hypotheses with a clear direction. Instead, we found two opposing views. On the one hand, trust and due diligence can protect from malfeasance as was seen in the case of Baker and Faulkner's study of the Fountain, Oil and Gas fraud (2004). On the other hand, trust and due diligence, if done in such a way as not to give rise to any suspicions, may act to give a certain "peace of mind" to potential investors, who may feel safer than others and as such, be ready to invest more than their counterparts.

We begin with an explanation of the outcomes of trust and due diligence within the context of initial investment. Interestingly, we found that investors who were influenced by *institutional-based trust* experienced a different effect from that most often found within the literature; Baker and Faulkner (2004) found that a lack of conducting due diligence was cause for malfeasance within the Fountain, Oil and Gas fraud. Our results show that the more investors were influenced by professionals and industry regulators, the more they increased their initial investment in Eron. This illustrates that the more investors relied upon *professional-based due diligence*, the greater their feelings of comfort in Eron as a legitimate investment, and the greater their chances of potential loss if they become involved in fraudulent activities. It is highly probable that Eron investors saw industry regulators as experts in the mortgage brokering and securities trading business and trusted this perceived expertise. People rely on this form of trust to ensure that transactions in the market place are safe and that repercussions will be swift should there be any wrong-doing – many investors believe that their money will be recovered if they unintentionally become involved in a fraud.

According to Stolowy et al. (2011), people rely on *institutional-based trust* for comfort, reducing the need to further perform due diligence or monitor pre-existing investments (p. 18). Our results confirm that investors influenced by professionals and regulators in the beginning of the fraud may have substituted this *institutional-based trust* for *fact-based due diligence* when investors began considering future transactions with Eron, thus accounting for the insignificant findings of conducting *fact-based due diligence* when examining an investor's initial investment and loss of capital. To Eron investors, *institutional-based trust* may have been nothing more than an added comfort that their initial investment in the beginning was warranted, that the information they received from Eron as a source of due diligence was sound, and thus, reducing the

further need to justify future investments in Eron. Second, as Granovetter (1973) argues, trust in institutional-based entities generates weak ties (as discussed in Zucker, 1986, p. 58). Burt (2005) contends that networks consisting of weak ties create an unstable trust environment. In other words, if an individual or information is untrustworthy, word is unlikely to spread quickly, thereby allowing frauds to go undetected for long periods of time.

This reliance on *institutional-based trust* influences investors' decision-making by creating what Stolowy et al. (2011) refer to as the "Illusion of credibility" where trust in experts and financial institutions reinforce feelings of trust in the information acquired, as well as in the entity on which information is sought, and at the same time, reduces the need for further due diligence. Roberts (2009) and Stolowy et al. (2011) argue that information collected must be credible through the process of intelligent accountability – collecting valid and reliable information that keeps transaction partners accountable through transparency and that information should not be blindly trusted; they posit that in many cases, more information may actually increase the likelihood of falling prey to fraud.

Examining net loss and the later stages of the fraud, it is trust that arises through consultation with multiple sources that matters. All other forms of trust and due diligence were insignificant. According to Zucker (1986), all three forms of trust help fill the gap in uncertainty inherent within financial decision-making, thus reducing the risk of making financial transactions with another party. In the case of Eron, we found that the investors who were influenced by multiple types of trust significantly lowered their net loss ratios compared to respondents who were influenced by only one type of trust. So it appears that the accumulation of different types of trust has a protective effect throughout the duration of a fraud. In other words, the opportunity for malfeasance created by trust (in all forms) appears to be minimized by consultation with multiple sources. It seems rational to expect that information from multiple sources is more likely to result in contradictory information that will cause investor suspicion. This suspicion then translates into more prudent investment practices over time. Prior research on trust and verification supports this explanation. Stolowy et al. (2011) found for example, that investors who relied on both *characteristic-based trust* and *process-based trust* together had a reduced need to obtain further information about investment opportunities with

Bernard Madoff – trust in affinity ties and Bernard Madoff himself reduced the need for investors to perform due diligence. Gundlach and Cannon (2009) found that information and trust verification efforts through corroboration from multiple sources are particularly beneficial in situations such as investing, where trust can be easily manipulated.

One of the most intriguing findings of this research is that *characteristic-based trust*, *process-based trust*, and *fact-based due diligence* are not associated with substantial losses at either the beginning or throughout the duration of the fraud. However, perhaps this is not so surprising considering the contradictory nature of the research. There are scholars who argue that social relations can be the cause of malfeasance, and scholars who contend that social ties can protect individuals from financial loss. Baker and Faulkner (2004) found that social ties with principals and employees of an intermediate fraud, as opposed to social ties among friends and family within personal social networks provided the greatest protection against loss of capital. Conceivably, our research shows that the type of trust in an investment setting is both protective and harmful, depending on the characteristics of the relationship. As Hill and O’Hara (2006) point out, trust in relationships is highly interdependent and if misplaced, can be very costly to the trustor (p. 1762).

An important distinction must be made between our study and that of Baker and Faulkner’s (2004). The Fountain, Oil and Gas fraud examined by Baker and Faulkner is an intermediate fraud – a fraud that started off as a legitimate business but turned to fraudulent activity to sustain itself. Our study examines a pre-planned fraud which starts on the premise of fraudulent activity from the beginning of its existence. What must be distinguished here is that where Baker and Faulkner (2004) found that process-based trust (pre-existing social ties with principals and employees of Fountain, Oil and Gas) and conducting due diligence produced the greatest protection against an intermediate fraud, our study reveals that the cumulative effect of trusting multiple types of relations was the greatest protector against the pre-planned fraud orchestrated by Eron.

Examining the temporal differences between outcomes of trust and performing due diligence at the beginning and ending phases of the fraud, a leading explanation for our findings is the substitution of trust in place of performing due diligence. For example, Stolowy et al. (2011) suggest that while information is important in the beginning of a

contract to determine future behaviour of the trusting parties involved, information is also relevant after an investment has been made to check on account statements, property values, performance of investments, etc. (p. 7). Because trust can replace the need for information, Stolowy et al. (2011) argue that the presence of *characteristic-based trust* and *institutional-based trust* “reduce the perceived need to obtain additional information regarding the investment, highlighting the substitution effect of trust” (p. 17). Here, it appears that Eron investors, after making initial investments, replaced due diligence with trust in their social ties, particularly *characteristic-based trust* and *institutional-based trust*, when making investment decisions about Eron. Baker and Faulkner (2004) found that indeed investors in the Fountain, Oil and Gas fraud substituted trust in place of due diligence and ended up with greater loss of capital.

Limitations

There are two main limitations in this study. First, we are unable to identify potential investors who decided not to invest in Eron and the reasoning behind their actions. Had their reasons for not investing related to uncovering information that led them to believe Eron was not a legitimate investment remains to be seen. Second, in the absence of a possibility for systematic comparisons, it remains unknown whether the study participants had the same profile as those who did not return their questionnaires. These individuals may also shed more light on the possible effects of due diligence and social ties over the entire course of the fraud. However, efforts to compare the profiles of the sample to the population of investors led the research team to conclude that the sample was most likely representative of all investors, with a slight tendency for those who returned their questionnaires to have invested in the early years of the scheme (1992-95).

Conclusion

When making investment decisions in risky and uncertain situations, trust and due diligence play dual roles, either protecting investors from fraud or being a cause for fraud victimization. Our case provides evidence for both, where trust and due diligence either protected the investor from capital loss or increased the amount of loss. Here lies

the apparent success of Eron: the investors who relied on *institutional-based trust* before investing were satisfied enough with the decisions of their brokers and regulators that they saw no need to gather further information to reduce risk and uncertainty and went ahead to invest larger sums of money. Individuals who relied on multiple forms of trust gathered information that may have been contradictory and were more prudent with their money over the course of the fraud.

It is crucial that future studies on large-scale investment frauds find a way to reach those individuals who may have considered investing, but decided to pass on the opportunity. We believe that an opportunity for finding answers to difficult questions in the white-collar crime literature lies in widening sampling frames to include not only the victims of fraud, but also those individuals who were exposed to it, and made a conscious decision to look the other way.

Chapter 4.

Social Networks as Predictors of Harm Suffered by Victims of a Large-scale Ponzi Scheme

Introduction

The literature on harm suffered by victims of white-collar crime reveals that they often suffer just as much as victims of violent and street crime (Croall, 2007; Canadian Securities Administration [CSA], 2007; Deem, 2000; Moore & Mills, 1990; Schoepfer & Piquero, 2009; Shover, et al., 1994). The harm victims of fraud suffer goes well beyond that of financial loss and includes social, psychological, emotional and physical suffering that often extends well beyond the end of the fraud (CSA, 2007; Deevy, et al., 2012; Moore & Mills, 1990; Spalek, 1999; Shover, et al., 1994). The social aspect of fraud victimization is of particular interest to us in this study. Edwin Sutherland (1940) predicted that the costs of white-collar crime to society from financial loss are less important than the damage it causes to social relations. Sutherland (1940) states that "white-collar crimes violate trust and therefore, create distrust, which lowers social morale and produces social disorganization on a large scale" (p. 15). Button, Lewis, and Tapley (2009) posit that fraud victimization causes harm to relationships with family and friends in three ways: 1) the financial loss causes stress on the relationship; 2) one person may keep the loss a secret until losses are apparent and can no longer be hidden; and 3) family members become stressed when a relative squanders life savings while other family members try to stop them – both cause strain on the relationship (Button et al., 2009p. 59).

The current study examines not just the harm that fraud causes to social relations, but also how social relations can affect the level of harm suffered by victims. The specific case under study is a large-scale Ponzi scheme in the form of a pre-

planned mortgage fraud perpetrated by Eron Mortgage Corporation in British Columbia, Canada, from 1993 to 1997. When the fraud was detected by the authorities in 1997, Eron had raised over \$240 million from investors, which at the time made it the largest fraud ever detected in the country. What makes this particular fraud an interesting case study for our purposes is the fact that many investors reported having “spread the word” about the opportunity to friends and family members, convinced that 1) Eron was legitimate, and 2) that they and their social relations would financially benefit from the flux of new investors. The end result is that once it was revealed to investors that Eron was in fact a Ponzi scheme, one of the people they could hold accountable for their involvement was not simply a fraudster they barely knew, but a friend or family member. We hypothesize that this unique social dynamic may affect the level of physical, social, emotional, and financial harm suffered by victims. All else equal, investors who reported having been influenced by a friend or family member are expected to have suffered more harm from their involvement in Eron than those who were instead convinced by someone who is not as close to them, such as a financial broker or Eron principals themselves.

Key to this inquiry is the notion that trust in others is not only a starting point for fraud, but also a generator of harm once victims realize they have been deceived. We argue that whether trust was placed with a loved one may directly influence the level of harm suffered by victims. There is evidence to suggest that trust embedded in social ties plays a substantial role in the harms experienced by investors involved in financial scams. As such, it is important to examine additional underlying causes of harm on a social network level in order to understand the impact trust in one’s social ties has on victims of white-collar crime. Below, we review the extant literature on the various types of harm suffered by victims of fraud more generally; we then proceed to review the literature on the role of social relations as a predictor of harm.

Fraud Victimization and Harm

The extant research has consistently shown how complex, varied, and serious the consequences of fraud are for many victims. It also has shown that specific characteristics of the case may have an impact on the harms suffered by victims. For example, Shover, et al. (1994) examined the effects of the Southland Industrial Banking Corporation (SIBC) fraud and found that the harms caused to victims were sustained over a long period of time due to two characteristics – the lengthy settlement process which victims could accept or resist and their potential for recovering losses incurred, or their earning power (a combination of age and ability to generate income). In fact, the greatest effect of harm to victims came not from financial loss but from the emotional and psychological harm they experienced from the reorganization process where victims who had invested over \$10K were ordered by the court to keep their funds in the market to reorganize SIBC into a new company (Shover et al., 1994). After being asked how often she thought about the fraud, one victim stated “Every day for eight years. I go to bed with it. I get up with it. I think of it through the day...Really, it destroyed our life. We’re not happy people anymore” (Shover et al., 1994, p, 86).

Ganzini, et al. (1990) examined the effects of severe financial loss due to involvement in a Ponzi scheme and found that almost 30% of respondents in the study suffered a major depressive period and 27% generalized anxiety disorder for up to 20 months after the loss occurred. They posit that such large losses to financial stability make it extremely difficult, particularly for older individuals to recoup their losses, thus causing greater feelings of depression and anxiety (Ganzini et al., 1990). Victims also suffered from physical and general health problems, with the majority seeking a physician’s help. They also found that expectations for retirement were drastically changed among victims of the Ponzi scheme and that many anticipated selling their homes to make up for losses incurred (Ganzini et al., 1990). Examining the harm suffered by victims of Bernard Madoff, Lewis (2010) found that many of Madoff’s victims reported new health problems, psychological harm, insomnia, depression, grief, anxiety, and harm to family relations. They also reported losing their homes, financial security, financial independence and many have to return to the labor force – all of which may be cause for further emotional and physical harm as well as ongoing harm to their current financial situation and harm to family relations. For example, a 61 year old widow and

victim of Bernard Madoff had to re-enter the workforce and secure three jobs at the same time as she had lost her entire life savings. She states that “I must work full time in order to eat.” She also experienced a “devastating emotional toll” and deteriorating health from being victimized by Madoff (Lewis, 2010, p. 444). The preceding victim impact statements and interview data provide evidence of the different types of harm incurred by victims of fraud but the exact causes of harm remain unknown. In this study, we examine the construct of trust in social relations, a key component in financial decision-making, and how trust initiates the harms experienced by victims of fraud.

Trust, Social Ties and Harm

Trust is the building block for governing financial transactions, for propagating social relations and for cooperation among societies (Zucker, 1986). Trust is essential for business and economic success (Kramer, 2009) which leads Guiso (2009) to suggest that without trust, there would be no economy. Trust relations are interdependent transactions that take on an element of risk because the outcome depends on the actions of more than one actor – whether or not the outcome of a trust relationship is favorable to the trustee is dependent on the other actors who are part of the trust relation (Burt & Knez, 1995; Buskens, 2002; Granovetter, 1985). As such, many people rely on their trusted social ties to make financial decisions. DiMaggio and Louche (1998) argue that the structure of our social relationships is crucial in determining our choices of economic trading partners, how we interact with them, how we use our social networks to gather information about future transactions, and how we choose our transaction partners. However, trust also creates opportunities for malfeasance (Baker & Faulkner 2003, 2004; Comet, 2010; Granovetter, 1985).

Granovetter (1985) offers three reasons in which social ties can produce opportunities for malfeasance: 1) trust in personal relations makes one vulnerable; 2) trust in social relations are most often necessary to carry out “force or fraud” where these forms of criminal activity cannot be achieved alone; and 3) opportunism through trust is dependent on how social ties are embedded in the structure of the network (Granovetter, 1985, p. 491-493). For example, using word-of-mouth through social networks, Bernard Madoff was able to find victims for his Ponzi scam using accountants, brokers, dentists, bridge partners and friends and family (Lewis, 2010). One victim

spread Madoff's Ponzi scam through his entire social network via word-of-mouth, influencing 33 different family and friends to invest. The harm incurred by this family is extensive, with generations of family members losing everything they own and becoming indigent. In fact, twenty percent of Madoff's victims said their financial loss was multigenerational, thus extending the harm incurred by loss to more than just the victim. For example, victims could not help pay for college for grandchildren and could not provide help for aging parents. Shores (2010) contends that trust transmitted through social networks can dictate the information one obtains when making financial transactions, influencing outcome perspectives such as information asymmetry²⁷. Information asymmetry in favor of the seller can often lead to opportunistic behaviours such as fraud. In fact, strong social networks can be a risk factor for fraud victimization because the trust placed in friends, colleagues, work partners, and family is essential for a successful fraud (Ganzini et al., 1990).

Investment fraud is about trust. It is about trust because most victims of investment fraud are introduced to the fraud by an existing social tie. In fact, a relationship of trust was key to most successful frauds, with 65% of victims feeling a strong trusting relationship to the person(s) who influenced them to invest in a fraud, usually through a friend, neighbour, co-worker, or family member (CSA, 2007). Similarly, many fraudsters manipulate trust in social ties to establish a sense of legitimacy, creating seemingly trusting relationships with their victims, causing feelings of betrayal and loss of trust. In an important study of fraud victimization in Canada, the CSA (2007) found that 68% of fraud victims are less willing to trust others after becoming a victim of fraud and 63% are less willing to make future investments due to loss of trust in financial institutions. Another common casualty of fraud victimization is that of existing social connections. Victims report less involvement in social activities, loss of friends, and reduced involvement in family activities after becoming victims of fraud (CSA, 2007). Trust is often the first casualty of fraud and many victims feel a sense of betrayal,

²⁷ Information asymmetry occurs when market information tends to be on the side of the seller and is generally present in most market transactions.

particularly if they knew the person who got them involved which is cause for negative emotional and psychological harms to victims (Koehler & Gershoff, 2003; U.S. Attorney's Office, 2013).

There is some research suggesting that trust embedded in social ties and financial decision-making plays a substantial role in the harms experienced by investors. For instance, the United States Attorney's Office (2013) states that because crime is a personal violation, it often causes the victims of such crimes to lose trust in themselves and more importantly, trust in others as it is often the case that victims of fraud and other white-collar crimes knew and trusted the offender. They contend that even though financial loss is an impetus for the harms victims experience, loss of trust in yourself, in your friends and family, in impersonal information channels such as the media, in consumer protection agencies and in government agencies and professional institutions can cause emotional and physical harm, and harm to ones friends and family relations (United States Attorney's Office, 2013). Deem (2000) argues that while financial loss is an impetus for harm, there are many other factors that can contribute to the harm suffered by fraud victimization such as a victim's family and support structure, the degree of trust a victim had toward the offender, and the victim's ability to recover losses incurred. In the same vein, the CSA (2007) argues that financial loss does not account for all harms incurred by victims involved in white-collar crime and the social costs of white-collar crime, including loss of trust, seem to have the hardest impact on victims. In fact, the CSA found that 63% of Canadians who experienced investment fraud lost trust and confidence in the financial market and dealt with substantial health-related problems, both mental and physical, and suffered loss to family and friend relations. As such, it is important to examine additional underlying predictors of harm on a social network level in order to understand the impact trust in one's social ties has on victims of white-collar crime.

Koehler and Gershoff (2003), who examined the effects of betrayal from trusted social ties, posit that a fraud involves the violation of a protective-trust or, when the trusted party is the cause of the very harm they were trusted to protect against. This type of betrayal through trusted social ties causes the greatest harm to its victims (Koehler & Gershoff, 2003). There is a sense of betrayal when one is involved in fraud because fraudsters target religious, social and other bonds formed on trust (Deevy et al., 2012).

Fraud is also one of the few white-collar crimes in which the victims unknowingly collaborated in their own victimization, thus adding to the psychological, emotional, and physical harms they experience. By breaking the bonds of trust in such a manner, this “threatens the very social order that permits us to have a positive expectation of safety (Koehler & Gershoff, 2003, p. 246).

Current Study

The extant literature indicates that the different types of harm victims of white-collar crime incur are deeply rooted in trusted relationships. Yet, there has been little empirical work examining trust embedded in social ties as a cause of harm suffered by victims of fraud. According to Deevy et al. (2012), a particular reason for this lack of research is that psychological and emotional consequences of harm to victims of fraud are not only difficult to track but also difficult to measure.

Using data collected on the emotional, physical, relational, and financial harms experienced by victims of a securities fraud, this study will fill a gap in the literature on the role of social networks and trust in relation to the harms experienced by victims of fraud. Research within the realm of fraud victimization attests mainly to financial loss as a cause for harm, as such, expectations as to the role of social networks as a cause for harm are as of yet unknown.

We seek to uncover the effects of network centrality, relationship ties, and information channels on the harms suffered by victims of the Eron Mortgage fraud including: 1) the overall harm experienced and more specifically; 2) financial harm; 3) harm to friends and family relations; 4) emotional harm; and 5) physical harm. Research on fraud victimization suggests that beyond financial loss, loss of trust is the first casualty of fraud victimization and is often a major cause for the harms suffered by victims of fraud, creating a sense of betrayal toward those who introduced the victims to the fraud in the first place (Koehler & Gershoff, 2003; U.S. Attorney’s Office, 2013; Sutherland, 1949).

Data and Methods

The current study analyzes data drawn from a victim survey of the investment and securities fraud devised by Eron Mortgage Corporation between January 1993 and October 1997²⁸. The survey questions were designed to obtain from respondents a summary of their age, education, gender, income, investing behaviour, process of involvement in Eron (including personal and impersonal methods of introduction), extent of loss, perceptions of responsibility for the fraud, personal consequences from the fraud and possibilities for future prevention of securities fraud. The sampling frame for this study was a list of approximately 2,800 names obtained from the Eron Lender's Committee and the British Columbia Securities Commission (BCSC). Duplicate names, incomplete addresses and corporate addresses which did not refer to an identifiable individual were removed, leaving 2,285 unique names and addresses of Eron investors.

The study began in the fall of 2004 and the data were collected in two phases. The first phase consisted of three focus groups comprised of Eron investors who had substantial knowledge of the fraud. These individuals were identified from a list of names provided by the Eron Lender's Group and the BCSC. The focus groups were of extreme value to the research team because they helped in the development of the survey questionnaire and also helped clarify that possible memory recall issues pertaining to Eron victims would not be problematic considering the amount of time that had passed between the end of the fraud and the study (seven years). Participants in the focus groups stated that since the majority of the investors lost a substantial amount of money and had been interviewed by the BCSC and the police a substantial number of times over the past seven years, their memories regarding the fraud were clear.

The second phase of data collection consisted of surveys administered in two separate waves. The first wave was a pilot survey mailed to 520 randomly selected Eron investors in December of 2004. During the second wave of the survey, 1,765 surveys

²⁸ While January 1993 is the official starting date of Eron as a business, several investors (n = 8) were induced to invest in 1992 and are included in the Eron fraud network.

were mailed between February and March of 2005. Out of the second wave of surveys mailed, 559 investors returned their surveys, an overall response rate of 31.6%. Efforts to compare the profiles of the sample to the population of investors led the research team to conclude that the sample was most likely representative of all investors, with a slight tendency for those who returned their questionnaires to have invested in the earlier years of the scheme (1992-95).

Sociometric Data

Although some analyses will be tested against the full sample of 559 respondents, the current study focuses on the social network created by the 331 Eron respondents who named a specific person as being most influential in convincing them that Eron was a legitimate financial investment. The sociometric data needed to create and map the social structure of the Eron victim network and to identify social ties linking victims to those who influenced them to invest was generated from the survey question “Who played the most significant role in persuading you that Eron was a legitimate financial venture?”

Overall, the 331 victims in our study identified 162 distinct influential social ties, for a total network size of 475 individuals. Table 4.1 shows the number of investors influenced by each relationship category, their percent to the overall network and the ratio of victims to those who influenced them. While the *friends/family* category influenced the most individuals to invest, they have one of the lowest ratios of victims to those who influenced them (1:1). This is not surprising because this relational category of individuals had fewer incentives to influence others to invest in Eron. Individuals in the *Eron* relational category were much more active in influencing new, potential investors that Eron was a legitimate investment with a ratio of almost 4 to 1 revealing a much higher level of involvement and influence from the individuals who created and were employed by Eron, a finding which points to the fact that the owners had great incentive to spread the fraud to as many potential investors as possible in order to maintain the pool of new investors needed to sustain the Ponzi scheme.

Table 4.1. Relationship to Eron Victims and Number of Eron Victims Influenced to Invest

| Relationship | Total in Network | # Influenced | % Influenced | Ratio |
|--------------------|------------------|--------------|--------------|-------|
| Eron | 17 | 64 | 19.4% | 3.8:1 |
| Family/Friends | 140 | 152 | 46.6% | 1.1:1 |
| Professionals | 14 | 49 | 14.8% | 3.5:1 |
| Multiple Relations | 56 | 63 | 19.1% | 1.1:1 |

Individuals in the *professional* relational category were also relatively active in convincing others that Eron was a legitimate financial venture (3.7 to 1). This higher level of influence from industry professionals reflects that of the Eron category, industry professionals have a professional and monetary incentive to introduce their clients to lucrative investment plans. None of those professionals were believed to know about the illegitimate nature of Eron. The *multiple relations* category is similar to that of the friends and family category in influencing others to invest, with a ratio of 1 to 1. This category is of interest because its presence suggests that some investors required much more convincing or influence from more than one type of social tie to invest in Eron, known as a threshold level in network studies. The multiple relations category included combinations of Eron and friends and family, Eron and professionals, friends and family and professionals, and in some cases, it took all three types of relations to convince some investors that Eron was a legitimate investment.

Dependent Variables

There are five dependent variables in the current study which were chosen based on research conducted on harms experienced by fraud victims (see Button et al., 2009; CSA, 2007; Deevy et al., 2102; Shover et al., 1994; Spalek, 1999). All are Likert-scale variables that measure different types of harm experienced by investors in the Eron mortgage fraud. Harm variables were derived from the survey question “Describe the degree of harm the Eron fraud has caused in various areas of your life.” A total of seven different categories of harm were posed to respondents; harm to marital relations, family relations, friendships, current financial situation, retirement security, emotional well-being, and physical health. Respondents were asked to circle the appropriate number that best reflected the degree of harm they experienced: 0 = none, 1 = minor, 2 = moderate, 3 = major and 4 = extreme. All seven types of harm were indexed into the

first dependent variable, *harm index* ($\alpha = .894$) with a range of 0 – 28 and a mean of 8.5. Marital relations, family relations, and friendships were indexed into the first dependent variable, *friends/family harm* ($\alpha = .858$) with a range from 0 – 12 and a mean of 2.874. Current financial situation and retirement security were indexed into the second dependent variable, *financial harm* ($\alpha = .937$) with a range from 0 – 8 and a mean of 4.163. The third and fourth dependent variables, *emotional harm* (mean = 1.843) and *physical harm* (mean = 1.140) were preserved as distinct variables, each with a range of values from 0 – 4.²⁹

Independent Variables

Because actors with high centrality often occupy positions of prestige and visibility within a network, they are extremely influential in the spread of ideas and behaviours within social networks (Valente 2010). As such, these individuals also occupy positions of trust within a social network, particularly in the diffusion of innovations where word-of-mouth is dependent on the trust placed in the opinions of these influential people (Valente, 1995; Rogers, 2003). Within financial transactions, these trusted relationships tend to reduce information asymmetry by providing an avenue of information to investors. However, trust placed in these individuals may also create opportunities for fraudulent behaviour (Baker & Faulkner, 2004; Granovetter, 1985; Pack, 2002). Thus, through trust embedded in social networks, central actors in a network potentially set in motion the opportunity for fraud and the harm suffered by its

²⁹ EM estimation was used to impute missing values for each dependent, control and predictor variable separately, creating four separate models in order to maintain the power of a larger sample size as well as to minimize bias that results from casewise deletion methods (Scheffer, 2002; Langkamp, Lehman, & Lemeshow, 2010). The percent of missing values for each dependent variable is: 1) friends/family harm = 42.6%; 2) financial harm = 35.1%; 3) emotional harm = 34.8%; and 4) physical harm = 37.5%. Because our data are MCAR (missing completely at random), EM estimation, according to Scheffer (2002) with MCAR data and EM imputation minimizes bias and imputes the mean within 1% of the real mean with data having up to 50% missing values (p. 4). Chi-square and significance values for Little's MCAR test for each model include: 1) friends/family harm; $X(422) = 436.936$; $p = .298$, 2) financial harm; $X(426) = 54.441$, $p = .164$, 3) emotional harm; $X(426) = 456.204$, $p = .151$, and 4) physical harm; $X(426)=441.984$, $p = .286$.

victims. For the purposes of this study, both degree and betweenness centrality, described below, are calculated for the Eron victim network to identify those individuals who are most central in the network from two perspectives: 1) nominating the greatest number of social ties who were influential in persuading victims to invest in Eron, and 2) spreading the fraud to others.

Out-Degree Centrality

Degree centrality counts the number of direct ties adjacent to a node or actor in a network; actors with the most adjacent connections are high in degree centrality (Freeman, 1979; Valente, 2010)³⁰. Because the network data used in this study are based on nominations from victims to those who influenced them to invest in Eron, out-degree centrality is calculated. Out-degree centrality counts the number of outgoing ties to other actors and measures an actor's propensity in the Eron network to be influenced by others to invest; it is a measure of expansiveness (Wasserman & Faust, 1994). In this study, it is used to identify victims who nominated the most individuals as being influential in convincing them to invest in Eron. Non-normalized degree scores are used and range from 1 to 4 individuals. Valente (1995, p. 66) posits that "individuals differ in the degree they are influenced by the behaviour of others in their social system." We argue here that the number of people nominated is the degree in which victims were influenced to invest by the trust they placed in their social network, thus individuals with larger centrality scores will have a higher degree of trust to be gained and may suffer a greater degree of harm from the betrayal of trusted social ties influencing them to invest in a fraud.

Betweenness centrality

Betweenness centrality is when an actor in a network lies on the geodesic (shortest path) between all other actors in the network (Freeman, 1979). Betweenness

³⁰ Non-normalized point measures of out-degree and betweenness centrality are applied in this study because no network comparison analyses were conducted.

centrality identifies bridges who are connecting otherwise unconnected groups in a network. Even if the number of contacts to a node with high betweenness is not large, their centrality comes from their strategic position between nodes, thus controlling the flow of information or influence within a network (Valente, 2010). Betweenness centrality is useful in this study because it identifies those individuals who convinced others to invest in the Eron fraud. In other words, victims who were identified by other victims as a person of influence persuading them to invest in Eron. Non-normalized betweenness scores are used with a range of 0 to 13 individuals on which an actor in the network lies between on their geodesics.

Relationship Ties

Our second predictor variable, *relationship ties*, is constructed from responses to the sociometric survey question which asked investors “Who was the most influential person, if any, in convincing you that Eron was a legitimate investment?” Respondents were asked to name up to five individuals who were influential and were asked to indicate the relationship to each individual named. This resulted in six distinct relationships: 1. Eron principals; 2. Eron representatives; 3. Family and friends; 4. Fellow investors; 5. Industry regulators; and 6. Professional mortgage brokers. Eron principals are the owners of the company, Brian Slobogian, Frank Biller, Curt Lehner, and John Taylor. Eron representatives are employees and brokers of Eron Mortgage Co. Family and friends is a self-explanatory relationship where either a friend or family member influenced individuals to invest in Eron. Fellow investors are individuals who invested in Eron and then influenced other potential investors such as business associates or acquaintances to invest. Industry regulators are employees of institutions such as the B.C. Securities Commission and B.C. Registrar of Mortgage Brokers who enforce securities laws and regulations and protect investors from potential fraudulent practices. Finally, professional brokers are the individuals who proposed the investment to the victim and provided financial counseling and expertise about the investment.

First, a general measure of influence is created in order to determine if social ties affect the degree of harm suffered by Eron victims in our overall sample (n = 559). A dichotomous variable, *social influence*, was created and coded 0 = not influenced to invest by a social tie and 1 = influenced to invest by a social tie – this variable accounts

for those respondents who did not answer the sociometric question “Who was the most influential person, if any, in convincing you that Eron was a legitimate investment?”

Second, in investing in Eron, our respondents put their trust in one or more of these types of individuals. We draw from Zucker’s (1986) typology of trust to recode these social ties into three types: 1) process-based trust; 2) characteristic-based trust; and 3) institutional-based trust. We collapsed Eron principals and Eron representatives into one category, *Eron*, representing process-based trust. Process-based trust refers to “trust based in past or expected exchange” (Zucker, 1986, p. 53), this expected exchange is established through status, reputation, or expertise (Stolowy et al., 2011; Zucker, 1986). Eron principals and Eron brokers, due to their positional status and expertise as business owners and professional mortgage brokers of multi-million dollar investments created expectations of investment and financial expertise among investors and thus, fall into this category of trust. The professional look of the Eron offices and ownership of status symbols such as expensive cars and tailor-made clothes acquired by Eron principals is also suggestive of financial success and expertise and creates expectations of such from potential investors – however, there is still risk present in this form of trust.

Industry regulators and professional brokers were collapsed into a separate category, *professional* and represent institutional-based trust. Trust in industry professionals is based on manufactured or saleable trust – created by the stock market and promoting a “system that guarantees trust” (Zucker, 1986, p. 13). This type of trust is often taken for granted because it is thought that there is little risk present when trust is placed in institutions relegated to the regulation and protection of individuals against fraud. Last, friends and family and fellow investor relations were collapsed into one category, *friends and family*, and represent characteristic-based trust. Characteristic-based trust is based on shared personal characteristics such as family background, ethnicity, political and religious beliefs, social status and many other shared traits (Stolowy et al., 2011; Zucker, 1986). This type of trust is most often relied upon when making financial decisions, particularly if individuals feel uncertain about their decision to invest (Burt, 2005; DiMaggio & Louch, 1998; Shores, 2010). Dummy variables were created to indicate whether each investor was influenced to invest by their social ties to Eron, to friends and family, or to industry professionals (0 = absence of social tie, 1 =

presence of social tie). The omitted category, *multiple relations*, serves as the reference category.

Information Channels

Because trust in one's social ties is often the cause for malfeasance, exposure to Eron through personal information channels may potentially impact the harm experienced by victims of Eron more so than if victims were first exposed to Eron through impersonal channels of information (media). This would be due to a loss of trust and feelings of betrayal from those who introduced them to Eron in the first place.

To measure exposure to Eron, or how victims first heard about Eron, respondents were asked the following question: "How did you first *hear* about Eron?" Eleven choices were provided and respondents were able to choose all that applied to their individual situation. The choices were: 1. Eron employee; 2. financial broke; 3. Family or friend; 4. Business associate; 5. Hockey connection³¹; 6. Eron seminar; 7. Newspaper advertisement; 8. Newspaper article or column; 9. Mail solicitation; 10. Television advertisement; and 11. Other. Personal information channels were coded as a dichotomous variable using respondents who chose only choices 1 – 5, impersonal information channels were coded as a dichotomous variable using victims who chose only choices 6 – 10, a dichotomous variable for *both* was coded using respondents who chose both types of information channels as the method of first hearing about Eron and a final dichotomous variable, *no exposure* for those who were not exposed to Eron through information channels. Each variable was coded 1 = yes, 0 = no. The four respondents who answered "other" (approximately 1%) were asked to explain how they first heard about Eron in their own words and their answers were coded to the corresponding categories above. Three out of four were coded as hearing about Eron through personal channels (one through a stock broker, two through an insurance agent) and the other through impersonal channels (fax solicitation). The comparison group for

³¹ It was reported at the time the Eron case emerged in the media that many local professional hockey players were among the 2,285 victims.

this variable is Eron victims who were exposed to Eron through personal information channels. This measure is used in the analyses for both our full sample of victims (n = 559) and our network sample of victims (n = 331).

Control Variables

Control variables measuring financial loss, investor risk behaviour, and demographic characteristics are included in the analyses. Financial controls include net loss, household income, and reinvesting in Eron. *Net loss* is a continuous variable that allows us to measure the overall loss incurred by investors at the end of the Eron fraud. This variable is continuous and is measured in Canadian dollars (geometric mean = \$24,100). *Household income* is a continuous variable and allows us to measure the yearly income respondents reported in the survey instrument (geometric mean = \$57,500)³². It is also measured in Canadian dollars. *Reinvested in Eron* is a dichotomous variable that measures whether or not respondents increased their investments in Eron over time and is coded as 1 = reinvested, 0 = did not reinvest. Both household income and reinvest in Eron are a product of *earning power*, a concept in fraud victimization studies that posits that people with greater income are often more risk prone when making financial decisions and may invest more than those with less income; these individuals have more disposable income and are thus more able to suffer loss due to access to new income, reducing the risk of financial hardship, the impetus for harms experienced by victims of fraud.

We also include controls for risky investing behaviour of Eron investors because prior research has shown that risk is a significant predictor in financial decision-making and fraud victimization (see Van Wyk & Benson, 1997; Holtfreter, Reisig, & Pratt, 2008; Schoepfer & Piquero, 2009 on risk behaviour as a predictor of fraud victimization). Risk variables include Eron risk, investing approach, and in and out of projects. *Eron risk*

³² Due to a positively skewed distribution for both net loss and household income, natural log transformations of both were calculated and transformed versions of net loss and household income were used in the analyses for this study to control heteroskedasticity.

measures respondent's answers to the question "at the time of your initial investment, did you consider Eron to be: 1 = no risk; 2 = low risk; 3 = medium risk; and 4 = high risk. Investing approach is a Likert-scale variable where respondents were asked to circle a number between 1 and 10, indicating their approach to investing with 1 being "extremely conservative" and 10 being "extremely aggressive" (mean = 2.26). *In and out of projects* measures respondent's answers to the question "how often were you in and out of different projects? In and out of projects is coded as 1 = stayed with same project(s), 2 = rarely, 3 = sometimes, and 4 = frequently. Rosen and Rosen (2010) argue that investors who invest in more projects concurrently or move their money in and out of projects engage in what they call "portfolio churn" which increases the risk and financial loss for investors who practice this behaviour.

The last group of control variables are demographic characteristics of victims, including age, education level, sex, and employment status. *Age* is measured in years (mean = 51, range = 18 to 80). *Education*, is categorical (1 = elementary school or less, 2 = high school or less, 3 = some college/post-secondary school, 4 = university graduate, 5 = post graduate degree/professional training). *Sex* is dichotomous (Male = 1). *Employment* is a dummy variable where categories were collapsed into employed (employed full time, employed part time, business owner) = 1 and unemployed (unemployed, student, retired, homemaker) = 0. All of these variables have been shown to be associated to fraud victimization in a variety of contexts (e.g. Deevy et al., 2012; Titus et al., 1995), but rarely to predict harm per se. Deevy et al. (2012, p. 12); however, contend that victims with lesser earning power, or those who may be older and already retired, may suffer more mental harm than those with a propensity for higher earning power. All control variables are used in the analyses for both the full (n = 559) and network (n = 331) samples. Correlation matrices for the dependent and independent variables for both samples are located Appendix 4.1 and 4.2.

Analytic Strategy

We begin by conducting five separate standard OLS (ordinary least squares) regression analyses on the full sample (n = 559) of respondents, regressing the five dependent harm variables on a general measure of social influence and the information channel predictors. Second, we regress the five dependent harm variables on more

specific network and relational tie predictors along with information channel predictors within the network sample (n = 331). For the second analyses, because we are testing hypotheses using network predictors (betweenness and out-degree centrality) in which actors in a network are interdependent, applying standard statistical analyses will violate the assumption of independence, as well as provide false-positives (Everton, 2012; Lewis, Kaufman, Gonzalez, Wimmer, & Christakis, 2008). To account for the interdependency of actors in the network data, we apply a node-level regression using UCINET 6.0 (Borgatti, et al., 2002). It is an OLS regression with standard errors and significance estimation using the random permutation method known as double semi-partialling in which matrices data (values in rows and columns) of each attribute of an actor in the network are randomly shuffled thousands of times (in our case 10,000 times starting with a random seed for each model) in order to recover the R-square and regression coefficients. These values can then be used to estimate standard errors under the assumption of independence (Borgatti et al., 2002; Everton, 2012).

Results

Who are Eron Investors?

Table 4.2 provides descriptive statistics for our network sample (n = 331). We find that the mean age of investors is 51 and that the majority of investors were male (61%) and were employed (74%). The majority of investors also had some post-secondary school (33.2%) while investors having only a high school degree were the second most common (25.9%). Approximately 18 percent of investors were university graduates (18.4%) or had a post-graduate degree (18.7%) and only four percent of investors had up to an elementary school education.

Considering risk-behaviour characteristics of Eron investors, we found that the majority (42.4%) perceived Eron to be a low-risk investment while 35.2% thought Eron to be a medium risk investment. Approximately seventeen percent thought Eron to be no risk while 4.8% thought Eron to be a high risk investment. The average risk approach of Eron investors prior to investing in Eron was 4.39 on a scale of 1 to 10 with higher values indicating more risk-taking behaviour. The majority of investors kept their

investments in the same project(s) (74%) while 49% of respondents reinvested in Eron after their initial investments.

Socio-economic indicators reveal that Eron investors' average household income was \$57,500 (median = \$62,500), their average initial investment in Eron was \$19,400 (median = \$20,000), and their average loss of capital from involvement in the Eron fraud was \$24,100 (median = \$25,000). Although the investment capacity of the respondents is not measured, the relatively high ratio of investment to household income may translate into more harm experienced by our respondents.

Table 4.2. Descriptive Statistics for the Network Sample (n=331)

| Variables | Network % (n = 331) |
|---|------------------------|
| 1. Gender | |
| Male | 60.9 |
| Female | 39.1 |
| 2. Education | |
| Elementary School | 3.8 |
| High school | 25.9 |
| Some Post-Secondary | 33.2 |
| B.A. Graduate | 18.4 |
| Post-grad/Professional | 18.7 |
| 3. Employment Status | |
| Employed | 73.7 |
| Unemployed | 26.3 |
| 4. Perception of Eron Risk | |
| No Risk | 17.6 |
| Low Risk | 42.4 |
| Medium Risk | 35.2 |
| High Risk | 4.8 |
| 5. In and Out of Projects | |
| Stayed w/same projects | 74.3 |
| Rarely | 10.9 |
| Sometimes | 7.3 |
| Frequently | 3.6 |
| 6. Did you reinvest after initial investment? | |
| Yes | 49.2 |
| 7. Heard about Eron - Personal channels* | |
| Yes | 62.8 |
| 8. Heard about Eron - media channels* | |
| Yes | 13.3 |
| 9. Heard about Eron – both channels | |
| Yes | 21.1 |
| 10. Did not rely on information channels | |
| Yes | 2.7 |
| | Mean |
| 11. Age at Initial Investment | 51.00 |
| 12. Investing Approach | 4.39 |
| 13. Net Loss \$ | \$24,100.00 |
| 14. Household Income \$ | \$57,500.00 |
| 15. Harm Index | 8.51 |
| 16. Harm to Friend/Family Relations | 2.38 |
| 17. Financial Harm | 3.82 |
| 18. Emotional Harm | 1.74 |
| 19. Physical Harm | 1.05 |

^a Personal Channels: $X(1) = 6.664, p < .05$; Media Channels: $X(1) = 4.790, p < .05$.

Social Influence and Trust

Table 4.3 presents the regression coefficients from our multivariate analysis for the effects of social influence and information channels on the full sample of respondents (n = 559). Beginning with the harm index model, our set of predictors provides a reasonably good model with an R^2 of .373. The model first shows that being influenced to invest by one's social ties increased the degree of harm victims of Eron experienced. Controlling for demographic, financial, and risk variables, we found that investors who were influenced to invest by one or more of their social ties were more likely to experience harm overall than investors who were not influenced to invest by their social ties. Other factors that played a role in the overall harm suffered by victims were not unexpected, such as the amount of financial losses experienced by respondents. Both household income and level of education were significant negative predictors.

To further uncover the effects of social ties and the harms experienced by Eron victims, four additional multiple linear regression analyses were conducted for the four constituents of harm, harm to friend/family relations, harm to financial situation, emotional harm and physical harm. Beginning with harm to friends/family relations ($R^2 = .198$) we found that victims who were influenced to invest by one or more of their social ties were significantly more likely to 1) experience harm to their friends/family relations, 2) experience financial harm ($R^2 = .402$) and 3) experience emotional harm ($R^2 = .282$) than victims who were not influenced to invest by their social ties. Examining information channels, we found that victims who were exposed to Eron through both personal and media channels compared to those exposed through personal channels alone were significantly more likely to 1) experience harm to their friend/family relations, 2) experience emotional harm, and 3) experience physical harm than individuals who were exposed to Eron through personal channels only.

As expected, net loss was a positive significant predictor in all four harm models. Level of education was a negative predictor in all four trust models, while household income played a significant, negative role in three out of the four harm models. Age also had a significant, negative effect on harm, but only to friends and family relations. As people's perception of Eron as a risky investment increased however, the harm they

experienced due to financial loss decreased. This suggests that at least some investors may have recognized their own responsibility in their fraud victimization.

Table 4.3. Full Sample (n=559) Harm Regressed on Network, Relationship Ties, Information Channels and Controls

| DV (n = 559) Independent | Harm Index | | Friend/Family Harm | | Financial Harm | | Emotional Harm | | Physical Harm | |
|-----------------------------|------------|-------|--------------------|-------|----------------|-------|----------------|-------|---------------|-------|
| | B | S.E. | B | S.E. | B | S.E. | B | S.E. | B | S.E. |
| Constant | 15.599 | 6.121 | 3.582 | 3.044 | 6.775 | 2.279 | 3.839 | 1.345 | 1.404 | 1.487 |
| Controls | | | | | | | | | | |
| Financial | | | | | | | | | | |
| Net loss | 2.325*** | .345 | .659*** | .154 | .919*** | .125 | .426*** | .053 | .321*** | .065 |
| HHI | -1.970*** | .646 | -.284 | .295 | -1.007*** | .226 | -.459*** | .140 | -.220 | .134 |
| Reinvest | -.092 | .792 | -.008 | .376 | -.001 | .250 | -.115 | .126 | .032 | .159 |
| Risk Behaviour | | | | | | | | | | |
| In/Out Projects | .177 | .457 | -.085 | .224 | .225 | .146 | .003 | .119 | -.039 | .079 |
| Approach | .024 | .167 | -.028 | .078 | .065 | .076 | -.013 | .034 | .001 | .032 |
| Eron Risk | -.756 | .476 | -.063 | .220 | -.387* | .174 | -.157 | .092 | -.148 | .099 |
| Demographics | | | | | | | | | | |
| Sex | .698 | .761 | .400 | .362 | .053 | .242 | .100 | .151 | .145 | .123 |
| Age | -.060 | .032 | -.047*** | .013 | .001 | .011 | -.007 | .006 | -.007 | .007 |
| Education | -.940*** | .285 | -.424* | .160 | -.239*** | .084 | -.155* | .054 | -.123* | .059 |
| Employment | -.200 | .958 | -.307 | .481 | .319 | .281 | -.013 | .193 | -.200 | .185 |
| Predictors | | | | | | | | | | |
| Relation Ties | 2.122*** | .628 | .867* | .322 | .759*** | .224 | .317*** | .110 | .179 | .137 |
| Information | | | | | | | | | | |
| None | -2.928 | 3.029 | -1.008 | 1.240 | -.403 | .780 | -.790 | .610 | -.726 | .641 |
| Media | -.353 | .768 | -.455 | .380 | -.254 | .251 | .251 | .151 | .105 | .161 |
| Both | 1.904*** | .650 | .936*** | .326 | .276 | .243 | .388*** | .137 | .303* | .130 |

^a Omitted category for social ties is “influenced by multiple relations”; omitted category for information channels is “personal”.

^b Harm index model fit: $F = 8.614, p < .001$; Friend/Family harm model fit: $F = 3.691, p < .001$; Financial harm model fit: $F = 11.525, p < .001$; Emotional harm model fit: $F = 6.763, p < .001$; Physical harm model fit: $F = 6.005, p < .001$.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

Applying Zucker's (1986) typology of trust and positional network measures we further analyzed trust and network position on our network sample of respondents (n = 331) to see if the type of trust and network centrality make a difference in the harms experienced by Eron victims. Regression coefficients for the five harm models included for our network sample are located in Table 4.4. Controlling for demographic, financial and risk variables, we regressed all five dependent variables of harm on trust and network centrality. Beginning with the out-degree centrality predictor, we first find that out-degree centrality is a significant, positive predictor of harm in three out of our five models including, overall harm, harm to friends/family relations, and emotional harm. Beginning with the index harm model we see that as a victim's out-degree centrality score increased, the harm experienced by victims also increased by almost 1.5 times. Victims with higher out-degree scores also experienced a significant increase in harm to their friends and family relations and an increase to the emotional harm they experienced from being involved in the Eron Ponzi scheme.

Second, trust in one's social ties played a significant role in the harms experienced by victims. Beginning with process-based trust, victims who relied on Eron principals and associates experienced an increase in the degree of harm they experienced to their financial situation, as well as emotional harm experienced. Victims who relied on characteristic-based trust (friends and family) experienced significant increases in the degree of harm to their friend and family relations, as well as an increase in emotional harm. As for victims who relied on institutional-based trust (industry professionals), the only type of harm significantly affected was emotional harm.

Finally, information channels were found to play a significant role in the harms suffered by victims in our network sample. Victims who were exposed to Eron through personal and media channels together were significantly more likely to experience harm to their friend and family relations compared to those who were exposed to Eron through personal information channels only. Other factors present in the role of harm include net loss which was a significant, positive predictor in all five models. Sex was also a significant predictor of harm to friends and family relations, with males being more likely than females to experience harm in this constituent.

Table 4.4. Network Sample (n=331): Harm Regressed on Network, Relationship Ties, Information Channels and Controls

| DV (n = 331) | Harm Index | | Friend/Family Harm | | Financial Harm | | Emotional Harm | | Physical Harm | |
|----------------------|------------|-------|--------------------|-------|----------------|-------|----------------|-------|---------------|-------|
| Independent | B | S.E. | B | S.E. | B | S.E. | B | S.E. | B | S.E. |
| Constant | 23.789 | 0.000 | 1.458 | 0.000 | 11.687 | 0.000 | 5.019 | 0.000 | 3.202 | 0.000 |
| Controls | | | | | | | | | | |
| Financial | | | | | | | | | | |
| Net loss | 2.227*** | .539 | .636*** | .350 | .948*** | .594 | .369*** | .444 | .324*** | .404 |
| HHI | -2.686 | -.256 | -.188 | -.041 | -1.548 | -.381 | -.578 | -.274 | -.286 | -.141 |
| Reinvest | .031 | .067 | -.108 | -.022 | -.084 | -.019 | -.105 | -.047 | .001 | .000 |
| Risk | | | | | | | | | | |
| In/Out | .538 | .073 | .142 | .044 | .3115 | .110 | .083 | .057 | .192* | .135 |
| Approach | -.146 | -.051 | -.072 | -.057 | .002 | .002 | -.048 | -.084 | -.029 | -.052 |
| Eron Risk | -.931 | .133 | -.123 | -.040 | -.350 | -.129 | -.180 | -.128 | -.197 | -.145 |
| Demographics | | | | | | | | | | |
| Sex | .740 | .064 | .740* | .146 | .093 | .021 | -.032 | -.014 | .079 | .036 |
| Age | -.093 | -.195 | -.056 | -.267 | -.005 | -.025 | -.010 | -.108 | -.021 | -.225 |
| Education | -1.127 | -.225 | -.526 | -.239 | -.203 | -.104 | -.147 | -.146 | -.149 | -.153 |
| Employ | -.216 | -.017 | -.346 | -.061 | .600 | .121 | -.043 | -.017 | -.603 | -.242 |
| Predictors | | | | | | | | | | |
| Network | | | | | | | | | | |
| Centrality | | | | | | | | | | |
| Between | .314 | .067 | .051 | .025 | .132 | .073 | .023 | .027 | .051 | .057 |
| Out Dgr | 1.477* | .172 | .884** | .235 | .217 | .065 | .380** | .221 | .090 | .054 |
| Type of Trust | | | | | | | | | | |
| Process | 1.375 | .097 | .635 | .102 | .819* | .149 | .660** | .231 | -.101 | -.037 |
| Character | 1.308 | .116 | .865* | .175 | .583 | .134 | .608** | .269 | -.037 | -.017 |
| Instiitnl | 1.080 | .069 | .481 | .070 | .589 | .097 | .488* | .155 | -.046 | -.015 |
| Information | | | | | | | | | | |
| None | .075 | .002 | .164 | .011 | .001 | -.000 | -.013 | -.002 | .034 | .005 |
| Media | .267 | .016 | .186 | .027 | -.206 | -.032 | .152 | .046 | .036 | .011 |
| Both | 1.005 | .073 | .776* | .128 | .006 | .001 | .215 | .079 | .137 | .051 |

^a Omitted category for social ties is "influenced by multiple relations"; Omitted category for information channels is "personal".

^b Harm index model fit: $F = 18.430, p < .001$; Friend/Family harm model fit: $F = 7.138, p < .001$; Financial harm model fit: $F = 21.531, p < .001$; Emotional harm model fit: $F = 10.730, p < .001$; Physical harm model fit: $F = 11.417, p < .001$; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$.

Discussion

This study establishes that social networks positively influences harm suffered by victims of fraud. While the theoretical background on harm suffered by victims of fraud suggest a positive relationship with financial loss, to our knowledge there exists no empirical studies on the predictors of harm to victims of fraud from a social network perspective. We argue that because trusted social ties were influential in a victim's decision to invest in Eron and consequently involved them in a fraud, the betrayal of trust involved may cause additional harm to those victims than those who were influenced by less proximal ties.

When examining our network sample of victims, we found that victims who nominated more individuals as influential (higher out-degree centrality scores) suffered higher degrees of harm. This finding raises the question of why these individuals consulted with more individuals prior to investing. It is possible that they required talking to more people because of a more prudent approach to investing, but the absence of a correlation between out-degree and investment approach (or perception of Eron as a risk) suggests otherwise (Appendix 4.2.). Our data does not allow us to tell whether these victims were in the thick of things as far as knowing individuals connected to Eron by design (they sought those individuals) or via their position in the social structure of Eron (they attracted those individuals). What we know is that their centrality was associated with them experiencing additional harm than others after it was revealed that Eron was a fraud.

Examining the influence of trust, we found that it plays a significant positive role in the harms experienced by victims. First, influence through social ties played an important role in the harms experienced by investors. With the exception of physical harm, influence through social ties positively affected the harm victims suffered in all models. This finding is concurrent with the literature on loss of trust, betrayal and fraud victimization. For instance, Deevy et al. (2012) argue that fraud is one of the few crimes in which betrayal is inherent because fraudsters often target the social and demographic characteristics of victims, praying off of the trust they place in those similar to them such as friends and family. Koehler and Gershoff (2003) found that people who were betrayed

by their trusted social ties experienced greater harm and felt a greater sense of punitiveness toward those who involved them in a fraud.

Looking at our network sample, we found that victims who trusted Eron to invest experienced greater emotional harm and harm to their financial situation than any other type of trust. A plausible explanation is the fact that Eron was very active in 1) spreading the fraud to new investors, and 2) targeting high profile individuals with large amounts of capital. While there may be a sense of risk when investing, the status of Eron principals as experts and professionals make them knowledgeable and trustworthy, allowing Eron to manipulate the trust victims placed in them. According to Stolowy et al. (2011), process-based trust is more effective in motivating individuals to invest when accompanied by an attractive offer thus, Eron may have been more influential in the amount of money they persuaded victims to invest because of the high yield, low risk investments they offered and more so than any other type of relationship tie.

The overwhelming amount of trust placed in friends and family (characteristic-based trust) within the Eron victim network is indicative of Burt (2005, p. 99) who argues that decision-making begins by taking advantage of our ties with friends and family because these types of strong ties are pre-existing and familiar. Stolowy et al. (2011) contend that people place confidence and expectations in their friends and family relationships when making investments. These feelings in friends and family to make potentially life-altering financial decisions may heighten the sense of betrayal felt towards these intimate relations causing a greater degree of harm to victims. Hill and O'Hara (2006) argue that trust in friends and family is highly interdependent and if misplaced, can be very costly to the trustor. This is suggestive of the Eron case from both a financial loss and harm perspective.

Examining institutional-based trust, we see that relying on professionals was cause for emotional harm to Eron victims, but no other type of harm. Because many of the professional and government institutions regulating market transactions were created to offset the breakdown in other formal trust mechanisms and to undermine fraud, people tend to rely on these institutions more often, using them as a substitution for trust (Zucker, 1986). For example, the Maxwell pension fraud during the 1980s defrauded over 30,000 victims, for hundreds of millions of pounds. Many victims

believed that government and regulatory agencies were protecting their pensions and themselves from fraud and felt betrayed when they realized they themselves were victims (Spalek, 1999). This appears to be the case for some Eron victims, but the results are less compelling for this type of trust than for others. The additional social distance to industry professionals may have acted as a buffer to harm compared to victims who trusted more proximal social ties.

How victims first heard about Eron also seemed to matter. Although the social chain element was central to the spread of Eron, the company was also responsible for launching an aggressive media campaign that consisted of cold calls, mailings, television and newspaper advertisements and seminars. We found that victims who were exposed to Eron through both media and personal channels together, compared to victims who were exposed to Eron through personal channels alone, experienced a greater degree of harm. It appears that the addition of sources who had recommended Eron may have created more of a shock to victims when it was found that Eron was a fraud.

Fraud victimization scholars state that trust is a key component of financial transactions and the first casualty of fraud victimization (CSA, 2007; Deem, 2000; Deevy et al., 2012; U.S. Attorney's Office, 2013). In the case of Eron, the loss of trust caused multiple types of harm to its victims. This misplaced trust not only caused victims financial loss but emotional harm and damage to their personal relationships as well, possibly extending over long periods of time.

Limitations

There are three main limitations in this study. First, while comparisons were conducted between harm respondents and non-respondents, multiple imputations on missing data may have overestimated the effects of social ties to the comparison group, multiple relations and the effects of out-degree centrality in our harm-response group. Second, the sociometrically identified relationship ties that make up the Eron victim network are assumed to be mutually exclusive. However, in reality, there may be overlap between relationships. For example, a tie to Eron may in fact also be a tie to a friend and/or family member. Third, in the absence of a possibility for systematic comparisons,

it is unknown whether the study participants have the same profile as those who did not return their survey. However, efforts to compare the profiles of the sample to the population of investors led the research team to conclude that the sample was most likely representative of all investors, with a slight tendency for those who returned their questionnaires to have invested in the early years of the scheme (1992-95).

Conclusion

Economic behaviour is heavily embedded in social relations, and excluding social relations from economic models is risky if prediction is the goal (Granovetter, 1995b; 2005). Fraud is about trust. Fraud is the successful marketing of a product for illegitimate purposes, yet the way in which people are drawn into fraud is through the same avenues as marketing legitimate products and ideas; trust embedded in one's social networks. With the complaints and reports of fraud increasing (Deevy et al., 2012) and the cost of white-collar crime to society estimated at \$50 to \$60 billion a year in the U.S. alone, more research is needed to find ways to protect future investors from fraud. Given the importance of social ties in spreading investment opportunities, and given their centrality in assessing the degree of harm when it turns out that the opportunity is fraudulent, future research must adopt methods designed to investigate the social structure of white-collar crimes. If, as Button et al. (2009) contend, we are to improve our limited understanding of victims of white-collar crime and create a healthy infrastructure of support to victims of white-collar crime, we must engage future research of fraud victimization with methods that allow us to understand it from a different, social perspective. Transaction-based crimes require cooperation among victims and offenders, which makes the analysis of these social relations a crucial element in the investigation of all aspects of these crimes, from the first decision to trust someone, to the consequences of that decision when the fraud is finally revealed.

Chapter 5.

Conclusion

This dissertation, using a broad approach to network analysis, presented three studies that examined the social structure of a pre-planned fraud and its successful diffusion through a population of fraud victims. Three main conclusions are drawn:

- 1) A pre-planned fraud spreads through a population of victims via a “diffusion effect” much like legal innovations spread through a population of consumers;
- 2) Trust embedded in the structure of the Eron network plays a dual role in fraud victimization, being a potential cause of malfeasance and protecting investors from opportunistic behaviour;
- 3) Within the Eron network, trust embedded in social ties causes harm and increases the harm experienced by victims of Eron.

The first conclusion is that the structure of the network influenced the speed and successful diffusion of the pre-planned fraud perpetrated by Eron. This finding is contrary to previous research in Baker and Faulkner’s (2003) study of the Fountain, Oil and Gas fraud, the only other study on the diffusion of fraud, suggesting that the type of fraud does make a difference in how it diffuses through a population of investors. In the Fountain, Oil and Gas study of an intermediate fraud of congestible goods where each additional investor reduces the potential for profit, Baker and Faulkner (2003) found that a diffusion effect did not occur. Instead, they found that investors were apt to keep the opportunity to themselves, not even telling friends and family about the investment opportunity. This may be due to the fact that they were selling congestible goods where the incentive for monetary gain was greater than sharing a lucrative investment opportunity with friends and family. I show that diffusion through word-of-mouth by opinion leaders, particularly through friends and family telling other friends and family

about Eron and their investment opportunities was one reason for the success of Eron. This finding suggests that the type of fraud, syndicated mortgages, actually induces word-of-mouth exchange because it is more lucrative for investors in Eron's case to bring others in on the investment opportunity in order to make larger profits. I also show that change agents were responsible for the diffusion of fraud through the entire process; even after notification of an investigation by FICOM in 1996 both Nairne and Taylor began influencing new investors to adopt while Slobogian and Biller decreased their participation in persuading new investors. Just two Eron principals were responsible for spreading the fraud to a large portion of the entire network within the first 5 years of the fraud.

Further, network bridges were found to be instrumental in the spread of fraud, causing a chain-reaction effect through word-of-mouth. Finally, whereas media channels are often useful in the beginning of a successful diffusion process (Rogers, 2003), the large and ever-present media campaign implemented by Eron reveals that media channels remained an important element in the successful diffusion of the fraud. These findings suggest that the uncertain and risky nature of investing in market transactions may be the impetus for the need to use varying types of spread mechanisms to successfully spread the fraud and maintain an influx of new investors needed to sustain the Ponzi scheme perpetrated by Eron. Where a classic diffusion starts with cosmopolites hearing about a new innovation through media channels or sources outside their social system (Rogers, 2003), then spreading to opinion leaders who then, through word-of-mouth influence others to adopt, the Eron fraud, from start to finish relied on several methods of diffusion, including opinion leaders, change agents, network bridges and media channels.

It is important here to draw a distinction between the adoption mechanisms of legal versus illegal innovations. Adoption of legal innovations generally begin with media channels and change agents where media channels are used to widely spread information to many potential innovators; at the same time change agents identify opinion leaders and pass on information about the innovation to them (Rogers, 2003). Opinion leaders, also known as innovators or cosmopolites are generally the first to adopt a new innovation. Using word-of-mouth, they influence social ties within their social networks to adopt, causing a chain reaction or "diffusion effect" where adoptions

take off exponentially. As the innovation saturates the population, late adopters and laggards are the last to adopt. Largely, diffusion of legal innovations is driven by personal information channels or word-of-mouth (Rogers, 2003).

Illegal networks like the Eron fraud have incentive to minimize detection by law enforcement (Baker and Faulkner, 1993). This may be a reason as to why the adoption mechanisms utilized by Eron take on different roles within the diffusion process than that of legal innovations. While the same adoption mechanisms are used in the Eron fraud, unlike legal innovations, diffusion is propagated by several mechanisms together. For instance, the success of the fraud relied on both personal and impersonal communication methods throughout the entire diffusion process. First we see that change agents (Eron principals and employees) were active throughout the entire 6 year period, influencing opinion leaders and others to invest in the syndicated mortgages until the end of the fraud. Second, media channels, while somewhat following that of legal innovations in the beginning of the diffusion process, also remain an important adoption mechanism throughout the entire diffusion of the Eron fraud. Here we assume that these two mechanisms remain an important function of spreading the pre-planned fraud in order to minimize word-of-mouth (opinion leaders and network bridges) enough so that detection by authorities is minimized, yet the fraud is diffused enough to continue an influx of new adopters to sustain the Ponzi scheme.

Third, compared to legal innovations, opinion leaders were most active in the later stages of the fraud between 1995 and 1997 and are not as prolific in spreading the fraud through word-of-mouth as they would be in successful legal innovations. Finally, network bridges were not as prolific as in legal innovations in diffusing the fraud, yet their presence in the network remains an important factor in spreading the fraud to otherwise unconnected individuals through word-of-mouth. What is truly unique about the illegal innovation propagated by Eron is that all diffusion mechanisms were combined together as multiple anchor points (change agents, media channels, opinion leaders and network bridges) spreading the fraud at the same time. This technique was essential in successfully spreading the fraud to approximately 2,285 individuals.

Regarding the second point, both trust and due diligence are the main avenues of information gathering when making financial decisions to invest and both play a dual

role in protecting individuals from fraud or being the cause of opportunistic behaviour. Examining the effects of trust on an investor's initial investment, I found that trust played a dual role. First, Eron investors who relied on institutional-based trust to obtain information about Eron investment opportunities invested larger amounts of money, setting them up for greater loss of capital. This implies the malfeasant effect of trust when relying on social ties to invest. However, this finding is contrary to the literature on the role of trust placed in friends and family. For example, Baker and Faulkner (2004) and DiMaggio and Louch (1998) suggest that for risky or uncertain, one-time transactions, an individual is more likely to be influenced by close social ties than by strangers or impersonal methods of influence. In fact, most investors rely on family and friends within their social networks for information regarding purchasing decisions and being influenced by family and friends to make an investment (Burt, 2005; Gaston & Bell, 1988; Shiller & Pound, 1989). However, Zucker (1986) and Stolowy et al., (2011) argue that reliance on formal institutions to make investment decisions has been increasing and people often take their "expertise" for granted, supporting the conclusions drawn on the effects of institutional-based trust as cause for malfeasance.

Further, when examining the effects of trust on net loss, I found that relying on multiple types of trust played a protective role against fraud. Eron investors who relied on multiple types of trust experienced a decreased loss of capital compared to those who relied on single types of trust. The accumulation of different types of trust thus has a protective effect throughout the duration of the fraud. This suggests that using multiple sources of trust may result in information that may cause feelings of distrust, keeping investors from reinvesting or investing in several projects at once. Prior research on trust and verification supports this explanation. For example, Gundlach and Cannon (2009) found that information and trust verification efforts through corroboration from multiple sources were beneficial in situations where low-trust is present, such as investing in market transactions. Additionally, and similar to Baker and Faulkner's (2003) study of the Fountain, Oil and Gas fraud, this study provides evidence that people who invested in Eron substituted trust in place of conducting due diligence, particularly if they placed trust in their friends and family (characteristic-based trust) and institutional-based trust. This may help explain why conducting fact-based due diligence was not a significant

factor in making financial decisions in both the beginning and the duration of the Eron fraud.

The third main point is that trust embedded in the structure of the Eron network caused harm to Eron victims. While the fraud victimization literature focuses on financial loss as the cause of harm, opposing views reveal that victims suffer long-term emotional, psychological, relational, physical, and medical harm equal to that of victims of violent and street crime (CSA, 2007; Deevy, et al., 2012; Moore & Mills, 1990; Spalek, 1999; Shover, et al., 1994). Some studies indicate that trust may be the cause of various harms suffered by fraud victims however no empirical research exists on how trust propagated through social networks plays a role in the harms suffered by victims of fraud. In the third study, three main findings emerge. First I show that network position not only causes harm to victims but also increases the degree of harm suffered. Second, social ties embedded in the Eron network matter when it comes to the harm suffered by victims of Eron; trust in social ties is associated with increased harms reported by victims including harm to friends and family relations and emotional and financial harm. Further, relying on different types of trust, including process-based, characteristic-based, and institutional-based trust produced differing effects on the harms experienced by Eron victims. Relying on multiple types of trust however produced lower levels of harm suggesting a protective nature in the accumulation of information sources.

The implications for this study are perhaps most notable as there have been no empirical studies on the social causes of harm and its impact on victims of fraud. Deevy (2012) argues that the few studies on harm available focus on financial loss as predictors. She also contends that emotional and psychological harm are much more difficult to measure and argues that future research is needed to help understand the social, psychological and other non-financial causes of harm in fraud victimization studies (Deevy, 2012). The third study presented here measures trust embedded in the social structure of the Eron network to determine the impact of trust on harm, including the effects of trust constituents on different types of harms suffered by victims and the degree of harm suffered. No known studies exist in the body of literature on fraud victimization of this kind.

These studies offer support for both the application of diffusion theory and network analysis in studies of white-collar crime. First, evidence is presented that the network structure of a pre-planned fraud diffuses through a population of investors much like a legal innovation spreads through a population of consumers. The implications for this are two-fold. First, similar to the type of legal innovation affecting success or failure of diffusion, the type of fraud matters here. Second, where legal innovations rely mainly on word-of-mouth to spread through a social system, the pre-planned fraud perpetrated by Eron relied on several elements to successfully diffuse their fraud through a population of investors, particularly Eron principals and employees acting as change agents and the aggressive media campaign used throughout the entire period of the fraud. The risk and uncertainty present when investing supports these findings, suggesting that word-of-mouth may not be enough in continuing the needed influx of new investors to sustain a Ponzi scheme.

Second, evidence suggests that trust embedded in the structure of the Eron network affects the degree of victimization and harm experienced by victims. Examining effects of trust on initial investment, I found that investors who relied on institutional-based trust had increased investments compared to those who relied on multiple types of trust. By producing feelings of comfort among investors, institutional-based trust highlights the negative effects of an increasing reliance on formal institutions to make decisions and the opportunistic effects of this type of trust. On the other hand, placing trust in various types of relations to obtain information before making investment decisions provided protection to investors against greater loss of capital. This is particularly true in situations such as investing in low-trust exchanges that promote reliance on more sources of information before making a decision. A possible negative effect remains however; relying on trust can reduce the need to obtain further information through fact-based due diligence; performing proper due diligence can have a protective effect against malfeasance (Pack, 2002). Being influenced to invest through trusted social ties embedded in the Eron network is also a cause for the harms suffered by Eron victims. It was found that victims who relied on trusted social ties suffered increased amounts of harm compared to those who did not. The source of trust also predicted an increase in the degree of harm experienced across the different types of harm examined. Interestingly, relying on multiple sources of trust had a protective effect

against harm. This corroborates the findings in the second study on the protective effects of multiple sources of trust on loss of capital. Network position within the Eron network is also a source of harm with increased centrality scores causing increased amounts of harm experienced by investors.

Limitations of the Dissertation Studies

Returning to the studies presented in this dissertation, the contributions should be interpreted within the context of a number of limitations. Regarding diffusion studies, several factors limit our interpretation of how the Eron fraud spread through the network. First, there was a premature end to the spread of fraud with the arrest and indictment of Eron principals. Due to this limitation, we were unable to calculate adoption time data that may have allowed us to witness the gradual decline of the diffusion process and truly revealed a “diffusion effect”. As well, the precise time of adoption data are missing for individuals who started the spread of fraud through the network. This limitation prevented us from calculating exposure rates and threshold levels of Eron victims and their nominees’ adoption rates which would offer more insight into victim characteristics such as their innovativeness and insight into their personal networks. This leads to another potential limitation within diffusion studies on the ability of respondents to recall relational and time data not only for themselves, but also for those they nominate (O’Malley, Arbesman, Steiger, Fowler, and Christakis, 2012; Valente, 2010). Data may also be biased toward respondent’s perceptions however O’Malley et al. (2012) argue that the respondent’s perception of the relationship between their nominees is more important than potential self-report data obtained from them. In the case of Eron victims however, because the majority of the investors had substantial financial loss and were interviewed by the British Columbia Securities Commission and law enforcement authorities a number of times between the end of the fraud and the survey, it was determined that their memories regarding the fraud were clear. A final limitation of diffusion studies applied in this dissertation is the inability of the data to measure people who did not adopt the fraud and why. Had their reasons for not investing related to uncovering information that led them to believe Eron was not a legitimate investment or was too risky for their investment style remains to be seen. Data on individuals who did

not invest is essential for future research if we are to understand why some people become victims of fraud and others do not.

Concerning the sample population of investors used in this dissertation, several limitations exist. First, our sample consisted of 559 respondents who may or may not be representative of the entire population of 2,285 total individuals who invested in Eron. Second, many of our analyses in the studies presented here were based on the 331 respondents who answered our network question: “Who played the most significant role in persuading you that Eron was a legitimate financial venture?” providing us with our network data. While both the full and network samples appeared similar on many characteristics, there is some indication that the 331 respondents were slightly more likely than others to have known other investors, to have met Eron principals, and to have invested earlier with Eron, increasing the possibility of an over-emphasis of the effects of personal relationships in the diffusion of the fraud. Third, because we were unable to systematically compare the study participants (n = 559) and Eron investors who did not return their survey (n = 1,726), it remains a limitation of this study whether or not these two groups differ in their profiles and what information the non-response group would bring to the studies presented here.

A third limitation in this dissertation deals with the network data utilized. First, the relationship ties that make up the Eron victim network are assumed to be mutually exclusive when in reality, these ties may overlap between relationships. For example, a family member may also be an Eron principal or employee as we saw with the investor Rita Reale who was a family member of Randy Bender and also an Eron employee. However, because respondents were asked to name the relationship ties to the individuals who influenced them to invest; their answers reflect the relationship from their perspective, the perspective from which the studies in this dissertation originate. Second, as is often the case with network data, and particularly true in our case due to the inability to include individuals who did not invest and those who invested in Eron but did not return their survey, the parameters of our network are not inclusive of the entire Eron network. This is often the case within any fraud victimization study due to the fact that many victims do not report their victimization to authorities or even to close friends and family members out of embarrassment or stigmatization (Deevy, 2012). As stated by Deevy (2012, p. 14) “the way we measure fraud is flawed by under-reporting and under-

admitting.” Thus, the findings in this dissertation cannot be generalized to all individuals who invested in Eron. However, the comparative analyses undertaken between the network and non-network samples increases confidence that the findings in this dissertation are not biased in favor of survey respondents.

Policy Implications

Detection, prevention and response are the major hurdles to overcome when developing policy implications to combat white-collar crime. The white-collar crime literature on policy implications most notably focuses on regulatory and punitive measures to control perpetrators of white-collar crime (see Dorn, 2010; Pontell, 2010; Pressman, 1998; Reichman, 2010) however; fraud victims take on a unique position, being accomplices in their own victimization. This dissertation focuses on policy implications concerning the education of the public in preventing individuals from becoming victims of fraud. In order to educate the public on the causes of fraud we must look to answer important questions such as “How do people become victims of fraud?” or “What differentiates fraud victims from non-victims?” To answer the first question, this dissertation has shown that trust is a cause of fraud victimization and trust can have potentially hazardous effects on outcomes within the successful diffusion of a fraud including influencing financial decision-making and harm experienced once one is aware of their victimization status. More specifically, this dissertation has shown that 1) financial transactions are embedded in trusted social ties, and 2) the type of trusted relationship influences outcomes of fraud victimization.

To answer the second question I turn to the findings in the three studies presented in this dissertation. The findings indicate that education is a significant factor in fraud victimization outcomes. For example, study one shows that victims who were identified as network bridges, responsible for spreading the fraud through word-of-mouth, were less educated than victims who occupied non-bridge positions. Findings in the second study confirm that victims who were more educated, experienced a decreased amount of net loss and also performed more fact-based due diligence than victims who were less educated. Finally, the third study substantiates that more educated victims of Eron suffered harm to a lesser degree than those victims having less

educational attainments. These findings provide substantial evidence that education is a major, significant factor in preventing fraud victimization. Van de Bunt (2010) blames *concerted ignorance*; investors and regulators get duped by Ponzi scammers because they simply do not know what is going on. Van de Bunt (2010) argues that this ignorance occurs because of misplaced trust in the Ponzi scammer, making investors and regulators complacent and therefore, they do not engage in proper due diligence needed to uncover a potential fraud. The lack of conducting proper due diligence keeps investors in the dark giving Ponzi scammers an edge in defrauding new investors. Reichman (2010) suggests other avenues for educating future investors such as increasing financial literacy and expertise of regulators and auditors while Pontell (2010) advocates educating the public by providing information about the red flags of fraud. By educating potential investors on the possible negative effects of trust and its influence on financial decision-making is a starting point in preventing future investors from becoming victims of fraud.

The findings in this dissertation also reveal the malfeasant effects of trust in regulatory institutions and industry professionals; investors who were influenced by institutional-based trust increased their initial investments in Eron as well as used the information gleaned from trusting these institutions as a substitute for conducting due diligence. What is not understood however is where do these institutional entities procure their information about potential fraudulent versus legitimate investment opportunities? How often are these institutions able to identify potential scams and how often do they point investors in the right direction? The findings in this dissertation pose important questions toward creating policy to prevent future fraud victimization. As such, within the context of educating the public on the opportunistic prong of trust in financial decision-making, educating the public must be extended to the information provided by these professional and regulatory institutions designed to protect against fraud. Reichman (2010) suggests increasing financial literacy and expertise of those who are sworn to protect our investments such as regulators and auditors. This would hold these entities accountable for the information they pass on to potential investors and may be a starting point for policy implications designed to educate both future investors and industry professionals to help prevent fraud victimization.

Creation of new policy toward the prevention of fraud victimization can also come from comparing and analyzing the diffusion of a successful, legitimate syndicated mortgage investment opportunity with that of the successful diffusion of the Eron fraud. The findings in this dissertation present a starting point for comparison beginning with the overall social structure of the two networks. For example, the successful spread of the Eron fraud was dependent on exploiting the trust placed in multiple diffusion mechanisms where each mechanism was utilized continuously throughout the duration of the fraud, including change agents, opinion leaders, media channels and network bridges. In theory and in practice, a successful, legal innovation generally incorporates these diffusion elements at more specific time points within the diffusion process. By comparing the social structure of these two networks using network analysis, it becomes possible to uncover the differences and similarities in how each network incorporates the mechanisms of diffusion for its success. However, comparing the two processes goes beyond the network. A detailed analysis of the procedures and investment pattern of Eron compared to similar, but legal companies could reveal key differences that, if known, could lead to early detection by authorities.

While educating the public is a positive step toward policy implications to prevent future fraud victimization, it remains a slow process and more immediate policy implications are needed. The findings in this dissertation also reveal that using network analysis was instrumental in uncovering the structure of the Eron fraud network which influenced the diffusion of the fraud, financial decision-making and loss, and the harm suffered by victims. These findings substantiate that the collection and use of network (sociometric) data in future studies of fraud is warranted. For example, one of the most widely used crime data instruments in both Canada and the United States is the Uniform Crime Report (UCR) yet, there are thirteen distinct types of fraud aggregated as “other” making it difficult to make distinctions between these offenses (Canadian Centre for Justice Statistics, 2002). Sociometric indicators should be routinely included in crime data collection instruments to acquire network data along with adoption time data to provide a better understanding of white-collar offenses. For example, if network data are routinely collected in major crime incident and victimizations surveys, network analysis can then be used to calculate threshold levels of fraud victims which can help answer the question “Who is more likely to adopt a fraudulent innovation first”? Network and

adoption time data can also be used to calculate exposure rates which will answer questions about influence and behaviour change within a network of adopters to help understand the effects of influence on financial decision-making. Following in this vein, future research much focus on the use of network analysis in the study of white-collar crime from a network perspective to uncover the social aspect that occurs between perpetrators and victims of fraud.

Future Research

While this dissertation contributes a number of findings to the research literature on white-collar crime in general and fraud victimization in specific, there is much work to be done incorporating applications of social network analysis and diffusion theory within fraud victimization studies. For instance, Tennant (2011) calls for more research on identifying detailed characteristics of people who invest in Ponzi schemes to determine traits and behaviours that make them more likely to do so. Titus et al. (1995) postulate that if more data are collected on white-collar crime victims, we can then compare characteristics, reporting behaviour, financial costs, and harms to that of burglary, robbery, assault, and other violent crimes. Incorporating network data collection procedures within surveys and interviews examining victims of fraud will allow for a more detailed examination of distinct characteristics of fraud victims based on their social networks and how the structure of their networks either protect them from fraud or are the cause of malfeasance.

To do this the correct way would require the collection of egocentric network data and adoption time data for both respondents and those in their social networks. Because network data document the frequency and weight of communications between individuals in a network, these data are important in studies that look at how social networks affect behaviour change (Valente, 2010). Egocentric data offer information on the actors that make up each respondent's social network from the point of view of the respondent and offer measures of interpersonal influence that can predict behaviour (Valente, 2010, p. 61). Questions used to collect egocentric data pertain to respondents nominating other individuals based on specific criteria such as "Who influenced you to invest?" or "Who did you talk to about the investment before investing?" Respondents

should be able to name specific names as well as any additional information (Valente, 2010); for example, relationship information, ethnicity, religious background, etc. of the individuals nominated by the respondents. Relational, socio-demographic, and adoption time information about a respondent's network can be useful in determining if certain characteristics are associated with behaviour change such as studies on homophily, where in the case of financial decision-making research has shown that people tend to be influenced by others who share similar traits (Stolowy et al., 2011; Lewis, 2010).

Because egocentric data provide relational information between the individuals nominated by the respondent and the respondent themselves (their social network), dyadic network data can be created. Dyadic data are useful to examine whether or not relationship characteristics are responsible for changing behaviour as well as to calculate exposure rates (Valente, 2010). Dyadic data also allow for calculating measures on a network level such as density and centrality and can be used in tandem with actor attribute data to predict behaviour change (Valente, 2010). For instance, the density of ties within a network who share the same religious or ethnic background can affect how fast a fraudulent opportunity spreads through a network of potential investors, drastically affecting the successful diffusion of a given fraud. Collecting egocentric data would allow for an examination of fraud victims' personal networks and how the network structure shapes a victim's behaviour (e.g. the number of ties influencing one to invest in an otherwise risky and uncertain investment opportunity). Egocentric data can easily be integrated into any future surveys and interviews to help answer research questions pertaining to the structure of victim's social networks.

Adoption data from victims and victim's nominees (actors nominated based on survey questions to obtain egocentric data) are also needed in future studies of fraud victimization. Adoption data tell us the time at which an individual adopted a new innovation or in the case of an investment fraud, the time at which an individual invested. First, this allows for determining how an illicit innovation such as a fraud diffuses through a population of victims but more importantly, and missing from the data in this dissertation, adoption data of respondent's nominees allows for calculations of exposure rates and threshold levels of victims and their social networks. These data can be collected either through respondents or through self-reports of respondent's nominees (alters). Together, these two data collection techniques, egocentric and adoption time

data will allow for a detailed examination of exposure rates and threshold levels among fraud victims.

Exposure rates, or personal network exposure, measures the proportion of ties in an individual's social network that hold a particular belief or are engaging in a particular behaviour (Valente, 2010, p. 61). In other words, exposure rates are the proportion of ties in an individual's network that have adopted an innovation at any given time (t) prior to ego (the focal actor in the network) or the degree to which that individual is exposed to a behaviour or idea from their social network (Nooy, et al., 2005; Valente, 1995). In relation to fraud studies, this would be the number of people in a victim's network who have invested in a fraud prior to the victim, potentially influencing the focal individual's behaviour to invest as well. Examining one of the first studies on exposure, adoption of a new math method in Allegheny County, Pennsylvania in the 1950s (Carlson, 1965), exposure rates are the proportion of ties in and individual's ego network that have adopted prior to ego. To calculate exposure, the number of ties who adopted prior to ego is divided by the total number of ties within the individual's personal ego network. For example, actor v8 (ego) in Figure 5.1³³, who adopted the new math method in 1960 has a total of 11 individuals in his/her personal network, 3 of which adopted the new math method prior to 1960. Actor v8's exposure rate is .27, or 27% of v8's network adopted prior to actor v8. Actor v36 who adopted in the last year (a laggard) has a personal network of four individuals, all of which adopted prior to 1963, thus actor v36 has an exposure rate of 100%.

³³ The data used to create figure 5.1 in Netdraw 2.0 were retrieved from <https://sites.google.com/site/ucinetsoftware/datasets/modernmathmethoddiffusion>. Figure 5.1 created in Netdraw 2.0 (Borgatti et al., 2002).

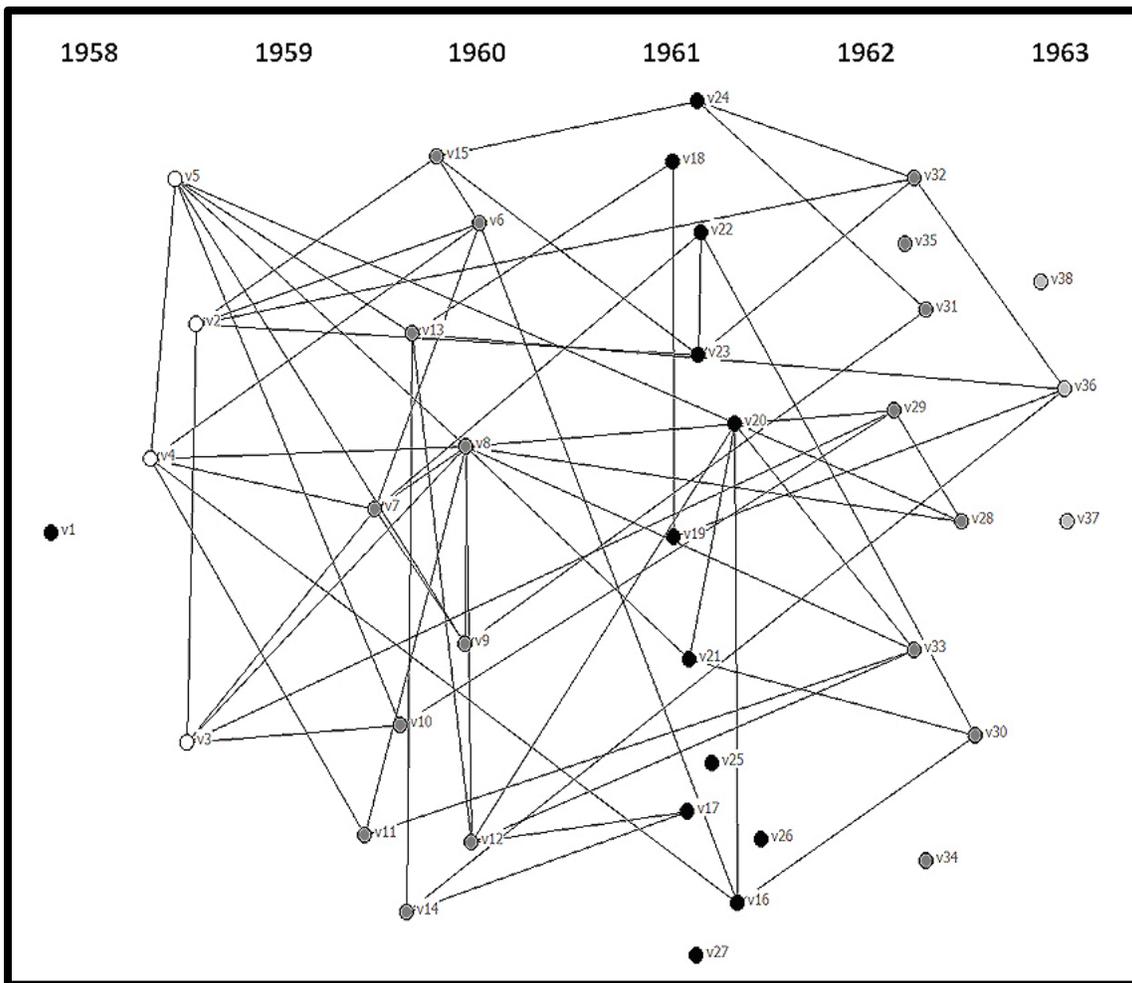


Figure 5.1. Exposure rates of personal networks among math teachers adopting a new math method (Borgatti et al., 2002; Carlson, 1965; Nooy et al., 2005: 168).

According to Rice (1993), individuals make decisions based on influence from the degree of exposure in their networks therefore, exposure rates have important implications for future fraud studies because 1) they determine how much influence is needed before a particular individual adopts a fraudulent opportunity, and 2) they allow for the identification of social and demographic characteristics of early adopters (Nooy et al., 2005). The ability to identify social and demographic characteristics of early adopters allows for the identification of specific characteristics that may affect the behaviour of others in terms of adopting. For example, follow-up questions on influence can be incorporated into future studies that test whether or not innovative individuals were responsible for influencing respondents to invest in a particular fraudulent investment

opportunity. Valente (2010) also suggests that influence can be measured by attributing weight to tie strength within respondents' individual networks to further test influence on behaviour change.

Understanding and calculating threshold levels of individuals are also important in future research on fraud victimization because they are responsible for the speed at which diffusion occurs. For example, threshold levels provide a more robust understanding of not only victims, but their peers within their social networks. Implications for calculating threshold levels of fraud victims include comparing individual threshold levels to other characteristics of victims to determine factors indicative of "innovativeness" – this is important here because innovative people, usually known as opinion leaders, are responsible for spreading an idea or innovation to their social ties via influence within their social networks. In other words, identifying opinion leaders is crucial in determining whether or not diffusion will succeed (Valente, 1995). Valente (1995) defines a threshold as the degree to which individuals are influenced by the behaviour of others in their social system based on personal and social factors combined; different individuals have differing degrees of influence before they adopt an innovation.

Threshold levels also provide personal information about individuals in regards to their "innovativeness" or how susceptible they are to persuasion (Nooy et al., 2005). Nooy et al. (2005) classify two ways to conceptualize the innovativeness of individuals: 1) relative to the system through adoption categories; and 2) relative to their personal social networks through threshold categories. Adoption categories give us classifications on the time of adoption within an entire social system; for example, cosmopolites, early adopters, early majority, late majority and laggards (Rogers, 2003). Each adopter category along with other attribute data can be used to predict behaviour change. For example, we may find that investors who tend to adopt early have attained higher educational levels and have higher status jobs, creating more social capital within their network and thus, being more influential. Threshold levels are categorized as low, medium and high; low thresholds are synonymous with low resistance and earlier adoption, high thresholds are synonymous with high resistance and later adoption (Nooy et al, 2005; Valente, 1995).

Threshold levels can be thought of in the context of fraud victimization through the amount of trust needed to adopt an illicit innovation. For example, people with lower thresholds may trust others in their social network quicker and thus, are more easily persuaded to change their behaviour and invest in a fraud sooner whereas people with higher thresholds require higher levels of trust from more people in their social networks to adopt, investing in a fraud later. This is instrumental in identifying people who are more susceptible to adopt a fraud and to spread it to others in their social networks. Incorporating social network analysis and the application of exposure rates and threshold levels in future studies on fraud victimization would have implications for a better understanding of the social and behavioural aspects that influence people to invest in a fraud, providing more detailed information about fraud victims beyond that of the demographic characteristics that are found within most fraud victimization studies. More importantly, identifying exposure rates and threshold levels of individuals would help identify people who are at risk of fraud beyond the available body of literature on fraud victimization.

Summary

The social structure of fraud networks plays a key role in fraud victimization studies. When making investment decisions, people rely on their trusted social ties, even at the cost of balancing information asymmetry in their favor; trust is the path of least resistance but it also places one at risk for fraud victimization. I find that illicit innovations like the Eron fraud diffuse through a population of victims similarly in relation to a legal innovation that diffuses through a population of consumers. Network position (centrality) plays an important role as a spread mechanism, helping to identify opinion leaders who were instrumental in the spread of fraud through the network (study 1) as well as contributing to the harms suffered by victims (study 3). Identification of network bridges was also important in maintaining the spread of fraud through the network using word-of-mouth. Finally, change agents were found to be important factors in selling the fraud to unsuspecting investors, maintaining the rate of new investors needed to continue the Ponzi scheme (study 1). Relying on trusted social ties embedded in the Eron network to make financial decisions was found to both insulate investors from more severe overall loss or was the catalyst for increased investments, revealing the opportunistic side of

trust. Reliance on institutional-based trust effectively caused Eron victims to make larger initial investments in the early stage of the fraud, setting them up for greater loss when the fraud was detected. However, investors who relied on multiple sources of trust were protected against more severe loss of capital (study 2). Trust also played a dual role in the harm experienced by Eron victims displaying both a protective and opportunistic effect on harm. Influence through social ties embedded in the structure of the Eron network was found to be the cause of several types of harm suffered by victims while trust constituents were responsible for increasing the degree of harm suffered to friends and family relations and emotional and financial harm. Trusting multiple types of social ties however decreased the degree of harm experienced by victims suggesting the protective role of trust (study 3).

Taken together, this dissertation contributes to the limited understanding of victims of white-collar crime within the context of a large-scale Ponzi scheme. Using applications of social network analysis to uncover the structure of the Eron network, the studies presented here offer new insight into the structural and social elements of an illicit innovation that successfully diffused through a population of fraud victims. In addition, these studies contribute empirical evidence to further our understanding of trust embedded in social networks and the dual role of trust in victimization and harm studies. Future research within studies of white-collar crime must take into account the beneficial function of social network analysis in uncovering the structure of illicit networks in identifying individuals at risk of fraud victimization.

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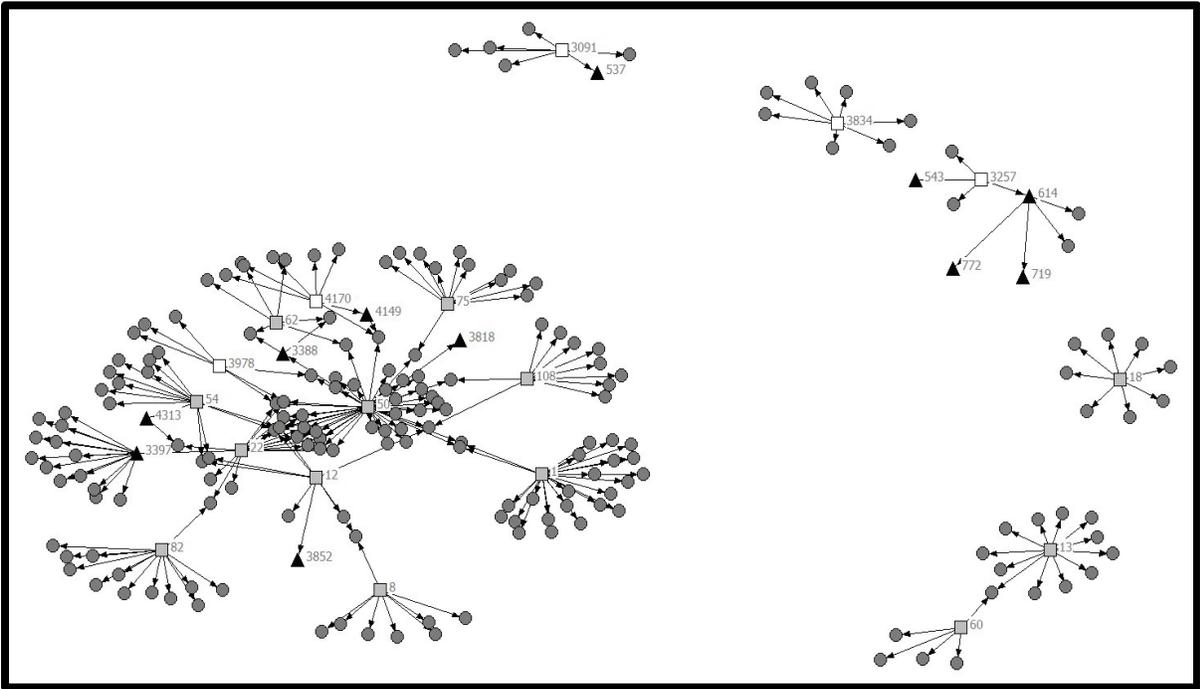
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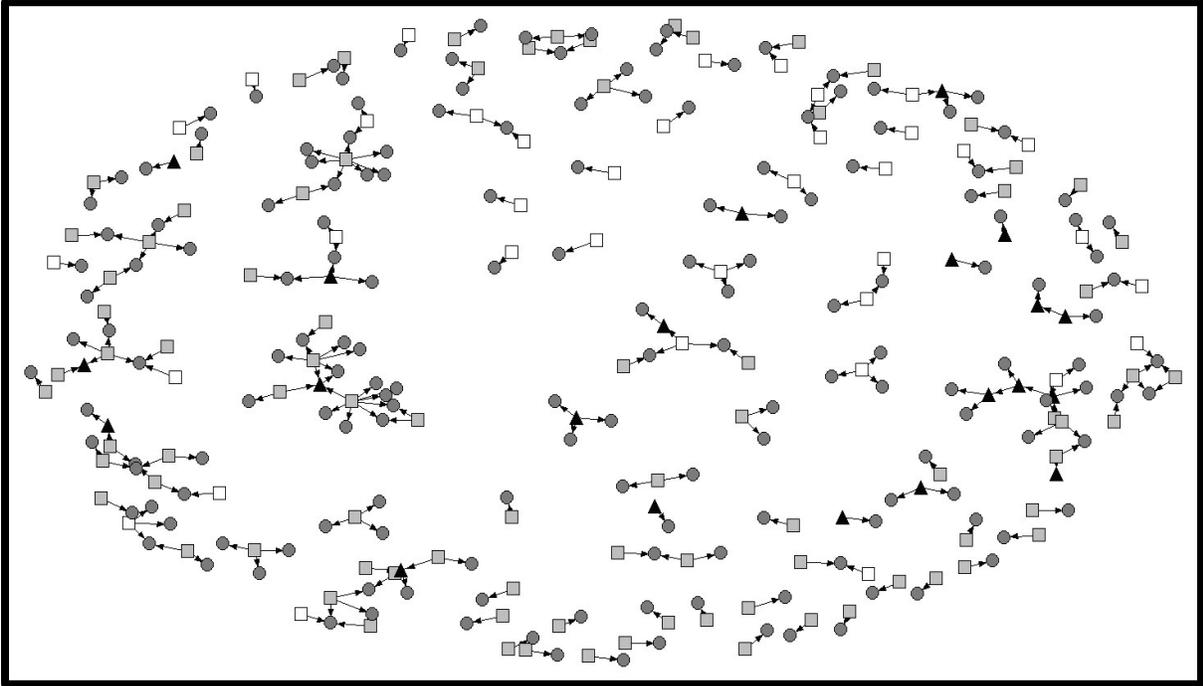
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Appendices

Appendix 2.1. Sociogram of the Eron Network (1997) containing only central players.



Appendix 2.2. Sociogram of the Eron Network (1997) excluding central players.



Appendix 2.3.Synopsis of the Eron Mortgage Fraud

Extract taken from the synopsis found in the findings report of the British Columbia Securities Commission (1999): <http://www.bcsc.bc.ca/comdoc.nsf/allbyunid/141cc62c7db8fc39882568e9005eb079?opendocument>

Slobogian formed Eron Mortgage in January 1993. He had had no previous experience in the mortgage brokerage business but formed a relationship with Brian Larsen, an experienced mortgage broker with Barclay Capital Corporation. Larsen taught Slobogian the business and Slobogian, through Eron Mortgage, began to raise funds from investors and to arrange loans to borrowers. Slobogian met Biller through a venture capital corporation project near Kamloops. Biller had been hired to raise funds for the project and Slobogian was impressed with his sales ability. Slobogian hired Biller to work for Eron and proceeded to train him as a mortgage broker. Slobogian and Biller worked as a team: Slobogian found and negotiated the deals with borrowers, and Biller raised the funds from investors.

In some mortgage brokerage transactions, a mortgage broker links a borrower with a single investor, or a very small group of investors. Eron took this a step further by raising funds for a single mortgage from a large number of investors. Each investor was to receive a registered interest in the mortgage. Mortgages funded in this fashion are referred to as syndicated mortgages.

From 1993 to 1995 Eron's team of brokers grew to over 40. In 1996 and 1997 the business grew rapidly and by the fall of 1997 Eron had raised over \$240 million from investors through the brokering of mortgages and the sale of promissory notes.

A large part of Eron's business was financing real estate development projects. Eron generally did not adequately investigate projects before funding them, nor did it properly manage the advances to projects. As a result, many of the loans did not perform. Nevertheless, Eron continued to advance funds to losing projects, to the point where the money advanced to many projects exceeded their worth. The only way that Eron could ensure that its investors were paid their interest and principal was to raise more money from new investors. Eron also moved investors' funds among projects and mortgages without regard to the investors' original investment, and its records were not accurate and complete.

In addition to raising funds for specific mortgages, Slobogian formed EIC, which issued promissory notes to investors. The stated intent was to invest the funds so raised in various Eron projects.

In 1996 the British Columbia Financial Institutions Commission ("FICOM") – FICOM is the statutory body responsible for regulating mortgage brokers in British Columbia – became concerned about various aspects of Eron's business. This concern intensified throughout 1997. The staff of the Securities Commission also had concerns about Eron's compliance with securities legislation. The concerns of the regulators were communicated to Slobogian and discussions and correspondence ensued among Slobogian, the regulators and counsel for the Eron group.

These discussions did not resolve the regulators' concerns. In October 1997 FICOM suspended Eron Mortgage's mortgage broker registration, issued an order freezing Eron Mortgage's accounts and successfully applied to the Supreme Court of British Columbia for the appointment of PricewaterhouseCoopers Inc. ("Pricewaterhouse") as receiver and judicial trustee of Eron Mortgage, EIC, Capital, Eron Financial and over 40 related companies.

Appendix 2.4. Comparisons of the Network (n = 331) and Non-Network (n = 222) Samples of Investors on Socio-demographics and Investment-related Characteristics.

| Variables | Non-Network% (n = 222) | Network% (n = 331) |
|--|-----------------------------------|-------------------------------|
| 1. Gender | | |
| Male | 61.7 | 60.1 |
| Female | 37.8 | 39.1 |
| 2. Education | | |
| High School or Less | 32.4 | 29.7 |
| Some Post-Secondary | 31.5 | 33.2 |
| BA or Above/Professor | 31.1 | 37.0 |
| 3. Employment | | |
| Employed | 59.0 | 67.3 |
| Unemployed/Student | 12.6 | 14.3 |
| Retired | 23.4 | 18.4 |
| 4. Year of 1 st Involvement in | | |
| 1992 | 2.7 | 2.6 |
| 1993 | 1.8 | 3.3 |
| 1994 | 9.0 | 8.9 |
| 1995 | 9.9 | 12.9 |
| 1996 | 26.6 | 34.3 |
| 1997 | 39.2 | 38.0 |
| 5. Perception of Eron Risk | | |
| No Risk | 16.7 | 17.5 |
| Low Risk | 48.2 | 42.3 |
| Medium Risk | 30.2 | 35.0 |
| High Risk | 5.0 | 4.8 |
| 6. Self-Reported Investing | | |
| Conservative | 49.1 | 49.8 |
| Moderate | 21.2 | 17.5 |
| Aggressive | 27.5 | 31.1 |
| 7. Investment Approach | | |
| Rely on Financial Advisors | 23.0 | 28.7 |
| Consider Financial Advisors | 45.9 | 42.9 |
| Make my own Decisions | 27.5 | 27.2 |
| 8. Investing Knowledge | | |
| Low | 46.8 | 43.2 |
| Medium | 40.1 | 43.8 |
| High | 6.3 | 9.1 |
| 9. Tried to pull money out Before Eron Collapse | | |
| Yes | 17.6 | 33.2* |
| No | 77.5 | 63.1 |

| | | |
|--------------------------------|-------------|---------------------|
| 10. Did someone talk you out? | | |
| Yes | 10.0 | 14.0 |
| No | 89.4 | 85.0 |
| 11. First heard of Eron | | |
| Personal | 51.8 | 62.2**(.014) |
| Impersonal | 20.3 | 13.3*(.045) |
| Both | 24.8 | 21.0 |
| Neither | 3.2 | 3.3 |
| Steps taken before investing | | |
| 12. Talk to investors | 33.3 | 43.8* |
| 13. Consulted friend/family | 40.5 | 45.3 |
| 14. Met Eron principals | 9.9 | 24.5** |
| 15. Visited Eron offices | 37.4 | 39.0 |
| 16. Examined property photos | 46.8 | 53.8 |
| 17. Read Eron prospectus | 53.2 | 52.0 |
| | Mean | Mean |
| 18. Net Loss | \$21,100.00 | \$24,100.00 |
| 19. Initial Investment | \$13,900.00 | \$19,400.00 |
| 20. Age at Initial Investment | 53.00 | 51.00 |
| 21. Average Household Income | \$53,700.00 | \$57,500.00 |

^a $p < .01$ significant difference between groups,

^b $p < .05$ significant difference between groups

^c Totals do not equal 100% due to missing data not imputed for the purpose of this analysis

Appendix 3.1. Correlation Matrix

| | Age | Ed | Kn | Ap | Prcept | Invest | Lend | #Proj | Reln |
|---------|-------|--------|--------|---------|---------|---------|---------|-------|--------|
| Sex | -.054 | -.033 | -.034 | -.196** | -.198** | -.033 | -.056 | -.087 | -.009 |
| Age | | -.132* | .087 | -.069 | -.074 | .188** | -.048 | .056 | .141* |
| Educ | | | .244** | .275** | .169** | -.143* | .185** | -.056 | -.047 |
| Know | | | | .351** | .029 | -.139* | .081 | .075 | .087 |
| Apprch | | | | | .247** | -.180** | .149** | -.027 | .061 |
| Percept | | | | | | -.040 | -.006 | -.069 | -.129* |
| Invest | | | | | | | -.615** | .003 | - |
| Lend | | | | | | | | .017 | - |
| # Proj | | | | | | | | | - |

^a Pearson's correlation coefficient was used for continuous variables; Spearman's correlation coefficient was used for non-continuous variables.

* $p < 0.05$, ** $p < 0.01$.

Appendix 3.1.2. Correlation Matrix

| | I.I | TTLPJ | DD | TE | TFF | TP | TM | Loss |
|------------|---------|---------|---------|-------|---------|---------|---------|---------|
| Sex | -.055 | -.167** | -.006 | -.018 | -.039 | .002 | .066 | -.037 |
| Age | .331** | .001 | -.060 | .075 | -.055 | .066 | -.066 | .270** |
| Educ | -.220** | .090 | .182** | .012 | -.040 | -.041 | .076 | -.172** |
| Know | .057 | .106 | .261** | .111* | -.145** | .007 | .066 | .102 |
| Apprch | -.094 | .074 | .074 | .072 | -.055 | -.057 | .049 | -.033 |
| Percept | -.226** | .031 | -.057 | -.023 | .072 | -.070 | -.004 | -.248** |
| Invest | .007 | - | -.201** | -.009 | .061 | -.021 | -.050 | - |
| Lend | -.008 | - | .177** | -.018 | -.077 | .054 | .067 | - |
| # Proj | .428** | - | .172** | -.068 | .024 | -.100 | .130* | - |
| Reinvst | .081 | .506** | .173** | .117* | -.128* | -.102 | .138* | .397** |
| Init Invst | | .233** | .170** | .021 | -.104 | .129* | -.007 | .633** |
| Total | | | .311** | .092 | -.125* | -.132* | .186** | .389** |
| Projects | | | | | | | | |
| Due Dil | | | | .104 | -.136** | -.043 | .107 | .205** |
| Trust Eron | | | | | -.457** | -.207** | -.237** | .113* |
| Trust | | | | | | -.393** | -.452** | -.071 |
| FF | | | | | | | | |
| Trust Prof | | | | | | | -.205** | -.006 |
| Trust | | | | | | | | -.018 |
| Multiple | | | | | | | | |

^a Pearson's correlation coefficient was used for continuous variables; Spearman's correlation coefficient was used for non-continuous variables.

* $p < 0.05$, ** $p < 0.01$.

Appendix 4.1. Dependent and Independent Variables Correlation Matrix for Full Sample of Victims (n = 559)

| | HHI | INFL | None | Med | Both | ReInv | In/Out | Appr | Eron Risk |
|--------|-------|-------|---------|---------|---------|---------|---------|--------|-----------|
| Loss | .108* | -.060 | -.049** | -.037 | .144** | .415** | -.291** | .049 | -.116* |
| HHI | | -.065 | -.006 | -.047 | .075 | .034 | -.119* | .245** | .151** |
| INFL | | | -.011 | .089* | .037 | -.031 | .028 | .008 | -.032 |
| None | | | | -.076** | -.092** | -.054** | -.011 | .045** | .048** |
| Media | | | | | -.237** | .048 | .039 | .080 | -.073 |
| Both | | | | | | -.031 | .021 | -.035 | .008 |
| Reinve | | | | | | | -.250** | .062 | -.070 |
| In/Out | | | | | | | | -.063 | -.028 |
| Apprch | | | | | | | | | .222** |

^a Pearson correlations were used for continuous variables and Spearman correlations for non-continuous variables.

* $p < 0.05$, ** $p < 0.01$.

Appendix 4.1.2. Dependent and Independent Variables Correlation Matrix for Full Sample of Victims (n = 559)

| | Sex | Age | Edu | Emp | Harm Index | FF Harm | Finance Harm | Emot Harm | Phys Harm |
|-----------------|---------|---------|---------|---------|------------|---------|--------------|-----------|-----------|
| Loss | -.073 | .118* | .010 | -.050 | .460** | .238** | .531** | .413** | .376** |
| HHI | -.194** | -.304** | .312** | .381** | -.149* | -.004 | -.184** | -.179** | -.143* |
| INFL | -.010 | .075 | -.058 | -.048 | -.228** | -.224** | -.164** | -.097 | -.100 |
| None | -.071** | -.009 | -.062** | -.030 | -.078** | -.051** | -.039* | -.108** | -.106** |
| Media | -.082 | .089* | .035 | -.074 | -.096 | -.116* | -.091 | -.009 | -.038 |
| Both | -.091* | .020 | .070 | .050 | .147** | .190** | .105* | .146** | .130* |
| Reinvest | -.021 | .076 | -.003 | .013 | .225** | .128* | .246** | .161** | .188** |
| In/Out | .038 | .054 | -.007 | -.061 | -.124* | -.053 | -.177** | -.106* | -.106* |
| Apprch | -.210** | -.156** | .232** | .136** | -.127* | -.058 | -.068 | -.122* | -.090 |
| Eron risk | -.143** | -.064 | .167** | .119** | -.208** | -.077 | -.212* | -.190** | -.167** |
| Sex | | -.032 | -.022 | -.186** | -.006 | .001 | .013 | .041 | .056 |
| Age | | | -.169** | -.434** | -.074 | -.207** | .084 | .052 | -.011 |
| Educ | | | | .148** | -.192** | -.074 | -.159** | -.151** | -.139** |
| Employ | | | | | .023 | .066 | -.035 | -.087 | -.115* |
| Harm Index | | | | | | .784** | .846** | .853** | .822** |
| FF Harm | | | | | | | .431** | .555** | .622** |
| Financia l Harm | | | | | | | | .695** | .641** |
| Emotion Harm | | | | | | | | | .765** |

^a Pearson correlations were used for continuous variables and Spearman correlations for non-continuous variables.

* $p < 0.05$, ** $p < 0.01$.

Appendix 4.2. Dependent and Independent Variables Correlation Matrix for Network Sample of Victims (n = 331)

| | HHI | Btwn | Dgr | Infl Eron | Infl FF | Infl Prof | None | Med | Both | Reinv | In/Out |
|---------|------|-------|-------|--------------|------------|--------------|-------|-------|-------|-------|--------|
| Loss | .138 | -.020 | .019 | .108 | -.098 | -.028 | -.111 | .030 | .147 | .434 | .326 |
| HHI | | .048 | .113 | -.038 | -.004 | -.077 | .032 | -.039 | .050 | .038 | .138 |
| Between | | | -.043 | .031 | .066 | -.071 | .031 | -.042 | -.027 | -.051 | .051 |
| n | | | | | | | | | | | |
| Degree | | | | -.199 | -.299 | -.218 | -.007 | -.038 | .088 | .160 | .098 |
| Infl | | | | | -.457 | -.207 | .012 | .214 | .009 | .116 | .066 |
| Eron | | | | | | | | | | | |
| Infl FF | | | | | | -.393 | -.007 | -.222 | -.097 | -.133 | -.115 |
| Infl | | | | | | | -.019 | .058 | .029 | -.097 | -.040 |
| Prof | | | | | | | | | | | |
| None | | | | | | | | -.065 | -.087 | -.089 | -.068 |
| Media | | | | | | | | | -.203 | .072 | .023 |
| Both | | | | | | | | | | -.051 | .009 |
| Reinvst | | | | | | | | | | | .242 |

Appendix 4.2.2. Dependent and Independent Variables Correlation Matrix for Network Sample of Victims (n = 331)

| | Appr | Eron Risk | Sex | Age | Emp | Educ | Harm Index | FF Harm | Fin Harm | Emo Harm | Phys Harm |
|---------|-------|-----------|-------|-------|-------|-------|------------|---------|----------|----------|-----------|
| Loss | .094 | -.169 | -.145 | .219 | -.045 | -.063 | .514 | .297 | .571 | .419 | .414 |
| HHI | .246 | .197 | -.212 | -.194 | .388 | .317 | -.246 | -.069 | -.292 | -.277 | -.200 |
| Between | .077 | .038 | -.056 | -.016 | .017 | -.000 | .033 | .005 | .051 | -.002 | .032 |
| n | | | | | | | | | | | |
| Degree | .019 | -.025 | -.027 | -.038 | .094 | .057 | .088 | .146 | -.039 | .036 | .056 |
| Infl | .072 | -.023 | -.019 | .055 | -.024 | -.008 | .063 | -.009 | .131 | .094 | .015 |
| Eron | | | | | | | | | | | |
| Infl FF | -.049 | .076 | -.036 | -.059 | .069 | -.038 | -.063 | -.009 | -.046 | -.016 | -.075 |
| Infl | -.063 | -.069 | -.001 | .064 | -.135 | -.038 | -.026 | -.067 | -.005 | -.021 | .018 |
| Prof | | | | | | | | | | | |
| None | .023 | .059 | -.096 | -.090 | .014 | .017 | -.078 | -.044 | -.088 | -.073 | -.056 |
| Media | .079 | -.110 | -.079 | .187 | -.113 | .090 | -.032 | -.089 | -.012 | .018 | -.007 |
| Both | -.087 | -.019 | -.054 | .066 | -.014 | .043 | .121 | .149 | .062 | .124 | .095 |
| Reinvst | .064 | -.143 | -.007 | .141 | .015 | -.036 | .251 | .123 | .267 | .161 | .190 |
| In/Out | .080 | .068 | -.011 | -.044 | .080 | -.012 | .220 | .158 | .251 | .142 | .233 |
| Apprch | | .246 | -.206 | -.071 | .170 | .275 | -.155 | -.138 | -.073 | -.177 | -.146 |
| Eron | | | -.208 | -.070 | .166 | .158 | -.324 | -.179 | -.290 | -.289 | -.302 |
| risk | | | | | | | | | | | |
| Sex | | | | -.091 | -.158 | -.026 | .088 | .140 | .021 | .012 | .102 |
| Age | | | | | -.388 | -.142 | .024 | -.123 | .143 | .089 | .018 |
| Educ | | | | | | .191 | -.129 | -.052 | -.082 | -.151 | -.267 |
| Employ | | | | | | | -.348 | -.261 | -.270 | -.289 | -.268 |
| Harm | | | | | | | | .830 | .796 | .797 | .814 |
| Index | | | | | | | | | | | |
| FF | | | | | | | | | .443 | .568 | .631 |
| Harm | | | | | | | | | | | |
| Fincl | | | | | | | | | | .713 | .677 |
| Harm | | | | | | | | | | | |
| Emot | | | | | | | | | | | .744 |
| Harm | | | | | | | | | | | |