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Thesis Proposal for: General and Specific Definitions: A Network Study of Differential
Association

A thesis submitted in partial fulfillment of the requirements of the degree of Masters of Science
at Virginia Commonwealth University.

By

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Acknowledgement

I've often said to friends and family when they ask me about my thesis that I cannot really call it "my" thesis because it is as much a creation of others labor as it is my own. I am sure that this can be said not only about my thesis but also any other accomplishments. I would like to use this opportunity to thank many people. I would like to thank the teachers from whom I have learned, the family who has raised and socialized me, and all the countless people who have made my life possible without me even realizing it. There are two people I would like to thank above all others though. One is my wife. Not only is she the love of my life but also the best work partner a man could ask for. Our relationship has made me a better person largely because her wonderful qualities make up for my many shortfalls. Second is that I would like to thank God from whom all blessings flow. His kindness, grace, and patience for me have never ended despite my endless mistakes. With this much help, how can any product of my labor truly ever be called mine?

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Abstract

GENERAL AND SPECIFIC DEFINITIONS: A NETWORK STUDY OF DIFFERENTIAL ASSOCIATION

By Nicholas J. Hauman, M.S.

A thesis submitted in partial fulfillment of the requirements of the degree of Master of Science at Virginia Commonwealth University

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Major Director: Jennifer Johnson, Assistant Professor, Sociology

This study examines a largely unexplored aspect of Sutherland's (1974) model of differential association: the interplay of general and crime specific definitions favorable towards crime. Do individuals learn the specific techniques of a type of crime through interactions or do social interactions produce a general disposition towards all types of criminal behavior? Little prior research has been done on the influence of these definitions. Instead studies focus on only one or another, which leaves the details of general/specific definitions unexplored. With the aid of a mixed methodology of statistical and network analysis, this study explores general/specific definitions simultaneously by focusing on relationships between egos and alters. If alters commit similar crimes, it is likely that crime specific definitions are being learned; if crimes are dissimilar then general definitions are more likely. Using police data on a known criminal network located in an urban capital, I test the relationship between the criminal behaviors of egos and alters. The study also compares the centrality of the node to the commonality of crime they commit. This provides an understanding of how key nodes in the network affect the

dissemination of criminal definitions. Overall, while variations exist for criminal types, the study finds that crime specific definitions dominate the network and, therefore, have greater influence over respondents' criminal behavior. Conversely, I found no clear pattern which indicates that high centrality nodes commit more common crimes. This may indicate that high centrality nodes are responsible for disseminating general definitions of crime while most nodes communicate crime specific definition.

Introduction

The current study is a part of differential association's long history of trying to further understand mechanisms left unexplained by the theory's progenitor: Edwin R. Sutherland (1974). This need for further exploration into mechanisms, partly as a result of Sutherland's (1974) vague outlining of the theory (Kubrin, 2009; Matsueda, 1988), was realized early on by differential association theorists and researchers (Akers, 1966; Cressey, 1965; Cohen, 1955; Sykes, 1957; Sykes, 1961). Both the ambiguous areas of Sutherland's model and the alteration of other authors will be examined in depth below. The mechanism explored in this study is the influence which general or crime specific definitions favorable towards crime have on offending behavior. Both types of definitions are discussed by Sutherland (1974) but he gives no indication to which type of definition is more important or in what situations each type is likely to determine criminality (Sutherland, 1974; Sutherland, 1937). Most research into differential association focuses on either crime specific (Deng, 1998; Jackson, 1983; Kandel, 1991; Kissner, 2009; McCarthy, 1996; Przemieniecki, 2005; Weerman, 2007) or general (Church, 2008; Costello, 1999; Cressey, 1965; Hirschi, 1965; Matsueda, 1982) definitions with little work being done comparing the two. This lack of focus on the interplay of general/specific definitions leads to gaps in the sociological knowledge of criminal learning. Crime specific studies only examine half of the variables involved in determining crime while general studies of criminal definitions suffer from a lack of detail and specificity concerning the influence that associations between people committing the same types of crime may have. This leads researches to miss information helpful for understanding the effect that definitions have on criminal learning.

Both of these gaps in current knowledge can be mended by research analyzing the interplay between general/specific definitions and cataloging their influence in different

circumstances. This study utilizes a mixed methodology approach that includes both statistical and social network techniques. It also examines data collected on a criminal network by the Richmond Police Department (RPD), which consisted of all known links between offenders known by the police department. The ego-networks were extracted for nodes in the network. By comparing the criminal involvement type of an individual ego to the criminal involvement types of their alters it is possible to analyze who the individual ego is learning definitions from and whether they are more likely to commit similar or dissimilar crimes. The stronger the correlation between the ego's involvement and their alter's involvement the greater the impact of crime specific definitions. This type of analysis will be performed for multiple types of criminal involvement allowing for an assessment of which crimes crime-specific definitions hold a larger impact for criminality. In addition to this analysis, the study will look at the relationship between the centrality of nodes in the network and the commonality of the crime they commit in order to understand the impact that key nodes play in the network in distributing general/specific definitions.

Overall, crime specific definitions were found to dominate the network and a relationship was found between an ego's criminal involvement and the involvement of their alters for each type of crime analyzed. While crime specific definitions dominated each of the criminal types, some crimes were more impacted by crime specific definitions than others. Fraud, drug offenses, violent crime and theft displayed the strongest relationship with weaker relationships being found for vandalism and gang involvement. Reasons for these differences will be explored.

In analyzing key nodes in the network no clear pattern was found which indicated that highly central nodes were involved in common crimes in the network. This means that these nodes are unlikely to be communicating crime specific definitions through the network and may,

instead, be communicating general definitions. This seems to suggest that the learning of definitions may mirror Granovetter's (1973) study on the learning of job opportunities. In other words, different types of information may be communicated through weak ties then through strong ties. In this case, general definitions may pass through nodes not adjacent to egos in the network, represented by central nodes, where crime specific definitions may pass through the members of their ego network.

These findings help in understanding the influence of general/specific definition by offering a view of how for this network learning is occurring. The network under study is dominated by crime specific definitions as a result of criminals' likelihood to enter into relationships with similar criminals. But these findings also indicate that central nodes in the network do not commit common crimes. This means that general definitions are in play in the network, but they are learned in different ways and through different people than crime specific definitions. If similar analysis is performed on other networks, a picture of the influence of general/specific definitions that is generalizable to criminal associations will become possible. Only then can sociology gain an understanding of whether this network's pattern of the dominance of crime specific definitions persists for other networks.

Literature Review

In this section the need to study the interplay between general and specific definitions in differential association will be illustrated. This will be done by first looking at the insightful but vague model for differential association offered by Edwin R. Sutherland (1974). Then the essay will look at various authors who combat Sutherland's (1974) ambiguity by altering his model. This analysis will include Sykes and Matza (1957), Gongaware and Dotter (2005), McCarthy (1996), Burgess and Akers (1966), and Cressey (1955, 1965). All of the above authors contribute to Sutherland's (1974) model either by furthering one of Sutherland's major variables (associations, definitions, and criminal behavior) or by suggesting the processes through which one variable relates to another. The following discussion will illustrate one unspecified aspect of Sutherland's (1974) model which none of the above authors have dealt with: the interplay between crime specific definitions and general attitudes towards crime. The literature review will then illustrate the need for further inquiry into this interplay and the potential problems of leaving this interplay under explored. Finally, the review will discuss the hidden network assumptions inherent in differential association and assesses the current SNA literature on differential association in order to demonstrate the need for a network analysis of general/specific definitions. This will illustrate how the current analysis could add to network research on differential association. The SNA literature largely resembles the greater literature in failing to address the learning of general/specific definitions.

Overview of Differential Association

Differential association theory traces its origins to Sutherland (1974), who first proposed that criminal behavior is learned socially. He suggests that, as we interact with those around us,

that we gain what he calls definitions. These definitions are any type of information which could affect our orientation toward crime and could include anything from concepts, attitudes, and justification to the technical knowledge necessary for committing a crime. As an individual gains these definitions, the balance between favorable and unfavorable definitions towards crime determines the likelihood of criminality. Two aspects of the definitions determine this balance. One is quantitative. The more definitions one holds in favor of crime, the higher the likelihood of criminal behavior. But there is also a qualitative element to definitions. Definitions gained in interactions that occur more frequently, are longer in duration, occur earlier in the socialization process, or involve more trusted sources are likely to hold more weight than others. So in summary, when the learning of definitions favorable toward crime become more powerful than definitions unfavorable, through either the number or weight of definitions, then criminal behavior is more likely to occur.

Drawn out as a causal model, it can be seen that Sutherland's (1974) explanation involves the interplay between three major variables: associations, definitions, and criminal behavior (Figure I). He suggests that an indirect relationship exists between the associations of an individual and their behavior. Criminal behavior is created when associations holding definitions favorable toward crime interact with an individual providing him with these definitions. In this way the criminal's associations impact their definitions. The definitions favorable towards crime once capable of overcoming definitions unfavorable toward crime, then create criminal behavior.

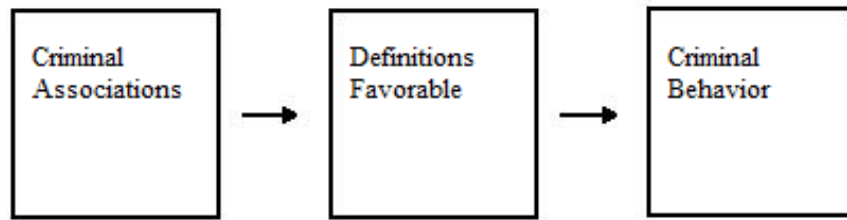


Figure I

Sutherland's (1974) core insight that criminal behavior is learned during interaction by acquiring definitions forms the basis of differential association theory. As will be discussed, his theory has served to inspire a plethora of empirical research but has also been found to be vague and ambiguous (Kubrin, 2009; Matsueda, 1988; Tittle, 1986). As Kubrin (2009) points out, this ambiguity exists at nearly all points in the model, and has been particularly problematic for his concept of definition. This level of ambiguity is partially due to the manner in which Sutherland (1974) chooses to present differential association theory. The basic tenets discussed above were offered in nine bullet points laid out in less than three pages in a criminological textbook written by Sutherland (appendix A). This lack of specificity remains a major challenge for differential association theory.

Current Work on Differential Association

In an effort to clarify differential association's basic model, researchers writing after Sutherland (1974) have purposed a variety of adaptations and specifications, involving alterations to most of the variables described by Sutherland (1974), as well as suggestions on how his variables might interact (Figure II). Major efforts to alter or specify Sutherland's original model are seen in the following points:

- 1) Criminal associations
- 2) The learning that occurs between associations and definitions
- 3) Definitions favorable
- 4) Cognitive elements intervening at the point between criminal association and criminal behavior

In the following discussion, alterations made by authors at each of these points in Sutherland's model will be discussed (Figure II).

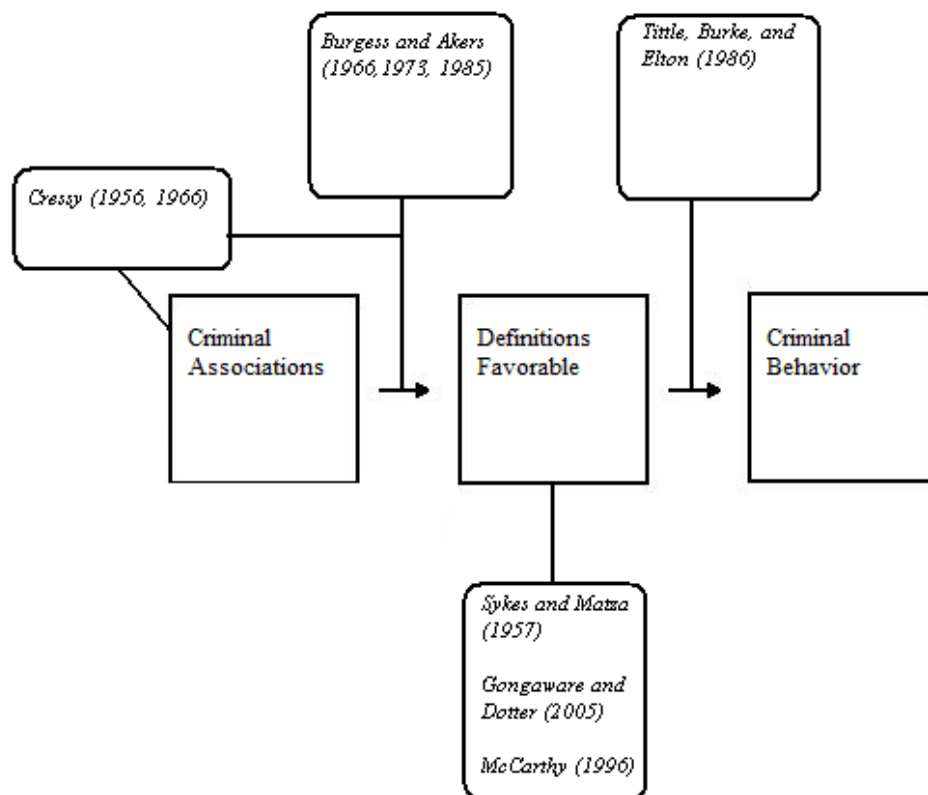


Figure II

Probably the most substantial work done to reduce ambiguity has been done on Sutherland's (1974) variable of definitions (Gongaware, 2005; McCarthy, 1996; Sykes, 1957). One example of this is Sykes and Matza's (1957) work on techniques of neutralization. Based on an observation that criminals' moral standards reflect that of the greater society, Sykes and Matza (1957) discuss the impact which learned excuses and justifications have on allowing for criminal behavior. They argue that criminals must learn ways to circumstantially excuse their behavior, which they themselves disagree with. This involves the learning of excuses and justifications that allow criminals to both commit crimes and preserve a positive concept of self. These observations attempt to further specify the type of definitions criminals learn which influence their behavior.

Other important work on definitions include Gongaware and Dotter (2005) who draw on other symbolic interactionists to help argue that definitions favorable to crime are not simply learned but are used to create a "criminal self". Thus, through definitions, offenders learn their roles as criminals as well as roles played by other criminals and victims. Using Mead's (1934) concept of role taking, the researchers suggest that criminals are capable of learning the rules that govern criminal interactions. They learn what behaviors are expected from their roles and learn to accurately predict the responses they call out in others. Similar arguments are made by Church, Wharton, and Taylor (2008) who suggest that the relationship between criminal association and criminal behavior is filtered through an individual's self-image. McCarthy (1996) also attempts to clarify Sutherland's (1974) model by suggesting the influence of a specific types of definitions. He emphasizes the role of technical definitions rather than attitudes or motives. He further argues that modern differential association theorists focus too heavily on symbolic definitions and ignore the influence of technical knowhow. This leads researchers to

narrowly consider the more psychological aspects of Sutherland's (1974) theory while ignoring the more powerful social elements. In addition to clarifying the concept of definitions, McCarthy (1996) also suggests emphasizing a particular type of association, that of tutelage. He argues that the most important definitions for criminal behavior are learned in a type of criminal mentorship where seasoned criminals relay their expertise to future criminals.

Burgess and Akers (1966) and Akers (1973, 1985) formation of social learning theory can be seen as an attempt to clarify Sutherland's (1974) model of learning as well, since social learning theory deals with how information passes from associations to individual criminals. Social learning theory attempts to explore how definitions are learned by imputing operant conditioning into Sutherland's (1974) model. As behaviors are committed offender's associates, criminal or non-criminal, offer various rewards and punishments for the offenders' behavior. If the rewards given, both by associations as well as those of the crime itself, outweigh the punishments the behavior is likely to persist. Akers (1998) also suggests that imitation is an important mechanism for criminal learning. Through observation of associates and the rewards or punishments they receive for their actions criminals can learn to imitate their behavior to receive similar rewards or avoid similar punishments. Despite the fact that Burgess and Akers (1966, 1973, 1985) major concern is to turn Sutherland (1974) into behaviorism, they create major alterations to the causal model at the point between associations and definitions. These alterations also consist of a specification on how criminals learn at this point of Sutherland's (1974) model. Therefore, Burgess and Akers' (1966, 1973, 1985) project works to reduce Sutherland's ambiguity as well as offer a behaviorist reading of differential association.

Cressey's (1955, 1965) work creating a differential association theory of rehabilitation further specifies the manner in which definitions are learned from associations. Cressey (1955,

1965) argues that the focus on psychology and counseling has lead rehabilitation to be ineffective. This is because trained psychologists cannot spend adequate time interacting with criminals to create enough anti-criminal definitions to reduce criminal behavior. Instead Cressey (1955, 1965) argues that other individuals, in fact any available individuals who could honestly provide anti-criminal definitions, should be sent to interact with criminals if rehabilitation is to be effective. In this discussion Cressey (1955, 1965) puts an emphasis on verbal interaction as communicating definitions and suggest other means, particularly those suggested by behaviorism, are ineffective. Cressey's (1965) work further specifies Sutherland's (1974) concept of priority as well. While outlining a rehabilitation plan, Cressey (1965) suggests that rehabilitated criminals would be best suited to convey anti-criminal definitions since they understand the definitions possessed by inmates. He also suggests they would have authority having gone through the process themselves. This would give the definitions they offer priority and therefore carry more weight. Here Cressey (1965) seems to suggest that priority for definitions is gained in two ways; either through the speakers authority or through their ability to connect with an individual or group.

Tittle, Burke, and Elton (1986) attempt to further specify the relationship between variables in Sutherland's (1974) model by using path analysis and alter Sutherland's model to include what they call cognitive elements. Where for Sutherland (1974) definitions act directly to create behavior, this research suggests that the definitions are then mediated through mental processes which then result in criminal behavior. These processes include the criminal's fear of arrest, perception of crime, tolerance of criminal behavior, and motive. Further, all of these elements also have an indirect relationship with criminal behavior except for motive. Much in the same way that Burgess and Akers (1966) and Akers (1973, 1998) further specify the step

between association and definitions, Tittle et al. (1986) specify the step between definitions and behavior. They argue that this step involves several cognitive processes which result in the creation of a motivational structure allowing for criminal behavior.

Despite the work done to the causal model of Sutherland (1974), ambiguity still remains. The precise relationship between variables and a thorough understanding of the variables themselves continue to elude differential association. In particular, definitions favorable toward crime continue to be among the most difficult to precisely define and test (Kubrin, 2009). In Sutherland's (1974) model any attitude, idea, or technique which would allow for the committing of criminal offences could constitute a definition favorable towards crime. He does not illustrate which types and forms of information are likely to make up a definition. He does not specify the types of definitions likely to have a greater impact on criminal behavior. This ambiguity is likely the reason why this variable continues to be unspecified. Further research is still needed to understand how the content of criminal definitions affects criminality.

One aspect of definitions favorable toward crime that has not been thoroughly explored is degree to which individuals' criminal definitions are composed of definitions favorable toward crime in general or definitions favorable toward a specific crime. This attribute of criminal definitions is also ambiguous in Sutherland's (1974) original discussion of differential association. Sutherland's (1974) statements concerning the principle of differential association, point six in his nine point outline, states that "a person becomes a criminal because of an access of definitions favorable to violation of law over definitions unfavorable to violation of law" (p. 75-78) This could be read either to mean violation of a specific law or violation of law in general. The text surrounding this principle further indicates that Sutherland (1974) does, in fact, mean both. Sutherland (1974) clearly states in point five that what determines criminal behavior

is the degree to which individuals are surrounded by people who view legal codes as something to be observed or people who view legal codes as something not to be observed. This statement clearly indicates that general definitions favorable toward crime impact criminal behavior. But, in point four, Sutherland (1974) clearly indicates that the learning of crime includes sometimes learning complicated techniques and specific motives, drives, rationalizations, and attitudes (appendix I). Thus, in Sutherland's (1974) original model, he gives little indication of the relationship between general/specific definitions of crime or the interplay of those differing types of definitions.

Authors seeking to clarify Sutherland (1974) offer little aid in presenting a cohesive image of general/specific definitions and, for the most part, do not discuss this directly. Indirectly many present models focus on either general or specific. Examples of crime specific authors include Sykes and Matza (1957), Burgess and Akers (1966), and McCarthy (1996). The clearest of these is Sykes and Matza's (1957) model. Sykes and Matza (1957) are concerned primarily with excuses and justifications learned by criminals which allow for their criminal behavior. These excuses and justifications are tailored to the specific crimes the individual commits and allows their behavior in a particular circumstance. This means that the excuses and justifications learned are not likely to be applicable to circumstances or crimes which differ from those committed by individual offenders. The importance of specific definitions over general can also be seen in the lack of impact that general morals or attitudes toward the legal system have in their model. This is because, according to Sykes and Matza (1957), criminals possess similar outlooks on morality and the legal system as the larger society. This is what makes it necessary to learn excuses and justifications to preserve a concept of self. Similar to Sykes and Matza (1957), McCarthy (1996) offers a model which places greater weight on crime specific

definitions. This is due to his emphasis on technique over other types of definitions. By downgrading the values and attitudes of criminals, McCarthy (1996) places greater weight on criminals learning of how a crime is committed. This information is likely to be catered to the committing of the specific criminal behavior an offender engages in and is unlikely to be generalizable to other types of crime.

Gongaware and Dotter (2005) and Cressey (1965) create models which seem to preference the importance of general definitions towards crime rather than crime specific definitions. This can be seen in Gongaware and Dotter's (2005) focus on the creation of a criminal self. They are concerned with how an individual internalizes definitions to learn the role of a criminal. It appears that they are interested in how criminals learn to view themselves as a "criminal". In other words, they are less concerned with how a car thief learns to view themselves as a car thief and learn to play this role then they are with the learning of a "criminal" identity in general. This seems to indicate that it is the criminal's relationship to the legal system and others, as a result of their role as the committer of crime, that matters rather than their role as the committer of a specific crime. Cressey (1965) also appears to be concerned with the learning of a general disposition about crime. This can be seen in his suggestions for the supply of anti-criminal definitions. Cressey (1965) specifies that anyone can offer such definitions. In doing so, he does not indicate that associations would have to possess any knowledge of the particular crime committed by the criminal. Only that they disagree with the committing of crime matters. A similar focus can also be seen in his suggestion of using reformed criminals to provide definitions. Cressey (1965) only suggests the potential aid of reformed criminals. He does not indicate if the type of crime the reformed criminal commits matters or if they need to provide anti-criminal definitions matching the crime committed by the inmates with whom they interact.

Other adaptations do not appear to specify general or specific definitions at all. This is particularly true of models which specify other areas of Sutherland's (1974) model. Tittle et al (1986), for example, focuses on the step in between definitions and criminal behavior, in which crime is fed through a motivational structure. It appears that the type of definition matters little and has little impact on how it is fed through this structure. Likewise, it would be difficult to indicate what type of definitions would be more impactful in Burgess and Aker's (1966) model. This is because they focus on the intermediate step between association and definitions when they specify the importance of operant conditioning. Whether this conditioning would create definitions concerning one type of crime or crime in general is difficult to ascertain. The reward and punishment could be viewed by the offender either way. For example, if someone is caught shoplifting and their associations punish them, they may be conditioned not to shoplift or not to commit crime in general. In this way, it does not appear that this model specifies a relationship between general/specific or places weight on either type of definition.

As can be seen, ambiguity haunts differential association. This ambiguity began at its genesis, with the vague model outlined by Sutherland (1973). Despite the adapting and editing of differential association's original theoretical model by various authors the model still needs specification. Included in this is the relationship and influence of general/specific definitions. As has been displayed above, work clarifying Sutherland's model has not helped reduce the ambiguity of general/specific definitions. None have attacked the question directly and most have implied a greater influence of one over the other. This section, therefore, illustrates that if the relationship between general/specific definitions is to be understood, then further research needs to be done to tease out this relationship. The next section will illustrate why the

relationship between general/specific definitions needs to be understood and the impact a lack of knowledge of this relationship has on the empirical study of criminal learning.

The Need to Study the Interplay of General/Specific

When surveying the literature about general/specific definitions, one finds an interesting lack of empirical research. In fact, practically no work has been done to tease out or specify when and for what type of crimes general or specific definitions are influencing criminal behavior. This lack of focus possibly exists from deficient interest or awareness of the importance of this topic. The following section will illustrate a few reasons why this area of Sutherland's (1974) model is an important topic of study. The first reason is that many studies in differential association have analyzed the influence of participants' associations for a particular crime to test the validity of differential association as a whole. These studies, without a proper understanding of the interplay between general and specific definitions, may have unseen problems as a result of their inability to account for the influence of general definitions. The second reason is that studying both specific/general definitions offers a more nuanced image of criminal learning than the study of general definitions alone, which are less susceptible to the problems outlined for crime specific studies. The third reason is that, without being studied, research into differential association closes itself off from patterns of learning that could offer further insight into the nature of criminal definitions.

The first reason for this study then is that researchers' failure to examine this part of Sutherland's (1974) model creates a blind spot that may generate false conclusions in crime specific studies. Without a thorough understanding of general/specific definitions many empirical results in differential association may rest on faulty understanding of their participants

learning. Studies attempting to test differential association by only looking at specific definitions are especially vulnerable to this problem. Bauman and Ennett (1996) can serve as an example of this vulnerability. This article attempts to test the validity of differential association by performing a multivariate analysis comparing the drug use of participants to the drug use of their peers, controlling for the influence of peer selection. This particular study finds that when peer selection is controlled the correlation between participants' drug use and their peers' drug use ceases to be significant. Thus the study claims that differential association is not supported as a proper explanation of adolescents' drug use. The problem this article runs into is that even if no relationship is found between the drug use of participants and the drug use of their peers, the study cannot rule out the possible influence of learning general definitions of crime. If general definitions of crime are being learned by the participants, then this behavior could be learned from any type of criminal association participants possess. The justification for breaking the law could have been learned from someone committing theft, assaults, or robberies. For this particular example, general definitions could have also been learned from other deviant, but not necessarily criminal, associations. A general definition for substance abuse may have been learned from alcoholics for instance. Regardless of the source, the lesson is the same. Not taking into consideration the learning of general definitions can lead researchers to come to conclusions that may not be supported if both general and specific definitions were taken into consideration. By focusing on one type of crime we limit ourselves to seeing only one piece of the definitions learned by participants and, therefore, cannot fully test differential association.

The above study is just one example. Many, if not most, articles examining differential association take a similar approach to the above study (Deng, 1998; Jackson, 1983; Kandel, 1991; Kissner, 2009; McCarthy, 1996; Przemieniecki, 2005; Weerman, 2007). That is, they

compare the deviance of a participant to the deviance of their associations for a particular type of crime. The prevalence of this type of research can be seen in the plethora of empirical articles on differential association which look at the ability of associates' criminal involvement to predict a participant's involvement. Such examinations have been done on a variety of crimes and acts of deviance ranging from gang activity, alcoholism, drug use, credit card fraud, and shoplifting (Deng, 1998; Jackson, 1983; Kandel, 1991; Kissner, 2009; McCarthy, 1996; Przemieniecki, 2005; Weerman, 2007).

Further research into general/specific definitions could give insight into the nature of criminal learning which would fill a void in the study of crime specific definitions. If more research is done discovering that crime specific definitions are the primary determinate of offenders' criminality in most circumstances, then such claims about differential association could be stated with greater certainty. But, until such research is done, crime specific research rests upon an assumption that is not supported by differential association theoretically and has not thoroughly been examined empirically. In other words, further research into the interplay between general and specific definitions is necessary if the larger claims of many empirical articles into crime specific definitions can be made with certainty.

While less common, some articles choose to focus on general definitions of crime. These articles, instead of focusing on a particular crime, look at the predictive value general criminalities of a participant's associations have on that participant's own criminality (Church, 2008; Costello, 1999; Cressey, 1965; Hirschi, 1965; Matsueda, 1982). Because authors studying general definitions of crime take into consideration all of the offenders' criminal involvements and all the criminal involvements of their associations, they are not plagued by the same issues as the studies of crime specific definitions. Put more plainly, those studying general definitions

of crime study the larger picture. They take all criminal involvement into consideration. If offenders learn these definitions from individual's committing the same crime, the criminal association offering these definitions would still be measured by their test. If the definition is learned from criminal's committing different crimes, this is measured in their test as well. Therefore, while crime specific studies run the risk of failing to measure the influence of offenders' associations who commit different crimes, general crime studies will measure all criminality. This means that overall studies into the general definitions of crime are more sound as tests of differential association.

An example of work focusing on general definitions can be seen in the infamous empirical debate between social control and differential association theorists using the Richmond Youth Project Data; the controversy originally sprung from Hirschi (1965) reexamining a dataset used by Sykes and Matza (1957), only to have that dataset subsequently re-analyzed by Matsueda (1982) and Costello (1999). To show an example of this work, this essay will take Costello's (1999) analysis focusing on how she measures the delinquency of the participants and the delinquency of their peers will be described. It should also be noted that Matsueda (1982) uses identical measures for both of these items despite the fact that Matsueda finds support for differential association and Costello (1999) does not. The criminal involvement of peers is measured by a survey question asking participants the number of their peers who had been picked up by police. The criminal involvement of participants is measured by their involvement in six different types of delinquency, which are then transformed into a dichotomous variable measuring criminal incidents. From this example it can be seen why such studies are a strong test of the influence of definitions, as a whole, despite their only taking into consideration criminality in general. If the participant was involved in thefts and their peers were picked up for battery, the

test would include this relationship. If the participant had committed theft and their peer had been arrested for theft, the relationship would also be tested. In this way it can be seen why studies of general criminal definitions are, indeed, better tests of differential association.

However, the study of general definitions of crime does have its drawbacks. A particular difficulty is an inability to provide detailed information about criminal learning. The study of general definitions provides a veneer analysis of the type of associations participants learn their criminal behavior from but misses the nuance of the learning that occurs. The study of general definitions is useful in testing if associations are impacting individual participant's criminality but they will also miss details about how or from whom this learning is occurring. It also struggles to provide a nuanced understanding of the impact the type of criminality possessed by associations has on the nature of offenders learning. In other words, the studies gain the confidence that they take into consideration all criminality from taking a larger view of criminal involvement. But, this distinct view can also obscure them from a detailed description of participants associations'. This leads to the second reason why the relationship between general/specific definitions needs to be studied. The study of general definitions alone also leaves a large gap in the sociological understanding of criminal behavior. This gap needs to be filled by assessing the impact of both types of definitions simultaneously.

Before moving on, it is important to note that not all studies of crime infer definitions from the criminality of its subjects. These variables were focused on because of their general use. Some studies also include measures of definitions through questions concerning attitudes and beliefs. The examples studies Costello (1999) and Matsueda (1982) included such measures¹.

¹ Definitions are measured by questions about beliefs towards law and policing.

These measures, like their measures for criminal involvement, were for crime in general. While the example from Bauman and Ennett (1996) did not include any direct measures of definitions, crime specific studies do sometimes include direct measures. Deng (1998) would serve as a prime example of a crime specific study which directly studies criminal definitions. In this study Deng (1998) compares the alcohol use of respondents to that of their peers but also tests their perceptions of alcohol and how it affects them. This study crime specific since it only takes into consideration friends' *alcohol* use and perceptions, excluding other forms of deviance. Even though some studies analyze definitions by measuring them directly and others by inferring them through the criminality of participants associations, the above generalizations about general and specific should still hold. This is because studies still have a tendency to focus either on involvement in general (Church, 2008; Costello, 1999; Cressey, 1965; Hirschi, 1965; Matsueda, 1982) or involvement for a specific type of criminal behavior (Bauman, 1996; Deng, 1998; Jackson, 1983; Kandel, 1991; Kissner, 2009; McCarthy, 1996; Przemieniecki, 2005; Weerman, 2007), but do not analyze both simultaneously or the interplay between them.

The final reason for researching general/specific definitions is that such research will offer insight into how the learning of criminal behavior differs from one situation to another. In Sutherland's (1974) model the major determinate of criminal behavior is the amount of definitions favorable towards crime an individual holds. Also in his model there is the possibility of learning definitions favorable for crime that are general or specific (Sutherland, 1974; Sutherland, 1937). The type of definitions being learned could differ by the type of crime being committed, the type of networks in which information travels, and where in geographic and social space the offender resides. Without specific inquiry into the interplay of general/specific definitions the variations will never be known. If differential association is correct that learning

definitions is the main factor determining criminality, then closing ourselves off from the patterns behind any of Sutherland's (1974) types of definitions (general/specific, cognitive elements/techniques, ect.) is also closing ourselves off from a wealth of information about the nature of criminal learning. With the growth of techniques, both statistical and network, at researchers' fingertips, sociology is capable of asking new questions about the learning of criminal definitions. For all these reasons, it becomes necessary to develop and implement empirical testing concerning the role learning general/specific definitions favorable towards crime has on criminal behavior.

Network Analysis and Differential Association

Embedded in differential association is the assumption that all behavior is effected by the transmission of criminal definitions through networks. This is because differential association views the differing access to definitions as influencing criminal behavior. What is responsible for these differing accesses is who people are connected to and the distribution of definitions favorable/unfavorable to crime that these associations offer. In this way, the study of networks surrounding criminals is the study of differential association.

Network analysis is already well acquainted with studying differential association in a variety of ways. For that reason the current study will and must demonstrate how this network study of general/specific definitions differs, and is similar to, prior network studies. For the most part the current study will differ topically from current SNA literature studying differential association which resembles the greater literature outlined above. SNA studies have followed a similar pattern of other studies is in a lack of focus on the interaction of general /specific definitions. While SNA and the greater differential association research both fail to study

general/specific definitions simultaneously, the distribution of the type of definitions studied differs greatly. While the greater literature has focused on crime specific definitions (Bauman, 1996; Deng, 1998; Jackson, 1983; Kandel, 1991; Kissner, 2009; McCarthy, 1996; Przemieniecki, 2005; Weerman, 2007), the SNA literature has primarily focused on general definitions (Baerveldt, 2008; Haynie, 2001; Haynie, 2002; Haynie, 2005; Haynie, 2006; McGloin; 2009; Weerman; 2007). An example of this type of work can be seen in Baerveldt and Van Rossem (2008). Like the above examples from the greater literature, Baerveldt and Van Rossem (2008) also construct their measure of delinquency to measure general definitions, while losing the nuanced differences of learning that may occur through crime specific definitions. Beginning with a list of twenty-three offences, the authors create an index score measuring delinquency. This measure is then used for both the delinquency of the participants and their peers. This reduction of different types of criminality into one measure of criminality, coupled with a failure to test crime specific definitions, mirrors other literature of general criminality described above. Most SNA measures of delinquency are conducted in a similar manner as this study (Haynie, 2001; Haynie, 2002; Haynie, 2005; Haynie, 2006; McGloin; 2009; Weerman; 2007).

These basic similarities illustrate that the current study will be just as conceptually dissimilar from the SNA research as it is from the larger differential association literature. With this said, the use of SNA has progressed the study of differential association in a variety of ways. The current study will both attempts to build upon these improvements as well as draw inspiration from them. The first improvements made by the SNA literature are methodological. This improvement is noted by Haynie (2001, 2002, 2005, 2006) in her work utilizing the Add Health dataset. In this work a survey question asking respondents to report friends was used to construct a comparison of participant's actual associations. This approach is a marked

improvement to the standard approach used by statistical research. Statistical studies normally measure the criminality of associations through questions asking participants perceptions of their associate's criminality. Such measures are filled with inaccuracy due to the false reporting and poor recollection of participants. Such errors are greatly reduced through SNA techniques which allow the criminality of a participant and the criminality of their associations to be measured directly (Baerveldt, 2008; Haynie, 2001; Haynie, 2005; Haynie, 2006). Most SNA studies of differential association use a similar technique to Haynie's (Haynie, 2001; Haynie, 2002; Haynie, 2005; Haynie, 2006; McGloin; 2009; Weerman; 2007). The current study will utilize this technique and thus achieve the same advantages as the previous studies.

The second major way SNA improves the study of differential association is through the use of theoretical concepts to enrich sociological understanding of criminal learning. A variety of concepts have been used in this manner. Haynie and Payne (2006) analyze the way the social capital of participants and their associates affect the learning of deviance in a network. They find that the lower the social capital of the participant and the higher the social capital of criminal associations the greater the chance of participant criminality. Patacchini and Zenou's (2007) study is another example of conceptual advancement. They borrow on Granovetter (1973) to illustrate how criminal learning is effected by the strength of ties. They find that, similar to information learned about job opportunities, criminal learning occurs primarily through weak ties. These ties can provide new information to the respondent when strong ties, who's knowledge sets are similar to the respondent, cannot.

The current study will attempt something similar to the above articles. This research will attempt to use SNA as a tool to learn how, not if, criminal learning is occurring. The above studies ask questions of how the network structure is affecting the learning that occurs. The

current study will attempt this by analyzing the influence of key individuals in the network on the flow of general/specific definitions in the network. While this inquiry will give insight into the patterns of learning in the network being analyzed, they will be a supplementary aspect of the study. The main focus of the study is Sutherland's (1974) unspecified mechanism of general/specific definitions. Even though the aforementioned studies have drawn concepts from SNA theory and the current study will draw concepts from Sutherland (1974), the end goal of both is the same. The study seeks to show how learning occurs in a network through the use of SNA.

In summary, the current literature involving both differential association in general and SNA specially will relate to this study in two ways. The first is that the above analysis of the greater literature of differential association also holds true for the SNA literature on differential association. The mechanism of general/specific is as much unexplored with SNA as it is in the greater literature of differential association. However, the literature also relates to the current project in a positive way. The current study will continue in the footsteps of SNA's analysis of the differential association process by asking unique questions and analyzing them in novel ways. This is seen by the work of both Haynie (2001, 2002, 2005, 2006) and Patacchini and Zenou (2007). As a result of these studies, the current study assumes confidence that this technique can aid in the discovery of the patterns of criminal learning and, therefore, can aid in recognizing patterns in the learning of general/specific definitions. The next section will explore the study of general/specific definition's need to take into account network structure and its impact on criminal behavior.

Network Structure and General/Specific Definitions

In studying general/specific definitions it is important to take into consideration the influence of network structure of an individual's impact on the learning of definitions occurring in the network. A similar argument can be made for the acknowledgement of network structure as Matsueda's (1988) argument for the acknowledgment of social structure. He argues that societal structure acts to replicate patterns of an individual's access to definitions over time. In other words, social structure creates patterns of criminality, but it does so through its impact on the distribution of definitions favorable towards crime. Similarly, network structure creates patterns of definitions because it also impacts which definitions are accessible to individuals.

It is likely that network structure affects the flow of definitions in the same manner as it affects the flow of other kinds of information and resources. This influence of network structure has been well documented in literature discussing networks and social capital. This research shows how access to influential individuals controls the information and resources to which an individual or community has access (Degenne, 2004; Nan Lin, 2001; Portes, 1998; Portes, 2002). Similarly, access to individuals holding definitions, whether criminal or noncriminal, will control an individual's access to those definitions and, therefore, control the definitions they are likely to learn. In this way network structure is likely to have a profound effect on the differential association process. In the same way that definitions, in general, are effected by network structure, the distribution of general/specific definitions is likely to be impacted by network structure. Therefore, it is necessary for this study to take into account this structure when analyzing the interplay of general/specific definitions

Nothing is better documented in network structure than the importance of network position in determining the impact of a single node. This phenomenon was observed early on by Grannovetter (1973) who shows the influence that position in a network has in providing information about jobs. In particular, he shows individuals weakly tied to a network possess different information and, thus, provide information about previously unknown job opportunities. In addition to the importance of weak ties, a variety of literature has demonstrated that individuals in privileged positions in the network have a greater impact on the overall network. This can be seen in Burt's (1992) analysis of the greater control of individuals who fill a gap between portions of a network with resources and those with needs. It can also be seen in the ability of a handful of nodes in a network, known as hubs, to dominate the links throughout a network and, therefore, disseminate information throughout a network (Barabasi, 2002). It can also be seen in the research on the impact which the centrality of nodes, how central they are in the network, has on both the attributes of the individual and their impact on the surrounding network (Degenne, 2004; Schreck, 2004; Wasserman, 1994).

The importance of key nodes on the impact of network structure is also well documented in criminal networks. No where can this be seen more clearly than in studies discussing the destabilization of criminal networks. Such work suggests that, if enough individuals occupying privileged positions in a network are removed, communication and the collection of resources in a network will become so difficult that the criminal network will destabilize and collapse (Carley, 2002; Davis, 1981; Klerks, 2002; Krebs, 2002; Van Meter, 2002). Such work displays the impact which a nodes position in the network has on its ability to control information within the network.

Research on network positions in general and network position in criminal networks in particular indicate it is likely that individuals with key positions in the network affect the flow of criminal definitions. These key individuals are also likely to do so in a similar manner to how they affect the flow of other types of information and resources. For this reason, the influence of individuals at privileged points in the network needs to be examined. Their influence over the network insures that the information they provide is likely to reach further into the network, be more common, and thus have a greater impact over the criminal behavior of individual criminality throughout the network. In other words, key nodes in the network need to be analyzed in the context of differential association because of the impact they are likely to have on the flow and distribution of definitions. Similarly, the flow of general/specific definitions is likely to be influenced in some way by key nodes in the network and, therefore, must be analyzed to fully understand this phenomenon.

Summary of the literature

Differential association has suffered from an air of ambiguity since its formation. This problem is the direct result of Sutherland's (1974) outline of the model which is both short and vague. In response to this, a variety of authors have offered alternative and adaptive models which seek to bring clarity to differential association. Despite these efforts, vagueness and ambiguity persist. One source of ambiguity is the influence of general/specific definitions. Neither the alternative models of differential association nor empirical research has brought much insight into the influence and interplay of general/specific definitions. This is largely due to authors focusing on either general or specific definitions rather than assessing both. This leads to possible testing problems and a lack of detail which has not been beneficial for studies of

differential association. Therefore the influence of general/specific definitions must be studied and understood.

Due to hidden assumptions about network structure embedded in differential association, a study of general/specific definitions could benefit from a network approach. Particularly, this approach will need to account for the influence of key individuals in the networks and their impact on the distribution of definitions. Current SNA work on differential association resembles the larger literature for general/specific definitions, focusing on either general or specific but not examining both simultaneously. Despite this, the imputation of network concepts and procedure into differential association has proven fruitful in prior literature and indicates that this study will benefit from a similar incorporation of network concepts, which it will do with the analysis of key nodes in the network structure.

Hypotheses

To begin exploring general/ specific definitions this project will ask one basic question: Are the types of crimes in which a person is involved related to the types of crimes in which his/her associates are involved? This question will provide insight into the criminal learning of individuals. If their associations are involved in similar crimes, it is likely that they learn crime specific definitions. If the crimes are dissimilar, then general definitions are more likely. Also, as stated above, assumptions about networks are inherent in differential association. For this reason, this project will also explore how individuals occupy important positions in the network affect the flow of information. To answer these questions the following research questions and hypotheses are formed.

1. Are the types of crimes in which a person is involved related to the types of crimes in which that person's associates are involved?

H1: The types of crimes in which an individual is involved tend to be the types of crimes in which that individual's associates are involved.

2. Are more influential individuals in a network involved with more common types of crimes?

H2a: More influential individuals in a network are more likely to be involved with more common types of crimes.

H2b: If the null hypothesis for H1 is not rejected, no relationship will exist between the influence of individuals in the network and the commonality of the crime they commit.

Methodology

To accomplish the research goals outlined above a mixed-methods study utilizing statistical and social network analysis has been constructed. The study will begin with a single criminal network from which the ego-networks of individual members will be created. These ego-networks will be the primary object of analysis. SNA analysis of these ego-networks will allow an understanding of both: 1) the types of criminal relationships in which the ego has been involved and 2) the types of crime in which ego's alters, those with whom the ego is connected, have been found to be involved. Through analyzing this network data it is possible to compare the criminality of the ego to the criminality of ego's alters.

Data

This study utilizes a unique network dataset created by the Richmond Police Department (RPD), which will be referred to in the remainder of the paper as the RPD Network. The dataset was formed out of the RPD's records management system (PISTOL) which included a bank of all observed relationships collected by the RPD during the course of normal police work between 2003 and 2008. In a case study in 2008 the RPD network was extracted from PISTOL to explain recent violent behavior between two groups of young males which were previously friendly. Twenty four names were selected as seed nodes, based upon known participation in violent altercations between these group. A snowball sample was then collected from these twenty four nodes. Nodes were selected up to four steps out from the seed nodes with a network created at each step. The current study uses the three-step network, which was the most robust out of those sampled. This network consists of 10,397 links between 3,182 nodes in the database, most of which are not adjacent to the original twenty four nodes. Nodes in the network ranged between

ages 9 and 96. The nodes gender distribution consist of 1,284 females and 1, 867 males. All nodes in the dataset were African Americans. The dataset created from this network consists of rows of data describing the tie between two nodes. Each row consist of several attributes including two ID numbers (source ID and Target ID) of the nodes involved, the type of criminal relationship (INVDESC), the roles of the two nodes, and flavor of the tie (affinial, adversarial, neutral). These relational attributes will be discussed in greater detail in the data manipulation section below.

Data Manipulations

The dataset was manipulated in a variety of ways to test hypotheses. First a considerable amount of “noise” in the network needed to be removed to lessen the impact of the redundancy of ties. To accomplish this, the main component was extracted, a two core was taken of the main component, and the neutral ties were removed. The removal of the main component extracted all ties that were only connected by one node or were not connected to the larger network. In addition a two core was extracted. In two core extraction all nodes which were not connected to at least two other nodes in the network were removed from the network. This procedure reduced the impact of nodes connected to only one node on the study’s findings. These nodes could possible inflate the correlations, as a result of their lone ego constituting 100% of their ego network. Neutral ties were also removed from the dataset. Ties in the dataset were coded as affinial (N=4,273) indicating the nodes possessed complimentary role in the criminal relationship (such as both victims, a victim and a complainant, both offenders, ect...); adversarial (N=1,090), indicating that the ties had opposing roles in the criminal relationship; or neutral (N=5134) which indicated that connected nodes were parent/guardian of juveniles, other juvenile relatives, as well as individuals known by police to have been in the same location at any given time. As a result

of the content of these ties they provided little information about the learning of criminal definitions and were removed. After the removal of the main component and neutral ties, the dataset consisted of 2,713 ties between 1,388 nodes. The relational data were then converted into a format appropriate for an analysis of ego networks. The variable indicating the tie's criminal relationship type (INVDESC) was recorded into a testable, and theoretically sound, number of categories. The original INVDESC was entered by the RPD without a set coding scheme, resulting in hundreds of criminal relationship types. The recoded categories included the following: violent crimes, theft/ larceny, fraud, vandalism, drug offences, gang activity, and other. During the recoding process some relationship types were removed since they were not theoretically relevant to the argument including shared locations, arrest numbers, natural deaths, and car accidents. While such relationships appear in the police data file, they cannot be considered types of criminal relationships. A data file containing all network ties between nodes was merged into a data file containing identification numbers of all nodes, so that each row displayed one ego connection to one of ego's alters, along with the involvement description for that connection. Each ego used one or more rows of data. The file was aggregated by ego identification number to calculate a variable measuring the percent of ego's alters who were involved in each of the criminal relationship categories. Using the same procedure, the network connections of ego's alters was derived. The final data set displayed one row for each ego, the percentage of ego's alters who were involved in all of the relationship categories, the average percentage of the alters' network connections who were involved in all of the relationship categories, and network measures assessing ego's placement in the network. For example, for ego 7255, 18.2% of ego's alters had drug involvements and 81.8% had violence involvements, with the remaining relationship categories at 0%. Carrying the network out one step further for

ego 7255, an average of 19.6% of 7255's alter's network connections had drug involvements, 0.2% fraud involvements, 61.5% violence involvements, 11.4% gang activity, 7.3% some other involvement type, with the remaining relationship categories at 0%.

This approach is a novel method to statistically comparing ego-networks. Past studies have often opted for greater control over the responses they received to increase the accuracy of their statistical models (Grippa, F., 2009; Lubbers, M. J., 2010; Luken, V.M , 2010; Tindal, D. B., 2004; Zakour, M. J., 2008). This methodology normally consists of a simple random sample of subjects from a specific social group who are administered a survey instrument. The instrument contains a variety of questions about the respondent's attributes. Then the respondent is asked to list a given number of people they are associated with and provide similar descriptions of the self-reported members of their ego-network. From the information provided by respondents in the questionnaire, researchers can then compare respondents to the members of their self-reported ego-network. The current analysis instead uses a complete network and extracts the ego-networks of nodes from an overall network. This process decreases the accuracy of statistical models but is based upon real relationships possessed by the ego and less susceptible to respondents' reporting error.

Measures

Involvement Measures: *Individual Involvement* for each of the criminal relationship types (violent crime, theft/larceny, fraud, vandalism, drug offences, gang activity, and other) is measured by the percent of the ego's ties for each type in the node's ego network. *Association's Involvement* is measured by the average percent of ties for each criminal relationship type

(violent crime, theft/larceny, fraud, vandalism, drug offences, gang activity, and other) possessed by the alters in the ego's ego network.

Other Measures: Individual Influence: The influence of individual nodes will be indicated by measures of nodal centrality. Nodal centrality measures are mathematical indicators of an individual node's importance in the network which focus on the extent to which a node is involved in the network. There are several types of nodal centrality and two measures being utilized here. The first is closeness which measures how close the node is to all other actors in the network. This is measured through an algorithm which measures the geodesic length of the node to all other nodes in the network. Essentially, this measure indicates the reach of a given node in the network. A node with a higher closeness has to travel shorter distance to provide or receive information in a network due to the shorter social distances between it and other nodes in the network. The second measure is betweenness, which measures the extent to which the node falls between unconnected nodes in the network. This measure is derived from a mathematical formula, designed by Freeman (1977), which creates a standardized number indicating the extent to which a given node falls on the shortest geodesic path between two other nodes in the network. In other words, it indicates the extent information must travel through the node to reach another part of the network. Degree centrality was not selected for analysis. Since degree measures the amount of nodal activity in the network, high degree nodes would automatically be more active in more common crimes than in less common crimes simply as a result of the large number of criminal relationships possessed by high degree nodes.

Other Measures: Commonality of Criminal Relationship: In the process of calculating the aggregated dataset a separate variable was created for each criminal relationship type for the network database after the extraction of the main component and neutral ties. For each tie in the

database a dichotomous variable (0= No 1= Yes) was created for each criminal relationship type indicating if the tie belonged to the criminal relationship type (violent crime, theft/larceny, fraud, vandalism, drug offences, gang activity, and other). A frequency count of each of these variables indicated the number of times a tie in the network belonged to the relationship type. The higher the frequency for “yes” the more times the criminal relationship type appeared in the criminal network and the more common the criminal relationship type.

Control Measure: Age: The individual attribute dataset collected by the RPD contained a variable indicating the date of birth of egos. This was used to calculate the age of all of the egos. The variable was then recoded into two variables: Juveniles, which included egos under the age of eighteen, and non-juveniles which included all egos 18 years of age or older.

Control Measure: Gender: The individual attribute dataset also included a variable measuring the gender of individual egos. This variable consisted to two categories: Male and Female. The gender categories were measured by the official police data on the gender of the individual egos derived from the police catalogue of crimes described above and was used in this study without any additional manipulations.

Results

Descriptive statistics were collected on each of the variables under examination, which gave insight into the characteristics of each variable. Included in descriptive analysis was the ego network scores for each of the ego and alter involvement types. For all involvement types of ego's involvement the median score was 0%. This means that at least half of the cases for each criminal involvement type had 0% of their overall ego network engaged in that involvement type. Each involvement type also possessed a significantly higher mean, ranging from 2.3 to 39.7. The standard deviation scores were also high, ranging from 13.7 to 45.4 (Figure I). The mean, medians and standard deviations indicated that the distribution consisted of a small number of cases after 0% which pulled the mean, which is sensitive to outliers, above the median score of 0%. Similar results were found for the involvement of ego's alters. Each criminal relationship type had a median score of 0% and higher mean indicating the same distributional pattern as the involvement categories for ego. The only exception to this was violent (median=10.35, mean= 26.8) and other (median=33.33, mean= 37.9) involvement of ego's alter (Table 1).

Frequency distributions for ego involvement and alter involvement gave further insight into these distributional patterns (Table 2). For the most part these distributions followed a similar pattern, consisting of a bimodal distribution with the majority of cases found at 0% and the second highest frequency found at 80-100 %. In most of the distributions, the 0% category greatly outnumbered the second, smaller peak at the 80-100% range. The large number of cases at the bottom of the distribution indicated that, for any given criminal relationship type, the majority of nodes in an ego or alter's network were not involved in that relationship type. The second largest frequency at the end of the distribution indicated that, out of the individuals with

alters in involved in this criminal relationship type, most or all of the nodes to whom the individual was connected will be involved in this type of criminal relationship (Table 2).

Table 1 . Descriptive Statistics for all Interval Level Variables

	N	Mean	Median	Std. Deviation
Drug Involvement of Ego %	1388	11.56	0	29.95
Fraud involvement of Ego %	1388	5.58	0	22.22
Gang Involvement of Ego %	1388	2.26	0	13.67
Theft Involvement of Ego %	1388	10.28	0	28.59
Vandalism Involvement of Ego %	1388	4.49	0	19.3
Violent Involvement of Ego %	1388	26.37	0	41.66
Other Involvement of Ego %	1388	39.68	0	45.37
Drug Involvement of Alter %	1388	12.56	0	24.7
Fraud Involvement of Alter %	1388	6.19	0	21.35
Gang Involvement of Alter %	1388	3.12	0	12.16
Theft Involvement of Alter %	1388	9.58	0	20.95
Vandalism Involvement of Alter %	1388	4.05	0	12.3
Violent Involvement of Alter %	1388	26.8	10.34	33.27
Other involvement of Alter %	1388	37.9	33.33	31.54
Betweenness	1193	4016.3	0	19730.43
Closeness	1193	10417.6	10279	1424.4
Age	1360	29.96	27	13.56

Despite common patterns in the distributions for all of the involvements of ego and ego's alters, some variation did exist. For example, alter involvement categories generally possessed smaller percents in the 80-100% range. Also, some involvement types did not actually fit this description. Some alter involvement categories (drug, theft, and vandalism) had the large first peak at 0% but did not have a second peak at the end of the distribution. By way of contrast, the other involvement types of alter did not possess a large peak at 0%. Instead, the distribution

appeared more normal, with the largest number of cases in the middle of the distribution (20-39%) and cases decreasing as categories lie further away from the center. This difference in distributional pattern explained why these variables did not mirror the other involvement types in regards to median and mean scores. Alter drug, theft, and vandalism involvements possessed a smaller difference between median and mean scores than other involvement variables under analysis. None-the-less, most involvement types showed the bimodal pattern (table 2).

What the above distributional pattern displayed is twofold. First, for most types of crimes the majority of individuals in the dataset were not involved in that particular type. Second, out of those individuals who were involved, the majority of their relationships in the network were relationships for that type of crime. In other words, the individual's involvement in a criminal type had an all-or-nothing character. Individuals had a tendency to either not be involved in the crime at all or have that crime dominate their relationships, composing 80-100% of their overall relationships. These distributions provided important insights into the nature of individuals in this network's criminal involvements.

Distributions for the other variables under analysis are shown at the bottom of Table 1. The age distribution was relatively normal, with only a slight variation between the median (27) and mean (29.96) age of the sample. The distribution for closeness also approximated a normal distribution with little variation between median (10279) and mean (10417.6) scores. A very strong positive skew was found for betweenness as indicated by the gap between median (0) and mean (4016.3). Such findings are normal for network data and represent a power curve distribution, in which a handful of nodes within a network dominate a given characteristic within a network (Barabasi, 2002).

Table 2. Frequency Distributions for Ego and Alter Involvement Types

	0%	1-19%	20-39%	40-59%	60-79%	80-100%
Drug Involvement of Ego	1169 (84%)	20 (1%)	34 (2%)	22 (2%)	14 (1%)	129 (9%)
Fraud involvement of Ego	1297 (93%)	4 (<1%)	6 (<1%)	8 (<1%)	5 (<1%)	68 (5%)
Gang Involvement of Ego	1344 (97%)	4 (<1%)	5 (<1%)	5 (<1%)	9 (<1%)	21 (2%)
Theft Involvement of Ego	1194 (86%)	20 (1%)	31 (2%)	19 (1%)	6 (<1%)	118 (9%)
Vandalism Involvement of Ego	1294 (93%)	17 (1%)	15 (1%)	10 (<1%)	3 (<1%)	49 (3%)
Violent Involvement of Ego	933 (67%)	35 (3%)	36 (3%)	42 (3%)	25 (2%)	317 (23%)
Other Involvement of Ego	708 (51%)	37 (3%)	58 (4%)	75 (5%)	45 (3%)	465 (34%)
Drug Involvement of Alter	835 (60%)	224 (16%)	115 (8%)	55 (4%)	58 (4%)	58 (4%)
Fraud Involvement of Alter	1209 (87%)	36 (3%)	20 (1%)	18 (1%)	17 (1%)	58 (4%)
Gang Involvement of Alter	1243 (90%)	62 (5%)	43 (3%)	8 (<1%)	17 (1%)	7 (<1%)
Theft Involvement of Alter	893 (64%)	229 (17)	116 (8%)	53 (4%)	35 (3%)	34 (2%)
Vandalism Involvement of Alter	1090 (79%)	156 (11%)	76 (6%)	21 (2%)	17 (1%)	2 (<1%)
Violent Involvement of Alter	502 (36%)	314 (23%)	155 (11%)	104 (8%)	105 (8%)	180 (13%)
Other involvement of Alter	228 (16%)	251 (18%)	276 (20%)	237 (17%)	178 (13%)	192 (14%)

The first hypothesis explored whether individual's involvement in a criminal type was related to association's involvement. The hypothesis predicted that there would be a relationship between the two. This indicated that individuals were likely to provide and receive crime specific

definitions from individuals with whom they interacted. To test this, correlations were analyzed indicating if the involvement of individual egos related to the involvement of alters in their ego network. In testing this hypothesis sufficient support was found. All variables tested (comparing the ego's involvement for drug, theft, fraud, vandalism, violent, gang involvement, and other criminal relationships to alter's involvement in the same categories) were significant at the .01 level or higher, meaning that there was a low probability that the relationship between these variables was due to chance (Table 3). Furthermore, each of the correlations displayed a strong positive relationship, indicating that the variables were strongly linked to one another. Despite all relationships being strong, positive, and statistically significant there was some variation in the strength for each of the categories. The highest correlation found was for fraud (.914) meaning that egos committing fraud were most likely, out of all the crimes, to possess criminal relationships with alters involved in the same criminal relationship type. Strong correlations were also found for drug offences (.782), violent crimes (.775), and theft (.772). While the findings for these variables were not as high as the correlation for fraud they were, by all conventional standards, very strong correlations. The lowest correlations were found for vandalism (.695), gang involvement (.638), and for all other crimes committed (.685), meaning that egos involved in these criminal types were less likely to be associated with alters involved in the corresponding criminal type (Table 3).

So, for the first hypothesis, the research found clear evidence of the dominance of crime specific definitions over general definitions in an individual's immediate associations. Egos' involvement type resembled the involvement type of their alters. This means that, within an ego's immediate ego network, egos were surrounded by those who possessed crime specific information. But, the level to which an ego's involvement related to the involvement of his alters

differed between the types of crimes analyzed. There were some crimes where the relationship was very strong and others where the relationship was weaker. Out of the relationship types analyzed, fraud stood out because it possessed a particularly strong relationship while vandalism, gang involvement and other relationships stood out as a result of the relative weakness of their relationships.

Table 3. Correlation for Ego's Involvement and the Involvement of Ego's Alters²

Involvement types	Pearson's <i>r</i> *
Ego's Drug/Alter's Drug	.782
Ego's Fraud/Alter's Fraud	.914
Ego's Gang/Alter's Gang	.638
Ego's Theft/Alter's Theft	.772
Ego's Vandalism/ Alter's Vandalism	.695
Ego's Violent/ Alter's Violent	.775
Ego's Other/ Alter's Other	.685

*All correlations are significant at $p < .001$.

After analyzing the relationship between ego and alter involvement, the relationships were reanalyzed after controlling for the impact of age and gender. When the impact that gender and age had on the relationship between ego and alter's involvement was examined, the correlations remained both strong and significant for each of the criminal relationship types. This indicated the neither gender nor age had a profound enough effect on the relationship between ego involvement and alter involvement to significantly alter the correlations found (Table 4, Table 5). In addition to this, the differences in strength of relationship between criminal involvement types remained consistent. This can be clearly seen in comparing the original

² N=1388 for all correlations.

correlations to the correlations found for male and females only. Here it can be seen that, for both males (.909) and females (.921) the strongest relationship continued to be found for fraud (males=.909, females=.921) followed by violent crimes (males= .729, females=.792), and theft (males=.757, females=. 794). Vandalism (males= .632, females= .748), gang involvement (males= .696, females= 474) and other (males= .679, females= .683) also continued to be lower correlations. The only major difference was drug involvement which continued to be in the higher category for males (.801) but was not one of the higher categories for females (.682). Drug correlations slipped behind vandalism and other involvement for females (Table 4).

Table 4. Correlation for Ego's Involvement and the Involvement of Ego's Alters by Gender³

	Males	Females
Involvement types	Pearson's <i>r</i> *	Pearson's <i>r</i> *
Ego's Drug/Alter's Drug	.801	.682
Ego's Fraud/Alter's Fraud	.909	.921
Ego's Gang/Alter's Gang	.696	.474
Ego's Theft/Alter's Theft	.757	.794
Ego's Vandalism/ Alter's Vandalism	.632	.748
Ego's Violent/ Alter's Violent	.729	.792
Ego's Other/ Alter's Other	.679	.683

*All correlations are significant at $p < .001$.

The consistency of strength of relationship across involvement types was also found when comparing involvement correlations for juveniles and non-juveniles to the original test correlations. High correlations continued for violent crimes (juvenile= .828, non-juvenile=.753)

³ Males: N=1867 for all correlations; Females: N=1284 for all correlations.

and drugs (juvenile= .863, non-juvenile=.771). Vandalism (juvenile= .786, non-juvenile=.678), gang (juvenile= .770, non-juvenile=.579), and other (juvenile= .755, non-juvenile=.663) continued to have lower correlations. Theft continued to be among the higher categories for juveniles (.788) but not for non-juveniles (.771). Fraud continued to have the highest strength of relationship for non-juveniles (.911) but did not persist for juveniles (.335), where it possessed the lowest strength of relationship out of all criminal relationship types.

Table 5. Correlation for Ego's Involvement and the Involvement of Ego's Alters by Age⁴

Involvement types	Juvenile (Under 18) Pearson's <i>r</i> *	Non-Juvenile (18 & Above) Pearson's <i>r</i> *
Ego's Drug/Alter's Drug	.863	.771
Ego's Fraud/Alter's Fraud	.335	.911
Ego's Gang/Alter's Gang	.770	.579
Ego's Theft/Alter's Theft	.788	.711
Ego's Vandalism/ Alter's Vandalism	.786	.678
Ego's Violent/ Alter's Violent	.828	.753
Ego's Other/ Alter's Other	.755	.663

*All correlations are significant at $p < .001$.

Overall, despite differences in some correlations, the findings were largely consistent after controlling for age and gender. All of the correlations under analysis continued to be strong, with the exception of fraud for juvenile offenders (.335), and all continued to be statistically significant at the .01 level of analysis. The control analysis found a replication of the original findings after accounting for age and gender. Age and gender were not found to have a profound effect on the relationship between ego involvements and alter involvements.

⁴ Juveniles: N=345 for all correlations; Non-Juveniles: N=1015 for all correlations.

But, while not countering the findings of the dominance of crime specific relationships over individual's ego networks, the differences still continued to clearly indicate some important shifts in which criminal relationship types were more dominated by crime specific definitions. When considering whether criminal relationship types are more dominated by crime specific rather than general definitions, there were three major shifts after controlling for age and gender. First, in the original correlations drug involvement was among the criminal types where crime specific definitions had a greater impact. After controlling for gender, the strength of the relationships indicated a shift of drug involvement from one in which crime specific definitions held a greater control to one in which this control is less important for females. Among females, crime specific definitions, while still more important than general definitions, were less important for drugs than they were in the overall network.

In addition to drug involvement a large difference in strength of relationship by gender was found for gang involvement with males (.696) having a higher strength of relationship than females (.474). While these findings exhibited differences in the crime specific nature of relationship types between differing genders, it did not mark a major departure from the findings of the non-controlled correlations. This is because, while the scores differed for both males and females, gang involvement remained among the variables with lower strengths of relationship for both males and females. In this way, the placement of gang activity represented a replication of the original correlations rather than a major shift in the crime specific nature of criminal relationship types as a result of controlling for age and gender.

The second and third major shifts were found after controlling for age. Here discrepancies were found in the strength of relationship for fraud and theft in comparison to the original correlations. The strength of relationship found for theft declines for non-juveniles,

which indicated that adults involved in theft were less likely to be surrounded by others involved in theft than juveniles are. Probably the most interesting shift out of the three was found for fraud. Fraud, which possessed the strongest relationship for all other criminal relationships, was the weakest relationships for juveniles indicating that juveniles involved in fraud were less likely to be surrounded by like criminals than juveniles involved in any of the other criminal relationship types. However, the fraud relationship for non-juveniles, males, females, and the overall network were the strongest of all of the criminal relationship types.

The final analysis performed was used to test the second hypothesis. This hypothesis involved examining whether any patterns appeared between the commonality of the criminal relationship's possessed by individuals and their influence in the network. The hypothesis predicted that powerful individuals in the network would be involved in more common types of crime. When commonality of relationship type and the frequency of crime committed were analyzed, no clear pattern was found (Table 6). In this analysis, the centrality measures were correlated with the percent of ego's network involved in the criminal relationship type. The frequencies in Table 6 indicate the number of egos who have at least some involvement the given criminal relationship type in their ego network (>0%). As can be seen in this analysis no statistically significant ($p < .05$) relationships were found between the ego's involvement in any of the criminal types and their betweenness in the network. Closeness results were more varied and more difficult to interpret. For the three least common crimes in the network (vandalism, fraud, and gang involvement) statistically significant relationships were found. Vandalism, the least common crime in the network, positively correlated with betweenness at the .05 significance level. On the other hand, fraud and gang involvement negatively correlated with betweenness at the .01 significance level. In addition to differences in direction and significance level, the

involvement types differed in strength. Vandalism displayed a very weak correlation (.059). Fraud and gang activity, while still weakly correlated, were stronger than vandalism (fraud= -.138; gang =-.139). In summary, while there was a correlation between entering into some types of criminal relationships (vandalism, gang involvement, and fraud) and one of the measures of nodal centrality (closeness) there was no discernable pattern between the commonality of these crimes and the strength of their correlations with centrality. Therefore, support for the hypothesis concerning the commonality of crime committed by an individual and their influence in the network was not found (Table 6).

Table 6 Commonality of Crime and Centrality⁵

	Frequency of Ego With Some Involvement	Correlations for Betweenness and % of Ego Involvement	Correlation for Closeness and % of Ego Involvement
Other	2191	.015	.056
Violent	1326	.009	.041
Drug	673	.005	-.056
Theft	394	-.03	.053
Gang	308	.047	-.139**
Fraud	184	-.021	-.138**
Vandalism	156	-.028	.059*

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed)

⁵ N=1388 for all correlations.

Conclusions

The findings of this study can easily be broken down into three categories: 1) the results of the first hypothesis concerning the relationship of an individual's criminality and the criminality of their associations, 2) the impact which control variables had on the first hypothesis, 3) the results of the second hypothesis concerning the lack of patterns between the commonality of an individual's crime and their power (centrality) in the network. For the first hypothesis, the analysis of the relationship between ego involvement and alter involvement found clear evidence that the type of crime in which an individual is involved is clearly related to the type of crime in which his associates are involved. The level of involvement of egos in a criminal relationship type was strongly and significantly correlated to the level of involvement of ego's alters in that criminal relationship type. These results illustrate that individual criminals are likely to be surrounded by like minded people who commit similar behaviors and possess a similar knowledge of crime.

Despite overall support, differences were found in the strength of relationships between variables with fraud having high correlations and vandalism and gang activity having low correlations. These variations clearly indicate the complexity of general/specific definitions. Even though crime specific definitions dominate the network, variations exist in the degree to which crime specific definitions impact different criminal involvement types. Therefore, the type of crime being committed is likely to impact the importance of crime specific/general definitions

In general, these relationships persisted after controlling for both the age of individual egos as well as their gender. The pattern of relationships over the type of criminal involvement was also similar to that observed in the overall network. This indicated that, for the most part,

individuals' criminal involvement was similar across age and gender. The original hypothesis, that the involvement of an individual would relate to the involvement of their associates, was supported. Even though the dominance of crime specific definitions persisted after the control analysis, three major differences in which variables were more dominated by crime specific definitions occurred. These differences can be seen in the decreased strength of relationships of drug involvement for females, the increased strength in theft for non-juveniles, and the decreased strength of fraud for juveniles. The most drastic change is seen for fraud which possessed the highest strength of relationship in the original test, as well as in all other control categories, but has the lowest strength of relationship for juveniles out of all the criminal involvement types. The differences in strength of relationship indicated that, while the overall relationship persisted, the control variables had an effect on the dominance of crime specific definitions for certain types of crimes. Possible reasons for the effect of age and gender for these criminal types will be analyzed in the conclusion below.

The final analysis searched for patterns between the commonality of a criminal relationship type and the centrality of egos. Correlations between the percent of ego's alter network involved in a crime and the centrality of the ego were compared to the frequency of involvement in the criminal relationship types in the analysis. While some ego involvements in criminal relationship types did correlate with centrality, no clear pattern emerged with regard to the frequency of the criminal relationship and the strength of the correlations. The second hypothesis was not supported indicating that those with sway over the overall network did not necessarily commit common crime and were, therefore, unlikely to be communicating crime specific definitions to the overall network. The remainder of this study will explore possible

reasons for the above findings and their implications on criminal learning, differential association, and network research will be more thoroughly examined.

Conclusions for Hypothesis 1

The evidence clearly points to the prevalence of criminals with similar criminal relationships in a given node's ego network. Therefore, crime specific definitions are likely to be impactful on individuals' criminal behavior, because similar criminals are likely to make up the majority of interactions and individuals in their network. These findings support existing empirical research in differential association which indicate that the criminality of individuals is predicted by the criminality of their peers (Bauman, 1996; Church, 2008; Deng, 1998; Haynie, 2001; Haynie, 2002; Haynie, 2005; Haynie, 2006; Kissner, 2009; Klemp-North, 2007; Matsueda, 1982; Weerman, 2007). In this way it appears that the results for general and specific definitions mirror the literature on criminality in general. This gives crime specific definitions the attributes (frequency, priority, and durations) which Sutherland indicates are likely to give definitions more weight as predictors of criminal behavior. This also means that most of the knowledge possessed by individuals in the criminal network is likely to be knowledge concerning the types of crime they commit, whether they be techniques, concepts, attitudes, or justifications.

As described in the literature review above, the literature, as it currently stands, has some problems which result from studies analyzing just specific definitions (Bauman, 1996; Deng, 1998; Jackson, 1983; Kandel, 1991; Kissner, 2009; McCarthy, 1996; Przemieniecki, 2005; Weerman, 2007) or just general definitions (Church, 2008; Costello, 1999; Cressey, 1965; Hirschi, 1965; Matsueda, 1982) while never analyzing both simultaneously. Also, it was

suggested that research into general and specific definitions could comment on whether the results, particularly crime specific results, were likely to be affected by the failure to measure the other type of definitions. While it is still likely that studies focusing on general definitions lose specificity, the current findings can remove some of the doubt surrounding the crime specific literature. With the domination of crime specific definitions in the network, the influence of general definitions are likely to be minimal. This means their impact on the findings of crime specific studies are unlikely to have a profound effect and that previous literature on the impact crime specific definitions findings are likely to be accurate, despite their failure to account for general definitions.

Also, it is unlikely that criminals' general attitudes or concepts about crime have as much of an influence over criminal behavior, since crime specific definitions dominate individuals associations. This seems to support Sykes and Matza's (1957) thesis about techniques of neutralization and would therefore support recent scholarship which has applied these concepts to various types of criminal behavior (Agnich, 2007; Dobash, 2011; Ingram, 2008; Klenowski, 2008; McGregor, 2008; Topalli, 2006; Zaffaroni, 2009). Since crime specific definitions dominate the network, many criminals may hold negative views of crime in general but have learned definitions which allow for their own criminality from their associations. They may even hold anti-criminal definitions, provided by non-criminal ties not examined in this study, toward crime in general but hold definitions favorable for the committing of their own crimes. Either way, the dominance of crime specific definitions in the network would allow for a structuring of definitions similar to that observed by the techniques of neutralization (Sykes, 1957).

While crime specific definitions had greater influence over all of the criminal relationship types analyzed, the strength of the relationships indicate that crime specific definitions are more

important for some crimes than others, illustrating a complexity behind the crime specific nature of criminal involvement. Fraud, having the highest correlation, was the most influenced by crime specific definitions. It was followed by drug activity, violent crimes, and theft. These categories were clearly dominated by crime specific definitions as a result of very high correlations. Nonetheless a noticeable difference existed between these crimes and fraud. The crimes analyzed which had the most balanced influence of both crime specific and general definitions were vandalism, gang involvement, and other involvement. Due to these differences in strength of relationship it becomes necessary to explain the research's results for criminal relationship types noticeably high or low correlations in comparison to other crimes. This is particularly true of Fraud, which is found, by far, to be the most crime specific in the network. The social nature of this crime should come as no surprise to sociologist familiar with differential association's work studying fraud. Beginning with Sutherland (1934), fraud has been a special subject of inquiry, displaying the complexity of information learned, skills learned, and associations needed to successfully commit various types of fraud, particularly the executing of confidence games. In addition to insider knowledge for the committing of crimes, Sutherland (1934) also indicates the importance of associations among individuals engaged in fraud in escaping punishment from the legal system. This is the result of their knowledge of "fixers" who can control the justice system to insure that offenders avoid punishment. Similarly, the importance of insider knowledge to successful commit fraud can be seen in Goffman (1952) who, borrowing on Sutherland (1934), examines the way individuals engaging in fraud must learn to manipulate basic human psychology and learn to "cool off the mark," which allows them to leave a confidence game without victims realizing that they had been victimized. Jackson's (1983) differential association study on credit card fraud also indicated the extremely social nature of this crime by finding that

the need to find low risk opportunities created a need for associations capable of providing constant information. More recent literature on fraud has continued to support conclusions about the social nature of this crime (Bejarano, 2009; Durkin, 2007; Knowles, 1999) and have even found social learning explanations for some types of internet fraud (Durkin, 2007). The current findings are similar to that of Sutherland, Goffman, Jackson, and others in indicating the social nature of this crime in comparison to other types of criminal involvement.

Vandalism, gang involvement, and other involvement all display significantly lower correlations than the other involvement variables which indicate they are the least crime specific in nature. Gang involvement's low score can be explained in two ways. The first explanation is that there may be a flaw in the data collection method due to the reliance on official police data. In contrast to other types of criminal behavior, gang activities occur around an often named and formed organization. It is possible that the existence of an organization leads its members, like other secret societies, to take steps to obscure the social links between its members from policing agencies for its own safety. The literature on the unique difficulty of studying secret societies, as a result of their efforts to hide their behaviors and connections from the outside world, has been a widely documented phenomenon (Bromley, 2007; Barker, 1984; Goldman, 2001). This could result in an inability to measure the true social nature of these criminal associations. This methodological concern about existing police datasets has been voiced by researchers in gang research who suggest alternative sampling methodologies in order to gain a more accurate picture of gang behavior (Petersen, 2005; Valdez, 1999). The second possible explanation is that specialization within gangs leads individuals involved in gang activity to have associations who commit different types of crimes and therefore have very different relationships in their ego-network than in their associations' ego-networks. This conclusion would be supported by

literature on gang specialization which indicates that members of gangs often fill divergent roles within the gangs and, therefore, commit different types of criminal behaviors (Thompson, 1996). These are just two possibilities. It is impossible, without further research into the general and specific nature of gang activity to know to what degree the correlations experienced here are the result of an actual relationship, created by gang specialization, or due to this studies method of selection and gang member's efforts to obscure their connections from authorities.

Finally there is vandalism. The lower influence of like criminals on individuals involved in vandalism may be the result of the nature of this particular type of crime. Existing literature on vandalism grows out of the work of Cohen (1984) who views vandalism as more a result of catharsis than association. Cohen and authors who follow in his research indicate that environmental factors, particularly struggles with poverty and inequality, are involved in vandalism. It is a manner of striking out against a system which has treated them unfairly (Cohen, 1984; Horowitz,2003; Moore 1980; Perlgut, 1983). If these views are correct, it is more likely that conditions around the individual, and the resulting emotional states, may account for a large piece of the causal pie resulting in lower correlations for association's involvement. The acceptance of this possibility does not mean that we have to abandon the influence associations on this process or existing symbolic interactionist's models of emotion (Hochschild, 1983; Rosenwein, 2006). The correlations are still, by conventional standards, strong and significant even if vandalisms correlations are lower than other criminal involvement types. It would simply mean that we might allow into consideration the increased influence of environmental factors on this type of crime that may account the lowering of associations influence in comparison to the other involvement types studied.

Conclusions for Control Variables for Hypothesis 1

After controlling for age and gender, differences in the strength of relationship for criminal relationship types can be seen. These differences in the strength of relationship in the test indicated a difference in the influence of general or specific definitions had over the type of crime, with lower strengths indicating more influence of general definitions and stronger relationships indicating more specific definitions. These differences, therefore, indicated ways in which the control variables, sex and gender, altered how much influence general/specific definitions had on the type of crime. In particular there are three differences. The first difference can be seen for drugs after controlling for gender. The reason for this difference in drug involvement can be illustrated by the larger literature on female criminality. Currently there is a debate between researchers that view female criminality as inherently different from male criminality (Barber, 2009; Cohen, 1988; Fetchenhauer, 2002; Knox, 2004; Palmer, 1995; Rowe, 2002) and researchers that view female criminality as being similar to male criminality (Felkenes, 1995; Gover, 2009; Lauderdale, 2009; Lurigio, 1998; St. Cyr, 2003). Miller (2000) offers a mixed model which is capable of explaining why, in some instances, female crime is similar to male crime and, in other instances, it does not. Miller (2000) outlines three types of criminal networks: 1) male dominated networks, which are composed almost entirely of males; 2) mixed gangs, which consist of enough female members to impact the perceptions of the gang; and 3) auxiliary gangs, which are all female gangs. In male dominated networks females were more likely to have relationships build upon sexist predispositions of male members where mixed or auxiliary networks, due to women's ability to affect the culture of the gang, were built upon more complicated relationships of roles and responsibilities with their network.

Miller's (2000) framework could explain why, for most crimes in our analysis, the associations of males and females resemble one another. For these criminal relationship types it is possible that females are functioning in mixed or auxiliary gangs. This would explain why their criminal involvement patterns resemble that of males. Females' ability to have greater control over the network leads to circumstances where their criminal involvement resembles men and, therefore, male and female ego networks are likely to resemble one another. But, for drugs, it may be possible that females involved in drug crimes are involved in male dominated networks. This would lead their criminality to differ from the men surrounding them and, therefore, lead them to possess dissimilar patterns of criminal involvement and the corresponding differences in correlations. While Miller's framework is a plausible explanation for our findings further research into the relationship between the percent of females in a gang and the makeup of female's ego networks would need to be done for these conclusions to be stated with certainty.

The second difference found after controlling for age and gender indicated that age had an impact on the associations of criminals involved in theft. Juveniles involved in theft are more likely to associate with other thieves than adults who are involved in theft. One possible reason for this may be an inherent difference in younger and older theft. Both Versichelen (1965) and Fagan (2005) indicate that theft, especially petty theft, is a type of crime dominated by juveniles in comparison to other types of crime. This could explain the differences found. Networks possessing specialized knowledge may be constructed around younger segments of the population. Considering that most criminals age out of crime (Kubrin, 2009) and that theft is primarily committed by the young (Fagan, 2005; Verssichelen, 1965), it is likely that many younger people engaged in theft age out of their criminal behavior. Adults who persist in the behavior may be isolated from existing individuals with crime specific definitions for theft and

may, therefore, possess ego networks with connections to alters displaying other types of criminal behavior. Once again, further research is needed to validate these conclusions. Currently we cannot claim with confidence that the difference is the result of aging out and not to some other difference between younger and older offenders of theft. The best way to determine the validity of this interpretation would be to collect longitudinal data on the ego networks of thieves to see if younger thieves, as they increase in age, possess less homogeneous ego networks.

Finally there is the difference for fraud. As indicated above, the crime specific nature of fraud offenders' ego networks is understandable under the umbrella of differential association's literature on fraud (Bejarano, 2009; Durkin, 2007; Goffman, 1952; Knowles, 1999; Sutherland, 1934; Jackson, 1983). While the crime specific nature of this variable explains the strength of relationship for males, females and juveniles, it does not explain the lower correlations we see for non juveniles. Luckily, this same literature may also give insight into why fraud would be the most crime specific involvement for adults, but the least crime specific involvement for juveniles. Sutherland (1934) indicates a distinction between "criminals" and "professional criminals." His generalizations of a highly complex associations, complex techniques, and insider knowledge are particular of the "professional criminal". Other less professional criminals may, in fact, commit the same crime with less tact and technique. This distinction could explain why fraud is so crime specific for adults but not juveniles. The level of adult crime specific definitions for fraud might indicate that they are engaging in the sort of crime Sutherland describes as professional where the younger individuals committing fraud may be the less professional in nature and therefore less reliant on specialized knowledge. Similarly Holtfreter (2004) found similar results when analyzing the way in which fraud was mediated through age, finding that the age of individual offenders determined the type of fraud being committed. All of

this may indicate that these findings are the result of a real difference in the nature of juvenile and adult fraud where juveniles commit acts of fraud less dependent on specialized knowledge and, therefore, less dependent on ties to other offenders committing fraud to obtain that knowledge. Further research would also need to be done to explore the above conclusion and could analyze if types of fraud being committed by juveniles differ from types being committed by non –juveniles.

A word of caution concerning the above interpretations is needed before continuing. While the explanations offered above are plausible and interesting it is also likely that the differences occur as a result of the design of the dataset utilized for this study. Not all individuals involved in the relationships under study are offenders but can possess other types of involvement (victims, witnesses, involved others, ect...) as described above in the methodology section. Differences found between gender and age groups might, therefore, also indicate a difference in these categories, such as relationships between offenders and victims. While this is less likely for some of the variables analyzed above (i.e. drug involvement) it should at least serve as a warning about overstating the likelihood of claims made about possible reasons for the differences in the correlations between the control categories of this study.

None-the-less, the interpretation of these differences in strength between criminal relationship types, as they are analyzed here, indicate that asking a blanket question of which is more important, general definitions or crime specific definitions, may only go so far in revealing the true nature of criminal learning. Instead, a more insightful question may be “What types of crimes are more likely to be learned generally and which types are more likely to be learned specifically?” This is because the amount that crime specific definitions are responsible for criminal behavior is likely to differ from one type of crime to another. Furthermore, the

alteration of differences in strength of relationship among criminal relationship types after controlling for age and gender adds another layer of complexity. Not only do crimes differ from one another in the impact of crime specific behavior, but this impact is mediated through social characteristics of the individuals under analysis. This can be seen in the way in that crime specific learning is indicated in juveniles involved in fraud or theft in comparison to non-juveniles involved in the same crimes. It can also be seen in the difference between males and females for drug use. All of this points to the complexity that lies beneath the surface of Sutherland's original model. Lurking beneath the concept of criminal definitions are not only hidden questions on the influence of specific/general definitions but also questions about the circumstances surrounding them, such as: What crimes are dependent on crime specific definitions for offenders to be able to engage in them? For which types of criminal behavior are only general attitude towards criminality needed to permit criminal behavior? How do offenders' characteristics affect the specific/general nature of a given crime? The importance of these questions become even more necessary after understanding that, despite the dominance of crime specific definitions, general definitions still exist and are important within the network.

Conclusions for Hypothesis 2

The third major finding of this study concerns general definitions. While crime specific definitions are most important, general definitions were found to be present in the network as well. The result of the second test adds yet another layer to the understanding of criminal learning because central nodes appear to play a different role in the dissemination of definitions. Influential individuals do not act as the hypothesis predicted. This is because there is no clear pattern between the relationship between centrality and criminal involvement type and the commonality of the type of criminal involvement. In other words, central players in the network

were not found to commit more common crimes than other individuals in the network. These findings, while not conclusive, appear to indicate that influential individuals are equally likely to commit uncommon crime. This means the initial hypothesis that influential individual would be more likely to disseminate crime specific information was unsupported. Instead, it appears that influential individuals disseminate general definitions throughout the network.

One way of explaining these findings can be seen in SNA's weak ties literature. The distribution of criminal definitions might resemble Granovetter's (1973) observations about the learning of employment opportunity. He found that information about employment was found through node's weak ties, rather than through their strong ties. Granovetter illustrated that this was the result of strong ties possessing similar information due to their similar location in the network. Weak ties, on the other hand, bridged otherwise disconnected groups, allowing them to relay information present in their own social network to the member of the group to which they are only weakly tied. Similar structures have been found for other types of information in criminal networks by Patacchini and Zenou (2007), who find that criminal opportunities behave in a similar manner to the employment opportunities found by Granovetter (1973).

This study points to a similar phenomenon when it comes to the learning of criminal definitions. The analysis found that those closest to egos possessed the same information as the ego, in this case crime specific definitions. But, those in structural positions between nodes in the network and those with further reaches across social spaces were unlikely to spread crime specific information. Instead they were more likely to convey general definitions, information which was otherwise uncommon in the network. So, like Granovetter's weak ties, central nodes pass unique information to homogeneous subsets of the network. This means that more influential individuals are spreading the uncommon general definitions, while the majority of the

networks members offer nodes crime specific definitions. So, while crime specific definitions are most common, general definitions appear to be present within the network, and primarily spread through more influential members in the network. This means that they are likely to have some bearing in the network and that members are likely to have learned general definitions, which are easily spread throughout the network by key nodes. While little work has been done on the power of central nodes to alter the attitudes and norms within criminal network, it has been observed in other types of networks including networks present in other types of networks (Mlicki, 1986; Szabo, 1988; Westphal, 2006). We need not assume that all criminals in this network utilize these definitions. The more substantial influence of crime specific definitions is likely to provide sufficient learning for criminal behavior. It is likely that many members in the network simply utilize crime specific information in their criminal behavior. But, none-the-less, the influence of general definitions cannot be discounted, though they are less common.

While central nodes do appear to impact the overall network in this manner by providing general definitions, this essay must be careful not to overstate the impact of central nodes in this network. Even if central nodes are responsible for the dissemination of general definitions, they are not responsible for the spreading of crime specific definitions which dominate the network. So, while they impact the overall network's definitions, their impact on each individual offender pales in comparison to the nodes closest to them, which share with him the type of crimes being committed and likely to have an equally large impact on other aspects of their criminal definitions. This conclusion would be supported by Sutherland's concepts of frequency and duration (Sutherland, 1974). Since offenders are likely to interact more with those closer to them in the network, which possess crime specific definitions, then these are likely to have a stronger influence over the offenders. So, even though central nodes have greater impact than non-central

nodes in general and, like other networks studied, set the normative tone of the overall network through spreading general definitions, their impact on each individual offender is not as strong as those directly connected to them.

Interestingly enough, the structure of general/specific influences mirror the two types of studies. In the same way that the current literature is structured into general definitions, which takes the larger scope of crime in general for its analysis (Church, 2008; Costello, 1999; Cressey, 1965; Hirschi, 1965; Matsueda, 1982), and crime specific, which focuses on the smaller scope of just specific types of crime (Bauman, 1996; Deng, 1998; Jackson, 1983; Kandel, 1991; Kissner, 2009; McCarthy, 1996; Przemieniecki, 2005; Weerman, 2007), this study's findings also divide into two scopes, a larger scope from which the impact of general definitions can be seen and a smaller scope from which the greater impact of crime specific definitions is more noticeable. This would suggest that both viewpoints are supported by the current literature. Crime specific studies likely measure the impact of those closest to an offender in his network, such as the members of the offenders ego-network analyzed in this study. Since these individuals dominate his surrounding network, crime specific studies are likely to account for the definitions with the greatest impact on the offender. Very little of his surrounding network is likely to provide general definitions anyway. But, in taking the larger scope, the existing studies analyzing general definitions are likely to measure some criminality that crime specific definitions miss, but lose the nuanced information provided by crime specific studies.

Put more plainly, these observations both help to support the existing literature in differential association while continuing to display the need for simultaneous analysis of general/specific definitions. Crime specific definitions, in the absence of general/specific studies, run the risk of failing to measure general definitions. Without existing literature to comment on

the strength of general definitions in comparison to crime specific definitions, the impact of their failure to measure could not be assessed. The current study supported the validity of these studies indicating the lesser impact of general studies. If a crime specific study was done on this network, for instance, it would be unlikely it would be impacted by their failure to measure general definitions as a result of crime specific definitions prominence in the network. The current findings also display that general studies do, none-the-less, measure some of the definitions which crime specific studies miss. In particular, this can be seen by the indication of general definition's presence in the network through the study's analysis of central nodes. This means that, overall, the existing literature is likely to be measuring real relationships as well as discovering accurate findings. With that said, the simultaneous study of general/specific study continues to look at the impact of both, allowing for nuance while continuing to measure general definitions. This means that the simultaneous study of general/specific definitions is still preferable, due to its mixture of nuance and measuring all definitions. Despite this advantage, simultaneous study of general/specific is not absolutely necessary as a result of the dominance of crime specific definitions.

Conclusions for Differential Association and SNA Research in General

Much can be learned from the current research project and its finding, advantages, and disadvantages. Methodologically, there were several advantages to this study. One major advantage was the study of actual behavior rather than self-reported behavior for the alters in the network. The majority of existing ego network studies continue to rely on self reported data to construct ego-networks (Grippa, F., 2009; Lubbers, M. J., 2010; Luken, V.M , 2010; Tindal, D. B., 2004; Zakour, M. J., 2008). The current study's utilization of actual behavior assured that the data found represented real relationships rather than participant's perceptions of the involvement

of their associations. The current study also had the advantage of utilizing both network concepts and differential association's model to identify patterns of general/specific learning. This merger, as described in the literature review, acts to create further insights into the nature of differential association, as has been demonstrated by prior studies utilizing both concepts (Haynie, D. L., 2001; Haynie, D. L., 2002; Haynie, D. L., 2005; Haynie, D. L., 2006; Patacchini, 2007). This allowed the study to look at the influence network structure had on the flow of definitions in the network under analysis. The greatest advantage was simultaneously looking at both general and specific definitions. This is, of course, in comparison to existing literature which either studies crime specific (Bauman, 1996; Deng, 1998; Jackson, 1983; Kandel, 1991; Kissner, 2009; McCarthy, 1996; Przemieniecki, 2005; Weerman, 2007) or general (Church, 2008; Costello, 1999; Cressey, 1965; Hirschi, 1965; Matsueda, 1982) definitions rather than assessing both. By looking at the composition of the ego-networks of individual egos in regard to multiple criminal types, it was capable of assessing the degree to which an ego's network was composed of similar or dissimilar criminals. This allowed the study to look beyond the relationship between the criminality of an individual and his associates for a single type of crime or just crime in general.

Despite these advantages, this study was also displays several disadvantages. Some of these resulted from the dataset and others from the process of ego extraction. From the dataset this study inherited a problem with the networks inclusion of associations that exist between offenders and victims of a crime. It is unlikely that criminals are acquiring definitions favorable towards crime from these connections, which is somewhat problematic for this analysis. A similar critique could be made for the relationships between offenders and witnesses in the dataset. One important disadvantage related to the process of extraction was the problem of

redundancy and the possibility of inflated correlations. Because all ego's inevitably become alters in the ego-network of their alters, there is a possible issue that an individual relationship is counted multiple times in this study's statistical analysis. This redundancy inflates the correlations and reduces the accuracy of the study's findings. Also, the ego extraction procedure has the disadvantage, mentioned above, of creating a sample that is not ideal for statistical analysis as a result of the non-random nature of the selection of nodes. So, while the current analysis has the advantage of analyzing real relationships over the self-reported ego studies (Grippa, F., 2009; Lubbers, M. J., 2010; Luken, V.M , 2010; Tindal, D. B., 2004; Zakour, M. J., 2008), the method unfortunately has both problems with research conditions for statistical analysis and inflated correlations not present in the above studies.

The abnormally high correlations found between ego involvement and the involvement of ego's alters is, in and of itself, problematic. It is unlikely that this high of correlations, some of which resemble perfect correlations more than normal findings in social science publications, are unlikely the result of the accuracy of my own predictions. There are several possible causes for these inflated correlations. One, mentioned above, is the result of the structure of the dataset and the method of ego extractions, which resulted in a problem of redundancy. But there are other problems with the current analysis which also may have inflated the correlations as well. One problem may be the large number cases falling at 0% in the variables measuring ego and alter involvement. Also, the categories that involvement type was collapsed into may not accurately reflect the involvement patterns in the actual network. In particular, the large number of "other involvement" types may be problematic. It is difficult to say which of these actually caused the inflated correlations. It is likely a mixture of all of these possibilities. None-the-less, the exceedingly high correlations is the largest problem with this study.

The current study, as a result of this mix of shortcomings and advantages, has several lessons for future research. Future research into ego-networks should try to develop a methodology which would not be reliant on self-reported data (Grippa, F., 2009; Lubbers, M. J., 2010; Luken, V.M , 2010; Tindal, D. B., 2004; Zakour, M. J., 2008), as this study has done, but avoid some of the disadvantages of the current method. In particular, future research should avoid the problem of redundancy which the ego extraction method utilized in the current study possess but which is absent from existing self-report ego-analysis. For differential association research this study illustrates the need, not only of the importance of considering the influence of the general/specific nature of definitions, but also the need for further exploration into the interplay of general/specific definitions.

There are many analyses which could be performed that were simply outside the scope of the current study as well. For example, it may be fruitful to do some qualitative research into the issue of general/specific research. Differential association, in general, is a theory which deals primarily with events occurring inside of the minds of individuals. It is about the ideas they gain, hold, use, and offer to those around them. It is about which ideas are likely to impact their behavior and which are not. Due to the internal nature of this topic, many insights about the importance and influence of general/specific definitions could be gained through an in-depth analysis of a handful of subjects documenting how they learn and use their general/specific definitions. While qualitative analysis is not uncommon in differential association (Jackson, 1983; Przemieniecki, 2005; Snodgrass, 1985; Steffenmeier, 2003; Sutherland, 1937; Sykes, 1957; Vasoli, 1974) and is a method utilized by Sutherland himself (1937), qualitative work into general and specific definitions has yet to be conducted. Also, it may be useful to analyze the interplay between general and specific and other types of definitions, such as definitions that are

cognitive in nature (justifications, concepts, and attitudes) or skill based definitions. Future studies could also take into consideration the interplay of both definitions favorable and definitions unfavorable towards crime by looking at the general and specific content of both types of definitions, rather than focusing on definitions favorable towards crime as was done here.

There is also a need for replication and continued research into general/specific definitions. The findings of the current study are not generalizable to other populations, but simply describe the network under analysis. This means that, if the interplay between general/specific definitions is to be understood, further research needs to be done. In particular, other criminal networks need to be studied to see if similar findings exist within other networks. Also, the study of the influence of general/specific definitions may differ as a result of crime being committed in the network. The differences in the strength of relationships between criminal types found in the current study seem to indicate why such an influence might be possible. This would mean that, for networks dominated by different types of criminal activity, the influence of general and specific definitions may differ. In this way, to truly understand this aspect of criminal definitions, further work must be done.

The final suggestion is developed in light of the findings of the research. The whole of this study indicates the interplay between general/specific is exceedingly complex. As a metaphor, we could think of these findings as if we were viewing a map of a network. Beginning with the overall network, we find that central nodes act as disseminators of general definitions throughout the network. These nodes, placed in obvious key positions commit a variety of types of crime: both popular and unpopular in the network. These nodes create a view which is equally common throughout the network, though many nodes in the network are not likely to hold onto

these definitions as significant motivators of their criminality due to the frequency, duration, and priority of their crime specific definitions. Moving a little further into the network we can see a pattern being formed. Most people in the network are surrounded by others committing the same crime. Associations are relatively homogeneous and people are unlikely to have many associations outside their individual criminal types. If we then allow for even greater detail we see that, despite this obvious homogeneity prevalent throughout the network, that differences exist. Individuals committing some types of crimes are surrounded by more homogeneous individuals than others. Members involved in fraud would be surrounded by extremely homogeneous associations. Individuals engaged in vandalism, on the other hand, would be surrounded by less homogeneous associations. Allowing for even more detail, the image changes slightly again. As we look at different types of crimes we see that they are also mediated through characteristics of the individual egos. For the purpose of this study these characteristics are age and gender, though other characteristics are likely to mediate the networks in a similar way. We see that women involved in drug use are surrounded by less homogeneous association than males involved in drug use; that juveniles involved in theft are surrounded by a more homogeneous group of associations than adults committing theft; that adults committing fraud are surrounded by other committers of frauds while juveniles committing fraud are surrounded by a more diverse group of associations.

This image, in essence, summarizes our findings. It is also meant as an illustration of the complexity of the concept of definitions in differential association. Here one possible aspect of definitions, general/specific, is being analyzed. On the surface it appears as a simple question: Sutherland indicates definitions can be general and specific; which types of definitions have a greater impact, general or specific. In the case of this analysis, the answer was that crime specific

definitions were more important. But answering that question is just the beginning. Upon answering it, further findings added another layer of complexity. General definitions appeared in the network as well. Both were in play but reached individuals in very different ways. In addition to this, a whole additional layer of complexity exists. We see major differences between types of crimes and different individual attributes which add further complicates our findings. This complexity has created many interesting findings for this study, but it has created as many questions as it has answers. Not just for general/specific definitions, or definitions as a whole, but for all aspects of Sutherland's model.

This study has, therefore, found one suggestion for further researches which is greater than any other examined. This study has demonstrated the need for greater research into the very mechanisms of Sutherland's model, the exploration of which is as needed today as ever. The inner complexity of Sutherland's model has been displayed by this study and its findings. Not only was the need to further explore definitions to gain more clarity and reduce the ambiguity addressed, but we also found further layers of complexity beneath that of general and specific were found. The majority of research and thought (Akers, 1996; Bauman, 1996; Church, 2008; Costello, 1997; Deng, 1998;; Herschi, 1996; Kandel, 1991; Kissner, 2009; Matsueda, 1988; Matsueda, 1997; Proctor, 2004) in differential association has focused on its relationship to control theory. This has, by and large, kept differential association from examining itself and researching the causal mechanisms of its own model. Differential association has been mired too long in needless debates with other theoretical paradigm, debates which may be as much political as they are scientific (Melossi, 2000). Too long has its focus only been the debate about peer influence. Too long has it turned away from interesting empirical avenues to further our understanding of its own processes. It is time for differential association to turn its gaze inward

and further examine the wealth of information about criminal learning which lies undiscovered, possibly greater than current research has realized, waiting for researchers' examinations.

Reference

- Agnew, R. (1993). Why do They do it? An Examination of the Intervening Mechanisms Between “Social Control” Variables and Delinquency. *Journal or Research in Crime and Delinquency*, 30, 245- 266.
- Akers, R. L., Burgess, R. (1966). A Differential Association Reinforcement Theory of Criminal Behavior. *Social Problems*, 14, 128-147.
- Akers, R.L. (1973). *Deviant Behavior: A Social Learning Approach*. Belmont: Wadsworth.
- Akers, R.L., Cochran, J.K. (1985). Adolescent Marijuana Use: A Test of Three Theories of Deviant Behavior. *Deviant Behavior*, 6, 323-346.
- Akers, R. L. (1996). Is Differential Association/ Social Learning Cultural Deviance Theory?. *Criminology*, 34, 2, 229- 246.
- Baerveldt, C., Volker, B., Van Rossem, R. (2008). Revisiting Selection and Influence: An Inquiry into the Friendship Networks of High School Students and Their Association with Delinquency. *Revue Canadienne de Criminologie et de Justice Penale*, 50, 559-587.
- Barabasi, A. L. (2002) *Linked: How Everything is Connected to Everything Else and What it Means for Business, Science, and Everyday Life*. London: Plum.
- Barber, N. (2009). From Steroids to Nation States: An Integrated Evolutionary Approach to Violent Crime. *Aggression and Violent Behavior*, 14, 415-422.
- Barker, E. (1984). *The Making of a Moonie: Choice or Brainwashing?*.Oxford: Blackwell.

- Bauman, K. E., Ennett, S. T. (1996). On the Importance of Peer Influence for Adolescent Drug Use: Commonly Neglected Considerations. *Addiction*, 91, 2, 185-198.
- Bromley, D. *Teaching New Religious Movements*. New York: Oxford University Press.
- Burt, R. S. (1992). *Structural Holes: The Social Structure of Competition*. Cambridge: Harvard University Press
- Carley, K. M., Lee, J., Krackhardt. (2002). Destabilizing Networks. *Connections*, 24, 3, 79-92.
- Church, W. T., Wharton, T. Taylor, J. K. (2008). An Examination of Differential Association and Social Control Theory: Family Systems and Delinquency. *Youth Violence and Juvenile Justice*, 7, 3, 3-15.
- Cressey, D. R. (1955). Changing Criminals: The Application of the Theory of Differential Association. *The American Journal of Sociology*, 61, 2, 116-120.
- Cressey, D. R. (1965). Social Psychological Foundations for Using Criminals in the Rehabilitation of Criminals. *Journal of Research in Crime and Delinquency*, 2, 49-59.
- Cohen, A. K. (1955). *Delinquent Boys*. The Free Press: Glencoe
- Cohen, L. E., Machalek, R. (1988). A General Theory of Expropriative Crime: An Evolutionary Ecological Approach. *American Journal of Sociology*, 94, 465-501.
- Cohen, S. (1984) *Sociological Approaches to Vandalism*. Amsterdam: North Holland
- Costello, B. J. (1997). On the Logical Adequacy of Cultural Deviance Theories. *Theoretical Criminology*, 1, 403-452.

- Costello, B. J., Vowell, P. R. (1999). Testing Control Theory and Differential Association: A Reanalysis of the Richmond Youth Project Data. *Criminology*, 37, 4, 815-842.
- Davis, R. H. (1981). Social Network Analysis: An Aid in Conspiracy Investigations. *U.S. Government Printing Office*, 1-9.
- Deng, X., Bebo, J. A. (1998). Theoretical integration and Drug/ Alcohol Use: A Test of an Integrated Model of Seduction, Differential Association, and Self Control Theories. *Discourses on Sociological Practices*, 1-7.
- Degenne, A., Forse, M. (2006) *Introducing Social Networks*. Thousands Oak: Sage
- Erickson, B. H. (1980). Secret Societies and Social Structure. *Social Forces*, 60, 188-210.
- Fagan, A. A., Western, J. (2005) Escalation and Deceleration of Offending Behaviours From Adolescence to Early Adulthood. *The Australian and New Zealand Journal of Criminology*, 38, 1, 59-76.
- Felkenes, G. T. (1995). Female Gang Members: A Growing Issue for Policy Makers. *Journal of Gang Research*, 2, 1-10.
- Fetchenhauer, D., Rohde, P. A. (2002). Evolutionary Personality Psychology and Victimology Sex Differences in Risk Attitudes and Short-Term Orientation and Their Relation to Sex Differences in Victimization. *Evolution and Human Behavior*, 23, 233-244.
- Freeman, L. C. (1977). A Set of Measures of Centrality Based on Betweenness. *Sociometry*, 40, 35-41.

- Goldman, M. (2001). *Toward Reflective Ethnography: Participating, Observing, Narrating*.
Cambridge: Elsevier Press.
- Gover, A. R., Jennings, W. G., Tewksbury, R. (2009). Adolescent Male and Female Gang
Members' Experience with Violent Victimization, Dating Violence, and Sexual Assault.
American Journal of Criminal Justice, 34, 103-115.
- Goffman, E. (1952). On Cooling the Mark Out. *Psychiatry*, 15,4, 451-453.
- Gongaware, T. B., Dotter, D. (2005). Developing the Criminal Self: Mead's Social Psychology
and Sutherland's Differential Association. *Sociological Spectrum*, 25, 379-402.
- Granovetter, M. S. (1973). The Strength of Weak Ties. *The American Journal of Sociology*,78, 6,
1360-1380
- Grippa, F., Gloor, P. A. (2009). You are Who Remembers You. Detecting Leadership Through
Accuracy of Recall. *Social Networks*, 31, 255-261.
- Haynie, D. L. (2001). Delinquent Peers Revisited: Does Network Structure Matter? *American
Journal of Sociology*, 106, 4, 1013-1057.
- Haynie, D. L. (2002). Friendship Networks and Delinquency: The Relative Nature of Peer
Delinquency. *Journal of Quantitative Criminology*, 18, 2, 99-134.
- Haynie, D. L. (2005). Adolescent Romantic Relationships and Delinquency Involvement.
Criminology, 43, 1, 177-210.

- Haynie, D. L., Payne, D. C. (2006). Race, Friendship Networks, and Violent Delinquency. *Criminology*, 44, 4, 775-805.
- Herman-Kinney, N. J. (2003) "Deviance" in Handbook of Symbolic Interactionism. *Walnut Creek: Altamira Press*. 695-720.
- Hirschi, T. (1969). *Causes of Delinquency*. California: University of California Press
- Hirschi, T. (1996). Theory Without Ideas: Reply to Akers. *Criminology*, 34, 2, 249-256.
- Hochschild, A. R. (1983). *The Managed Heart: Commercialization of Human Feeling*. Los Angeles: University of California Press
- Holtfreter, K. (2004) *Responses to Occupational Fraud: A Study in the Behavior of Law*. Unpublished doctoral dissertation, Michigan State University, Lansing, MI.
- Horowitz, T.; Tobaly, D. (2003). School Vandalism: Individual and Social Context. *Adolescence*, 38, 149, 131-139
- Jackson, J. E. (1983). Fraud Masters: Studying an Illusory, Non-violent, Gang Specializing In Credit Card Crimes. *The Gang Journal: An Interdisciplinary Research Quarterly*, 1, 4, 17-36.
- Kandel, D., Davies, M. (1991). Friendship Networks, Intimacy, and Illicit Drug Use In Young Adulthood: A Comparison of Two Competing Theories. *Criminology*, 29, 3, 441-469.
- Kissner, J., Pyrooz, D. C. (2009). Self-Control, Differential Association, and Gang Membership: A Theoretical and Empirical Extension of the Literature. *Journal of Criminal Justice*, 37, 478-487.

- Klemp-North, M. (2007). Theoretical Foundations for Gang Membership. *Journal of Gang Research, 14, 4*, 11-26.
- Klerks, P. (2003). The Network Paradigm Applied to Criminal Organizations: Theoretical Nitpicking or a Relevant Doctrine for Investigators? Recent Developments in the Netherlands. *Transitional Organized Crime; Perspectives on Global Security*, 97-113.
- Knoester, C., Haynie, D. L., Stephens, C. M. (2006). Parenting Practices of Adolescents' Friendship Networks. *Journal of Marriage and Family, 68*, 1247-1260.
- Knox, G. W. (2004). Females and Gangs: Sexual Violence, Prostitution, and Exploitation. *Journal of Gang Research, 55*, 1-15.
- Kornhauser, R. R. (1978). *Social Sources of Delinquency: An Appraisal of Analytic Models*. Chicago: University of Chicago Press.
- Krebs, V. E. (2002). Mapping Networks of Terrorist Cells. *Connections, 24, 3*, 43-52.
- Kubrin, C.E., Stucky, T.D., Krohn, M.D.(2009). *Researching Theories of Crime and Deviance*. New York: Oxford University Press.
- Lauderdale, M., Burman, M. (2009). Contemporary Patterns of Female Gangs in Correctional Settings. *Journal of Human Behavior in the Social Environment, 19*, 258-280.
- Lin, N. (2001). Building a Network Theory of Social Capital. *Social Capital: Theory and Research, 3-30*.

- Lubbers, M. J., Molina, J. L., Lerner, J., Brandes, U., Avil, J., McCarty, C. (2010). Longitudinal Analysis of Personal Networks. The Case of Argentinean Migrants in Spain. *Social Networks*, 32, 91-104.
- Luken, V. M., Tranmer, M. (2010). Personal Support Networks of Immigrants to Spain: A Multilevel Analysis. *Social Networks*, 32, 253-262.
- Lurigio, A. J., Swartz, J. A., Chang, J. (1998). A Descriptive and Comparative Analysis of Female Gang Membership. *Journal of Gang Research*, 5, 23-33.
- Matsueda, R. L. (1982). Testing Control Theory and Differential Association: A Causal Modeling Approach. *American Sociological Review*, 47, 489- 504.
- Matsueda, R. L. (1988). The Current State of Differential Association Theory. *Crime Delinquency*, 34, 277-306.
- Matsueda, R. L. (1992). Reflected Appraisals, Parental Labeling, and Delinquency: Specifying a Symbolic Interactionists Theory. *AJS*, 97, 6, 1577-1611.
- Matsueda, R. L. (1997). 'Cultural Deviance Theory': The Remarkable Persistence of A Flawed Term. *Theoretical Criminology*, 1, 4, 429-452.
- Matsueda, R. L., (2006). Differential Social Organization, Collective Action, and Crime. *Crime Law Soc Change*, 46, 3-33.
- McCarthy, B. (1996). The Attitudes and Actions of Others: Tutelage and Sutherlands' Theory of Differential Association. *British Journal of Criminology*, 36, 1, 135-147.

- McGloin, J. M. (2007). The Organizational Structure of Street Gangs in Newark, New Jersey: A Network Analysis Methodology. *Journal of Gang Research, 15*, 1-34.
- McGloin, J.M., Shermer, L.O. (2009). Self-Control and Deviant Peer Network Structure. *Journal of Research in Crime and Delinquency, 46*, 35-71.
- Mead, G. H. (1934). *Mind, Self, and Society*. Chicago: University of Chicago Press.
- Melossi, D. (2000). Changing Representations of The Criminal. *British Journal of Criminology, 40*, 296-320.
- Miller, J., Brunson, R. K. (2000). Gender Dynamics in Youth Gangs: A Comparison of Males' and Females' Accounts. *Justice Quarterly, 17*, 419-445.
- Moody, J. (2001). Peer Influence Groups: Identifying Dense Clusters in Large Networks. *Social Networks, 23*, 261-283.
- Moore, G. T. (1980). Holism, Environmentalism and Ecological Validity. *Man-Environment Systems, 10, 1*, 11-21.
- Palmer, C. T., Tilley, C. F. (1995). Sexual Access to Females as a Motivation for Joining Gangs: An Evolutionary Approach. *The Journal of Sex Research, 32*, 213-217.
- Patacchini, E., Zenou, Y. (2007). The Strength of Weak Ties in Crime. *European Economic Review, 52*, 209-236.
- Perlgut, D. (1983). Vandalism: The Environmental Crime. *Australian Journal of Social Issues, 18, 3*, 209-216.

- Portes, A. (1998). Social Capital: Its Origins and Applications in Modern Sociology. *Annual Review of Sociology*, 24, 1-24.
- Portes, A. (2002). Unsolved Mysteries: The Tocqueville Files II: The Downside of Social Capital. *The American Prospect*.
- Proctor, J. (2004). Understanding the Range of Female Criminality: A Prison-Based Test of Three Traditional Theories. *Women's Studies Quarterly*, 32, ¾, 61-85.
- Przemieniecki, C. J. (2005). Gang Behavior and Motives: Do Hollywood Gang Films Influence Violent Gang Behavior?. *Journal of Gang Research*, 12, 2, 41-71.
- Ruble, N. M., Turner, W. L. (2000) A Systemic Analysis of the Dynamics and Organization of Urban Street Gangs. *The American Journal of Family Therapy*, 28, 117-132.
- Rosenwein, B. H. (2006). *Emotional Communities in the Early Middle Ages*. Ithaca: Cornell University Press
- Rowe, D. C. (2002). The Evolutionary perspective on Crime. In *Biology & Crime* (pp. 43-65). Los Angeles: Roxbury Publishing Company.
- Schreck, C. J. (2004). The Social Context of Violent Victimization: A Study of Delinquent Peer Effect. *Justice Quarterly*, 21, 1, 23-47.
- Snodgrass, J. (1985). A Biographical Sketch and Review of the Work of Edwin H. Sutherland. *History of Sociology*, 6, 1, 55- 67
- St. Cyr, J. L., Decker, S. H. (2003). Girls, Guys, and Gangs: Convergence or Divergence in the Gendered Construction of Gangs and Groups. *Journal of Criminal Justice*, 31, 423-433

- Steffenmeier, D. (2003). "Confessions of a Dying Thief: A Tutorial on Differential Association" in Chapter 10, 227-264 in *Advances in Criminological Theory: A Guide for the New Century. Social Learning Theory and the Explanation of Crime*
- Sutherland, E. H. (1974). *Criminology*. J.B. Lippincott: United States.
- Sutherland, E.H. (1937). *The Professional Thief*. Chicago: University of Chicago Press.
- Sykes, G. M., Matza, D. (1957). Techniques of Neutralization: A Theory of Delinquency. *American Sociological Review*, 22, 6, 664-670.
- Sykes, G. M., Matza, D. (1961). Juvenile Delinquency and Subterranean Values. *American Sociological Review*, 26, 5, 712-719.
- Thompson, K. M. (1996). Journal of gang research: Specialization Patterns of Gang and Nongang Offending: A Latent Structure Analysis. *Journal of Gang Research*, 3, 25-35.
- Tindall, D. B. (2004). Social Movement Participation Over Time: An Ego-Network Approach to Macro-Mobilization. *Sociological Forces*, 37, 2, 163-184.
- Tittle, C. R., Burke, M. J., Elton, F. J. (1986). Modeling Sutherland's Theory of Differential Association, Toward and Empirical Clarification. *Social Forces*, 65, 2, 405-432.
- Van Meter, K. M. (2002). Terrorist/Liberators: Researching and Dealing with Adversary Social Networks. *Connections*, 24, 3, 66-78.
- Vasoli, R. H., Terzola, D. A. (1974). Sutherland's Professional Thief. *Criminology*, 12, 2, 131-154.

- Versichelen, M., Schepens, E. (1967). Age and Criminality. *Tijdschrift voor Sociale Wetenschappen*, 12, 4, 391-420
- Wasserman, S., Faust, K. (1994) *Social Network Analysis: Methods and Applications*. New York: Cambridge University Press.
- Weerman, F.M., Bijleveld, C.C. (2007). Birds of Different Feathers: School Networks of Serious Delinquent, Minor Delinquent and Non-Delinquent Boys and Girls. *European Journal of Criminology*, 4, 357-383.
- Wellman, B., Wortley, S. (1990). Different Strokes from Different Folks: Community Ties and Social Support. *The American Journal of Sociology*, 96, 3, 558-588.
- Zakour, M.J. (2008). Social Capital and Increased Organizational Capacity for Evacuation in Natural Disasters. *Social Development Issues*, 30, 1, 13-28.

Appendix A

Sutherland's Bullet Points Outlining Differential Association

The Following Statements refer to the process by which a particular person comes to engage in criminal behavior.

1. *Criminal behavior is learned.* Negatively, this means that criminal behavior is not inherited, as such; also, the person who is not already trained in crime does not invent criminal behavior, just as a person does not make mechanical inventions unless he has had training in mechanics.
2. *Criminal behavior is learned in interaction with other persons in a process of communication.* This Communication is Verbal in many respects but includes also “the communication of gesture.”
3. *The principle part of learning of criminal behavior occurs within intimate personal groups.* Negatively, this means that the interpersonal agencies of communication, such as movies and newspapers, play a relatively unimportant part in the genesis of crime.
4. *When criminal behavior is learned, the learning includes (a) techniques of committing crime, which are sometimes very complicated and sometimes very simple; (b) the specific direction of motives, drives, rationalizations, and attitudes.*
5. *The specific direction of motives and drives is learned from definitions of the legal codes as favorable or unfavorable.* In some societies an individual is surrounded by persons who inevitably define the legal codes as rules to be observed, while in others he is

surrounded by persons whose definitions are favorable to the violation of the legal codes. In our American society these definitions are almost always mixed, with the consequence that we have culture conflict over legal codes.

6. *A person becomes delinquent because of an excess of definitions favorable to violation of law over definitions unfavorable to violation of law.* This is the principle of differential association. It refers to both criminal and anti-criminal associations and has to do with counteracting forces. When persons become criminal, they do so because of contacts with criminal patterns and also because of isolation from anti-criminal patterns. No person inevitably assimilates the surrounding culture unless other patterns are in conflict; a southerner does not pronounce r because other southerners do not pronounce r.

Negatively, this proposition of differential association means that associations which are neutral so far as crime is concerned have little or no effect on the genesis of criminal behavior. Much of the experience of a person is neutral in a sense, e.g., learning to brush one's teeth. This behavior has no negative or positive effect of criminal behavior except as it may be related to associations which are concerned with the legal codes. This neutral behavior is important especially as an occupier of the time of a child so that he is not in contact with criminal behavior during the time he is so engaged in the neutral behavior.

7. *Differential associations may vary in frequency, duration, priority, and intensity.* This means that associations with criminal behavior and also associations with anti-criminal behavior vary in those respects. "Frequency" and "duration" as modalities of differential associations are obvious and need no explanation. "Priority" is assumed to be important in the sense that lawful behavior developed in early childhood may persist throughout life, and also that delinquent behavior developed in early childhood may persist

throughout life. This tendency, however, has not been adequately demonstrated, and priority seems to be important principally through its selective influence. "Intensity" is not precisely defined, but has to do with such things as the prestige of its source of a criminal or anti-criminal pattern and with emotional reactions related to the associations. In a precise description of the criminal behavior of a person these modalities would be rated in quantitative form and a mathematical ratio reached. A formula in this sense has not been developed, and the development of such a formula would be extremely difficult.

8. *The process of learning criminal behavior by association with criminal and anti-criminal patterns involves all of the mechanisms that are involved in any other learning.*

Negatively, this means that the learning of criminal behavior is not restricted to the process of imitation. A person who is seduced, for instance, learns criminal behavior of association, but this process would not ordinarily be described as imitation.

9. *Although criminal behavior is an expression of general needs and values, it is not explained by those general needs and values, because noncriminal behavior is an expression of the same needs and values.* Thieves generally steal in order to secure money, but likewise honest laborers work in order to secure money. The attempt by many scholars to explain criminal behavior by general drives and values, such as the happiness principle, striving for social status, the money motive, or frustration, have been, and must continue to be, futile, since they explain lawful behavior as completely as they explain criminal behavior, They are similar to respiration, which is necessary for any behavior, but which does not differentiate criminal from noncriminal behavior.

Appendix B

Categories collapsed for Crime Categories

THEFT	
Robbery/Individual	Robbery/Residential
Embezzlement	Burglary/B&E/Commercial
Burglary/B&E/Residential	Motor Vehicle Theft
Theft From Building	All Other Larceny
Theft From Motor Vehicle	Theft Of Moped/Other Vehicle Type
Robbery/Commercial House	
FRAUD	
Bad Checks	Gambling/Betting/Wagering
Forgery By Check	Forgery By Money Order
False Pretenses/Swindle/Confidence Game	Forgery/Counterfeiting/All Other
False Information To Police	Identity Fraud
Impersonation	Fraud; Credit Card
Drug	
Drug/Narcotic Violation	Drug Activity
Narcotics Investigation	Suspect Drug House
Vandalism	
Destruction Property/Private Property	Destruction Property/City
Trespass of Real Property	Destruction Property/Piva
Violent	
Simple Assault; Domestic	Murder/Non-Negligent Mansl
Aggravated Assault	Simple Assault
Threaten Bodily Harm	Sexual Battery
Threaten to Burn	Shooting at/Within Occupie
Throw Missile at Occuied	Hit and Run
Assault & Battery	Brandishing Firearm
Gang Activity	
1800 IDL	Gang Activity
New Gang Investigation	