ABSTRACT

Title of Thesis: INTEGRATING OFFENDING VERSATILITY INTO THE BALANCE PERSPECTIVE OF PEER INFLUENCE

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The balance perspective advocates for scholars to consider peer influence as both reciprocal and relative, asserting that adolescents will alter their behavior when there is an imbalance in delinquency with a peer. McGloin (2009) found support for balance when applied to frequency of offending. There is reason to suspect that this drive for behavioral homeostasis should emerge with regard to an adolescent's offending versatility, as well. This thesis uses the AddHealth data to explore whether adolescent alter their offending versatility to achieve behavioral "balance" with a best friend, and friendship stability moderates this relationship. The results provide support for the balance perspective and suggest that respondents alter their offending versatility to become more similar to their best friend over time.

INTEGRATING OFFENDING VERSATILITY INTO THE BALANCE PERSPECTIVE OF PEER INFLUENCE

by

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Dedication

I would like to dedicate this thesis to my friends and family, without whose support and encouragement this thesis would not be possible.

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Chapter 1: Introduction

The correlation between delinquent peers and delinquency is one of the most robust findings in criminology (McGloin & Thomas, 2019; Warr, 2002). Importantly, this association contains dimensions of both frequency and type of offending. With regard to the former, the basic argument is that having friends who are more actively delinquent should predict more frequent delinquency in the individual. There is ample empirical work that confirms this relationship (Akers, 1998; McGloin, 2009; Pratt et al., 2010; Warr, 2002). Regarding the latter, scholars argue individuals should also engage in the same *profile* of offending modeled (and presumably endorsed) by their friends (Thomas, 2015; Warr, 2002). This expectation is grounded in some core theoretical treatises, with Sutherland, (1947) arguing that the definitions learned through differential association were specific to particular crime types and situations. This suggests, for instance, that individuals who have violent friends should learn to view violence as a reasonable line of action in certain circumstances, not burglary or theft (Thomas, 2015, 2018). Indeed, Warr (2002) argues that understanding empirical validity of such arguments is crucial for theoretical commentary and a broad understanding of peer influence. Unfortunately, work in this domain is underdeveloped compared to that on offending frequency.

Though the literature evaluating type of offending and versatility has been scarce, research analyzing the frequency of offending and peers has received wide support (Pratt et al., 2010). However, a major shortcoming in this research is the tendency to view peers as having a unidirectional influence on an individual's offending. Heider (1958) proposed a balance theory in which he argues that friends who have attitudes that differ from one another will reach a state of congruence in order to alleviate tension in the relationship. Within criminology, McGloin (2009) argued that the balance premise held promise for understanding peer influence regarding deviant behavior.

McGloin (2009) found that, within best friend dyads, a difference in the frequency of delinquency predicted within-individual change in frequency of offending, suggesting that adolescents were behavioral congruent with a peer. These findings suggest that viewing peers who have engaged in delinquency as being axiomatically 'bad' influences is a mischaracterization, as deviant peers who are relatively less delinquent than the subject can be a prosocial influence. To date, this balance perspective has been applied solely to the frequency of offending and has not addressed offending versatility. Expanding the balance perspective to versatility may offer deeper insight into the mechanisms of peer influence, and how imbalances in offending versatility may influence peers. Utilizing the balance perspective is essential due to its ability to shift the focus away from one's peer, and instead measure the characteristics of the tie. Additionally, it is crucial to carefully consider how individuals with varying versatility influence one another when they are grouped together, as many criminal justice interventions and programs include components where individuals are in group settings and are exposed to individuals with versatile repertoires.

Although the balance perspective has not been applied explicitly to specialization/versatility, there is reason to suspect that its application on this front is reasonable. At a conceptual level, the balance perspective would accommodate a prediction that people not only alter their amount of offending, but that they also narrow or expand the range of offenses they engage in to become more similar to a peer (i.e., change the degree of offending versatility). Whether this movement towards balance happens due to normative influence, converged opportunities, desire towards similarity, or some combination thereof, the prediction would remain the same. Moreover, in light of the empirical work demonstrating a relationship between friends' type of offending and adolescents' own specialization (Thomas, 2015), there is reason to suspect that peers influence offending versatility.

This thesis seeks to expand the balance perspective by addressing how the relative versatility between an adolescent and his or her best friend may predict a convergence in the degree of offending versatility. In other words, this thesis aims to investigate the idea of whether people narrow or expand their versatility to become more similar to a peer. Using a balance perspective to understand versatility of offending provides insight into dynamic offending repertories and provides theoretical clarity on peer influence, particularly understanding reciprocity of behavior.

Chapter 2: Peer Influence and Delinquency

The statistical relationship between having delinquent peers and one's own delinquency is one of the most consistent findings within the field of criminology. Indeed, Warr (2002) argues that peer influence processes are perhaps the most important and empirically supported mechanisms of delinquency. Peer influence more broadly is a concept that encompasses a wide variety of processes, however the perspective that has dominated the literature is normative influence (McGloin & Thomas, 2019). Within this normative influence tradition, Sutherland's (1947) differential association theory and Akers' (1998) social learning theory are the primary theoretical perspectives. The basic mechanisms in these approaches are that beliefs and attitudes of delinquency are transferred between individuals through associating with peers. In Sutherland's (1947) theory he proposed that delinquent behavior was learned like all other types of behavior, namely through attitudinal transference and the learning of skills. Individuals are exposed to a wide vary of attitudes that either endorse or fail to endorse delinquent behavior, and when those that endorse delinquent behavior outweigh those that are unfavorable, we expect crime to occur. Akers (1998) built upon Sutherland's model by emphasizing the role that anticipated outcomes (i.e., reinforcement contingencies) have on the learning of behavior.

Although there has been substantial evidence in support of the socialization perspective (McGloin & Thomas, 2019; Pratt et al., 2010), one of the shortcomings in this literature is the tendency to view deviant peers as solely having a unidirectional, antisocial influence on an individual's offending. McGloin (2009) argues that the criminological socialization literature appears to reach a consensus that it is simple exposure to delinquent peers that results in delinquency. "Exposure" has been operationalized as the number of delinquent friends, proportion of delinquent friends, or the amount of delinquency that one's friends engage in (Haynie, 2002). Although these measures may provide insight into how

one's friends influence his or her behavior, simply using exposure may omit nuances of peer relationships. Specifically, by only considering objective exposure, researchers are essentially assuming that the peers who engage in delinquency are inherently risk factors for delinquency – that is, they should always promote increased offending in the subject. However, social psychologists such as Heider (1958) have argued explicitly that the influence of peers is a reciprocal process and that peers attempt to reach a state of similarity in their behavior. Heider (1958) extended this argument into creating the balance perspective, which argues that when there are differences in attitudes, peers influence one another towards a state of conformity. This perspective accordingly has different views on how to think about criminogenic risk and the mechanisms of (deviant) peer influence.

The Balance Perspective

There is wide support within the social psychological literature that individuals alter their behavior in order to be more in accordance with peers (Asch, 1952, 1956; Granovetter, 1978; Milgram et al., 1969; Sherif, 1935). Indeed, some of the earliest studies within the field of social psychology have considered conformity and how people's opinions change to become more similar to those whose opinions may differ. Perhaps the most classic example of this phenomenon is the Asch (1956) line test in which even when an individual knew that his answer was correct, when others disagreed, he changed his answer to conform to the group. Heider (1958) extended this approach in his creation of balance theory in which he argued that when individuals in a relationship have attitudinal incongruence, they will attempt to reach congruence in an attempt to alleviate social discomfort. In other words, when two individuals have a positive relationship with one another, but their feelings towards a third party or object are in conflict, either the relationship will alter or the feelings about the third party will begin to align in order to create a balance.

Heider (1958) focused on interpersonal relationships between dyads when utilizing this balance perspective. These dyadic relationships contain three components: a reference person (P), a peer with whom the reference person has some relationship with (O), and some third element that could be an idea, person, or behavior (X). Heider (1958) proposed that there are several states that exist within these triads, and that when the overall sign of the triad is positive, a state of balance is reached. Conversely, when the overall sign is negative there is an imbalance. For instance, when P and O have a positive relationship and there is an imbalance in attitudes of X, such that P has a positive affinity towards X and O does not like X, then there will be imbalance. When the triad is imbalanced, we can then expect to see a shift towards behavioral congruence, where either P or O change their attitudes in order to create a balanced triad. In terms of delinquency, if P has a lower rate of delinquency while O has a higher rate, we would expect them to alter their offending behavior in order to reach homeostasis (Heider, 1946, 1958; Newcomb, 1968: see Figure 1). If either P or O do not change their behavior or attitudes towards X, it may result in the severance of the relationships as a way to balance the triad.

Figure 1. Heider's (1958) Balance Triad

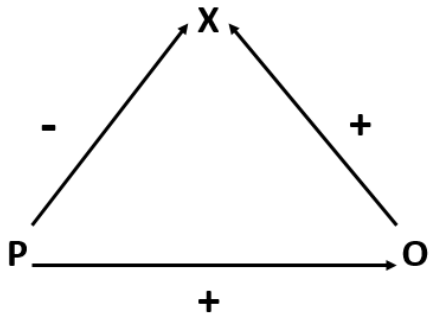

Figure 1 demonstrates Heider's (1958) classical conceptualization of balance. P represent the focal person, O the peer, and X the external object. Each tie represents a connection between the points.

Heider (1958) maintained that in order to understand balance, we must assess the POX unit (the triad between focal P, person O, and object X) from the perspective of the focal individual. The key for Heider's triad was not the nodes, or P and O, rather it was the connections that formed the POX unit. These connections are what form a balanced or imbalanced unit. When considering how balance may be applied to delinquency, it supports the perspective that risk is not inherent to the individual, but instead risk is defined by the relationship. To understand risk of delinquency, we must not assess the deviant peer in isolation. Rather than solely studying the deviant peer, we should instead assess characteristics of their relationships, including the difference in attitudes or behaviors. We can then understand how the difference in these attitudes among peers leads to behavioral and attitudinal convergence.

This process of converging attitudes may be similar to Sutherland's (1947) proposed mechanism of attitudinal transference. Though Sutherland himself was unclear about exactly how this process occurred, the premise behind his theory of differential association is that attitudes and norms can be learned and transferred from associating with peers, and these norms can then be internalized. The totality of the attitudes that are unfavorable or favorable towards delinquent behavior can then be weighed, and when the attitudes that are favorable outnumber the former than an individual is able to rationalize the delinquent behavior and engage in delinquency (Haynie, 2002; Matsueda, 1988).

Sutherland (1947) also argued that while delinquent behavior is learned just like any other behavior, who you learn from matters. The relationship measured in proximity, duration, frequency, and intensity alters the degree of influence that the peer holds. Davis and Rusbult, (2001) provide evidence for this postulate of differential association and found that attitudinal alignment is most likely to occur when the question in issue was more important to the reference person, and when the dyad was a dating pair or a pre-established friend. Similarly, the balance literature has supported the notion that the quality of relationship

influences the magnitude in the shift of behavior (Taylor, 1967). This suggests that the perception of the relationship by the individual influences how behavior will align. These findings are indeed not surprising given Sutherland's (1947) proposals.

There is also overlap between the balance perspective and social learning theory. Akers (1998) appended Sutherland's (1947) original differential association theory by adding differential reinforcement. He argues that in addition to definitions, imitation, and differential associations the key of social learning is differential reinforcement by operant conditioning. Akers (1998) argues that it is the learned anticipated outcomes that ultimately predict the engagement in delinquency. Peers can provide reinforcements or punishments from the behavior one either engages in or observes which can then shape later behavior of an individual (Akers, 1998). Warr (2002) mentions that one of the mechanisms of peer influence may not be the anticipation of reward, but the fear of ridicule and losing status (see also Anderson, 2000). He argues that these are mechanisms of compliance, and that individuals will alter their behavior to conformity for fear of losing this status (Warr, 2002). The fear of losing status may be similar to the process proposed by Heider (1958) and Newcomb (1968). When individuals have different attitudes, they feel a sort of discomfort that must be alleviated. Within the criminological context, this discomfort may be the anticipated punishment and fear of losing status as a result of not engaging in similar behavior based on the attitudes and norms of peers. In order to alleviate this discomfort, individuals conform and converge upon offending behavior.

Whether it be attitudinal transference, or the social discomfort felt by anticipated outcomes of behavior, the normative influence perspective melds well with Heider's (1958) balance theory, however there are still some stark differences. Specifically, balance shifts the focus away from the peer and moves it towards the tie, or the relationship between the two individuals. By changing the focus, we can see that the risk of peers is not constant for all social associates (i.e., all people with whom s/he is friends) but rather is dependent on the

specific relationship – for instance, a delinquent who is more deviant than one friend but less deviant than another should serve as an antisocial influence for the first friend yet a prosocial influence for the second. This view also explicitly allows for reciprocal influence, where traditional theories of normative influence do not typically include this component.

Theories of normative influence and balance are derived from a similar theoretical tradition, and the mechanisms by which they operate, namely attitudinal transference, are similar. Despite this similarity, balance theory is not only consistent with the normative influence perspective. Converging routines and opportunity structures may also explain convergence in behavior. McGloin et al., (2007) argue that local life circumstances and routines may explain differences in offending. As individuals spend more time together in the same routines, they have similar opportunities of offending either alone or together (see also McGloin, 2012).

Regardless of the mechanism, the balance perspective has received support within the empirical literature. For example, Kandel (1978) studied 233 adolescent best friend dyads and their attitudes and behaviors towards drug usage in order to discern whether these individuals would become congruent in either behavior or attitudes, or their relationship would end. She found that those who had an imbalance in their attitudes tend to reach congruence and argued that this indicates a socialization effect. Although this fails to take into consideration other types of deviant behavior, Kandel (1978) still demonstrates that when there is an imbalance in attitudes, congruence is reached. Using data from six waves of the National Youth Survey, Menard & Huizinga (1994) argue that they find support for the balance perspective because their data reveal that the interaction between attitudes and behavior appears to be reciprocal. This indicates that a change in attitudes predicts behavior and vice versa which they believe supports balance theory because individuals may be attempting to reach a state of congruence (Menard & Huizinga, 1994). Balance has also received support with respect to political

attitudes (Moore, 1978), sports identification (Fink et al., 2009), and market behavior (Woodside & Chebat, 2001).

Curiously, the balance perspective has received only modest attention within criminology. McGloin (2009) stands out as directly employing balance to delinquency and behavior. She argues those who engage in delinquency are too often only thought of as deterministic negative influences, thus not considering the potential prosocial influence they may have. Rather than viewing the relationship between peers as simple and one-directional, the balance perspective offers insight into the reciprocity of relationships and the complexities surrounding peer influence and delinquency. In her study, McGloin (2009) used an approach similar to Heider's (1958) in order to model the frequency of delinquency. She considered a reference person (P), a same sex best friend (O), and frequency of delinquency (X). When there was an imbalance in the rate of offending between the best friends P and X, it predicted within individual change in the reference person P. She found support that when the delinquent behavior was different between these best friends, the reference individual altered his or her behavior in order to be more like the best friend and reach behavioral homeostasis. Importantly, it did not appear that this relationship was a reflection of regression to the mean, nor did it appear that adolescents were breaking friendship ties rather than changing their behavior (Allison, 1990; McGloin, 2009).

The crux of McGloin's (2009) findings is her argument that the risk of delinquent peers is not inherent within the person, but instead in the tie. The degree of the risk of a peer is not constant, rather it is dependent on the relationship to the reference individual. Understanding risk as dependent on the relationship allows us to understand that when peers interact, they mutually influence one another. In some cases, friends that engage in delinquency provide attitudes conducive towards delinquency, and in others may provide prosocial norms. Because relationships with peers involve dynamic interactions, viewing those who engage in delinquency as 'bad' is an oversimplification. Viewing peers as

reciprocal influences allows us to move past studying only exposure. The question of whether this viewpoint can offer insight not only on offending frequency, but also on offending versatility/specialization, remains unanswered.

Balance in Versatility

Relatively few pieces explicitly acknowledge the balance perspective as being distinct from differential association and social learning theories (c.f., Carson, 2013; Osgood et al., 2015), and the literature that has utilized this perspective has focused almost exclusively on frequency of offending. Although this focus is certainly important, and has allowed for the application of balance, leaving out offending versatility may limit our understanding of peer influence (Warr, 2002). Indeed, Warr (2002) argues that peer influence theories should be able to address both offending frequency and versatility.

Sutherland's (1947) theory of differential association supports the notion that peers should influence not only how much crime an individual commits, but also the types of crime and degree of versatility of offending. When a peer possesses attitudes that condone a particular type of delinquent behavior, we can expect that the attitudes that will be transferred are specific to that type of behavior. In other words, if a peer teaches someone techniques such as how to pick a lock, pick pocket, or rob a store, we would expect to see the individual engage in offenses that require these similar skills. Specialization is natural within Sutherland's tradition, when an individual adopts attitudes that a particular crime or action is acceptable, then likewise that behavior may become acceptable.

Recent literature reemphasizes that attitudes towards delinquency are not general, but rather are much more specific, consistent with Sutherland's (1947) principles (Thomas, 2018). This position is intuitively logical when put in the context of a crime such as theft. When an individual possesses attitudes learned from others that allow theft, we may expect them to engage in theft, but it would be more unusual if they were to engage in robbery.

Sutherland (1947) applied this perspective in his pioneering work on white collar crime, arguing that we should see those who engage in these types of crimes engage in similar types of offenses as their peers. Through mechanisms of normative influence, they are taught these types of behaviors are acceptable as well as the techniques required. A key idea of the normative influence perspective is that people learn specific attitudes that can be applied in situational contexts, as opposed to global attitudes of approval. Thomas (2018) finds that while there is usually consensus among disapproval of crime when measured globally (e.g., when measured as stealing is always wrong), when there is situational context there is much more heterogeneity among approval. In this sense, it does not appear that people adopt global attitudes of crime, such that delinquency is an acceptable alternative under a wide range of circumstances but instead that it is much more situationally dependent. We can expect that when individuals are exposed to peers who engage in a constrained range of delinquency, they are exposed to limited attitudes and techniques, and thusly exhibit a higher degree of specialization, rather than more versatile offending patterns.

Akers (1998) social learning theory would also predict that individuals should display a higher degree of specialization if their peers do not engage in a variety of offenses. When a friend engages in delinquent behavior there are several ways in which this behavior may be socialized. Akers (1998) argues that behaviors and attitudes are learned through both differential reinforcement and imitation. If a friend holds certain attitudes and engages in a certain type of delinquency, the expected outcome is specific to that behavior. For example, if an individual's friend shoplifts frequently and gets away with that behavior the endorsement of shoplifting may be high. However, this does not mean that if the individual then breaks into someone's home in order to steal something the friend will consider that behavior acceptable. We expect that the extent to which an individual perceives the probability of rewards and punishments is specific to the offense. The way in which imitation influences the type of behavior learned is analogous to Sutherland's (1947) argument. When peers engage in

a particular type of delinquency, those specific skills and methods are what are learned, not some generalized underlying acceptance of all delinquency.

In league with such arguments, it is not surprising that Warr (2002) states that if peers have an influence on delinquency then we should observe influence not only in the frequency of offending but in the degree of versatility as well. Essentially, we should expect that peers influence how much an individual offends, and also the degree of diversity in his or her offending. Diversity in offending can be measured by versatility/specialization. Versatility/specialization should not be considered categorical but can be thought of as a spectrum of offending diversity that ranges from diversity (i.e. every offense is a different type) to complete specialization of a particular crime type (McGloin et al., 2007; Sullivan et al., 2006).

Over the past two decades there has been a substantial body of evidence supporting the notion that some individuals exhibit a higher degree of specialization in their offending (McGloin et al., 2007; Osgood & Schreck, 2007; Sullivan et al., 2009; Sullivan et al., 2006; Thomas, 2015, 2016, 2018). Specialization has been met with wide interest within the criminology due to its contribution to theoretical constructs and direct application to policy (Piquero et al. 1999). Perhaps one of the largest reasons for the expansion of specialization within the literature is in part due to improved measures (Farrington et al., 1988; Osgood & Schreck, 2007; Piquero et al., 1999). More recent work has adopted approaches that focus on individual-level measures in order to study individual offending patterns (e.g. the diversity index, latent class analysis, and item-response theory). Studying offending versatility and specialization is crucial in order to fully understand how individuals behave and precisely how behavior can be learned and transferred between individuals.

Despite the methodological advancements, a large portion of the literature has studied specific crime types (Thomas, 2015). Much of the work on versatility/specialization suggests that when a friend engages in a particular type of behavior, it is associated with an

individual later engaging more in the same type of behavior. (Kreager, 2007) analyzed violent offending and found that within networks of adolescents who play sports, those who have friends that are more violent are likely to become more violent themselves. Others have found that when an individual has drug abusing friends, they are more likely to abuse drugs (Akers et al., 1979) and when an individual has friends who engage in property crime, they are more likely to engage in a similar offense (Agnew, 1991). These studies begin to consider versatility/specialization, but they are limited by their ability to only speak to the same type of behavior rather than to the degree in which an individual demonstrates specialization/versatility.

Likewise, Thomas (2015) argues that this line of inquiry does not necessarily demonstrate specialization. He argues that in order to demonstrate specialization, one must assess a type of offending relative to the entirety of an individual's offending repertoire. Thomas (2015) found that those who have best friends that specialize in either violent crime, property crime, or substance abuse relative to each other are more likely to engage in similar behavioral patterns as well. By exploring these categories of crime relative to one another, he was able to comment on the degree to which an individual expressed versatility/ specialization. These findings provide support that peers not only influence frequency of offending, but also versatility. Informed by the balance perspective, we can expect that behavioral congruence occurs with respect to both versatility and frequency facets of offending, and we can turn to peer processes to explicate the mechanisms by which behavioral homeostasis may occur.

Potential Mechanisms of Balance in Offending Versatility

Although there is evidence to suggest that peers influence an individual's offending versatility, the mechanisms by which this process occurs have not been explored. The application of the balance perspective has previously been limited to consider the frequency

at which peers offend, however it should anticipate that versatility/specialization matters as well. An imbalance in the degree of specialization/versatility between friends should lead to a convergence driven by one of several mechanisms: normative influence attitudinal convergence, converging situational and opportunity structures, a need to alleviate tension, or some combination thereof.

First, attitudes that either endorse specialization or versatility may converge. Thomas (2018) argues that attitudes surrounding delinquent behavior are specific. Holding specific attitudes of delinquency that endorse a particular type of behavior are associated more with the delinquency-specific behavior rather than global forms of delinquency (e.g. those who possess attitudes more favorable to theft and fighting are more likely to engage in those same behaviors; Thomas, 2018). In essence, having only a few of these attitudes may lead to greater specialization, whereas possessing more leads to a more versatility. There has been considerable support suggesting that when attitudes or behavior are imbalanced between friends, these attitudes converge (Davis & Rusbult, 2001; Heider, 1958; Newcomb, 1968; McGloin, 2009; Taylor, 1967).

When there is an imbalance with a friend in the attitudes that endorse specialization or versatility, under the normative influence perspective we should expect that an individual will adopt those attitudes. The friend may possess a limited set of norms that endorse delinquent behavior or may possess norms that endorse a wide variety of types of delinquency. Because the individual alters his or her norms to be in accordance with those of a friend, they are likely to embrace either the limited or broad set of norms in order to hold attitudes similar to the friend. The adoption of these attitudes is likely to then result in similar sets of behavior, therefore leading to either more specialization or versatility. For example, if a best friend holds the attitudes that theft, robbery, and vandalism are acceptable in a wide variety of situations while the individual believes that only vandalism is acceptable, he or she may start to accept these novel norms of the friend. The individual's offending repertoire,

which until this point was constrained and relatively specialized will start to reflect the acceptance of these attitudes and become more versatile. Conversely, the more versatile friend may narrow his offending repertoire as his own attitudes shift to become more similar to his friend. Thusly, under the normative influence perspective, attitude convergence may result in the manifestation of a similar versatility.

The balance perspective is consistent with the notion that attitudes may converge and change over time; however, it is worth noting that not all views of peer influence would agree with this prediction. For example, the criminal capital perspective holds an implicit alternative prediction: rather than disregard behaviors that he or she has previously engaged in in favor for behaviors of a friend, an individual will expand their repertoire and become increasingly versatile. In this perspective, an individual accumulates new skills and behaviors which are then added to his or her offending repertoire thereby expanding his or her offending profile (Weerman, 2003).. While a majority of the peer literature assumes that an individual will alter his or her offending over time by both picking up skills and definitions from friends and dropping some of their own (Sutherland 1947; Akers, 1989; McGloin & Thomas, 2019), the criminal capital perspective deviates by implying that, at least in the short term, an individual will only expand their versatility over time as they incorporate the values, knowledge and skills they observe into their (expanded) criminal repertoire.

Under this alternative perspective, we would expect that an individual would be much more likely to add new attitudes and definitions to his or her repertoire rather than disregard some behaviors or skills over time. For example, if the subject frequently engages in auto-theft and has a friend that engages in burglary, under this perspective the subject would adopt these skills and expand their offending to include burglary as well. The predictions of criminal capital and attitudinal convergence differ significantly, however the mechanisms behind both are the same. Subjects versatility would expand because they would learn and adopt the skills and attitudes favorable towards delinquency that their friends hold.

As long as the delinquency between the respondent and the friend is non redundant (i.e., such that the respondent does not already engage in the type of behavior that the friend engages in) the respondent should acquire these new skills and become more versatile.

If the criminal capital perspective is supported and individuals only expand their offending, we should expect to only see increases in versatility and fail to observe imbalance predictions overall because their offending profiles should not stay the same nor become more specialized. Though in the short term this perspective may have merit (i.e., when exposed to new skills an individual may become temporarily more versatile as he or she engage in their typical routine behaviors and simultaneously incorporate the new skills), and the individual may become more versatile, it is not likely that the individual would hold the level versatility steady over more extended periods of time. As individuals age and as their life circumstances change, they are likely to alter their versatility and incorporate some skills while pruning others (Massoglia, 2006; McGloin et al., 2011; McGloin et al., 2007; Piquero et al., 1999; Sullivan et al., 2006). For instance, there is support that in legitimate markets such as the medical field, new skills are not all sustained and are both added and lost within only a year (Madigosky et al., 2006) . Within criminology, McGloin et al. (2007) offer support that individuals change their offending versatility in accordance with their local life circumstances and opportunities rather than simply becoming increasingly versatile. Even so, it is worth acknowledging an alternative view to the balance perspective and the predictions that flow from it.

Secondly, the convergence in specialization/versatility may be attributable to the alignment of opportunities and situational contexts. McGloin et al. (2007) found that opportunity structures play a role in specialization/versatility, and that changes in local life circumstances may alter opportunities to engage in different types of offenses. Under this perspective, imbalance in specialization/versatility with a peer stems from divergent opportunities and routines of the individual and the best friend. Once the individual starts

spending more time with the friend, their allocation of time converges and there is a blending of opportunities. Consider for instance an individual who spends the majority of his time at home, and a friend who frequently 'hangs out' at a mall. As they spend more time together and perhaps compromise in their socializing routines, the first individual is now exposed to many more opportunities to engage in a variety of behaviors. While he may only have had limited opportunities for delinquency before, now he may have the opportunity to engage in shoplifting, stealing, and a host of other behaviors. Conversely, the second individual may see his opportunities for offending become less versatile as he alters his routines.

It is important to note that, despite its plausibility, the idea that behavioral congruence is driven by convergence in opportunity structures has not received much attention within the empirical literature. McGloin (2012) applied unstructured and supervised socializing to her previous work with convergence in the frequency of offending (McGloin, 2009). She analyzed the imbalance in time use with peers between an individual and his or her best friend and found that despite a large body of evidence that suggests unstructured and unsupervised socialization drives offending (Hoeben & Weerman, 2016; Osgood & Anderson, 2004; Osgood et al., 1996; Siennick & Osgood, 2012), a differential level of time spent may explain different levels of delinquency, but not the tendency to achieve balance from within individual change. Though these findings suggest that an imbalance in time spent with friends does not fully explain convergence in behavior, changing opportunity structures and routines might offer different insights.

Third, and finally, changes in offending versatility could emerge due to other underlying peer processes such the desire to alleviate tension and the desire for closeness that drives the convergence of behavior. Though this may be similar to the normative influence perspective, the focus on the removal of dissonance and the achievement of closeness as a driver of behavioral change deserves specific attention. Heider (1958) and Newcomb (1968) propose that when there are attitudes that are in competition with one another within a

positive relationship there is a desire to achieve closeness with the individual and remove any dissonance or imbalance. An individual can feel a dissonance that must be eliminated, which can lead to a convergence in the acceptance of an attitude. When there is a sort of dissonance, individuals often conform and align their responses to that of their peers, even when the peer is not a close friend (Asch, 1952; Sheriff, 1935). This tension could also lead to a convergence in specialization/versatility by the same process of normative influence. As an individual accepts the attitudes that are specific to the type of delinquency, they are more likely to demonstrate higher degrees of specialization (Thomas, 2018).

Again, this does overlap some with a normative influence viewpoint. This mechanism could be a product of normative influence or an achievement of closeness (McGloin, 2012). In the social psychological literature, normative influence refers to influence that leads individuals to confirm because of fear of negative social consequences (Kassin et al., 2013). These social consequences are far reaching; (Williams & Nida, 2011) find that people can become severely distressed when rejected from a group, and this exclusion can feel like physical pain (MacDonald & Leary, 2005). Though it may be unclear how similar or dissimilar alleviation of tension is from normative influence, the vital component within the normative influence perspective the transference of norms. Conversely, in the removal of dissonance it is not the acceptance of attitudes of a friend, but instead engaging in similar behaviors in order to avoid negative social feelings. Individuals may engage in behaviors with a friend in order to avoid these feelings, but still possess attitudes that do not endorse the behaviors.

Conditional on Friendship Stability?

In addition to the prediction that an imbalance in an attitude or in versatility would lead to a state of convergence in order to reach similarity with that of a friend, Heider (1958) also theorized that an imbalance of an attitude could also lead to a severance in the friendship.

To his point, an important consideration within this perspective is the quality of relationship and the stability of the friendship over time. McGloin (2009) provides evidence that suggests individuals are more likely to alter their offending to become more similar to their friends rather than terminate the friendship, but it is possible that qualities of the friendship may moderate the extent to which individuals alter their behavior. This notion is grounded in the early works of Sutherland (1947). Sutherland (1947) argues that friends with whom we have stronger connections (i.e., friends that we have had for a longer period of time, friends who we feel closer to, and friends with whom we associate with more frequently) are more likely to have an influence on offending behavior.

Davis and Rusbult (2001) provide additional support for the importance of relationship context. They find that when there are attitudinal imbalances between dyadic pairs, pairs who are friends or couples are more likely to reach convergence that those who are strangers. Essentially, individuals with whom we have stronger connections with can have a greater impact on our social behavior. Warr (2002) explains that friends offer social support such as trust, loyalty, and commitment with one another. When an individual has a stronger connection with a friend, he or she may have stronger feelings of commitment and trust. These stronger connections may influence versatility convergence in each of the fore mentioned potential mechanisms.

First, the relationships between respondents and friends to whom there are stronger attachments to may hold more weight. It is possible that the attitudes and behavior of those who an individual is attached strongly to matters more, and the individual strives to be like this individual. In this scenario, we would expect the quality of the relationship may act as a moderator, such that versatility convergence is more likely to occur within stable friendships. Individuals may view the attitudes of these friends as more important than other messages that they receive and alter their offending accordingly to become more versatile.

Second, relationship strength may manifest as spending more time together, which may lead to greater convergence in both routines and opportunities. If individuals remain best friends over a longer period of time, they may spend more time together and have overlapping opportunities to engage in the same types of behavior. From this view, the convergence of versatility is simply driven by individuals having the same opportunities at the same time and potentially co-offending with one another. Third, similar to Heider (1958) and Newcomb's (1968) idea of alleviation of tension, relationship quality may impact the degree of tension felt and the subsequent need to alleviate the discomfort. In other words, an individual may feel more pressure to alter his or her behavior in order to relieve the dissonance and reach a state of congruence when the friendship is strong and stable. When there is a strong relationship and an imbalance is present, an individual may feel a need and a desire for closeness in order to secure the relationship. From this view, he or she may alter their behavior in order to reinforce the relationship and achieve closeness with the friend. The premise is still that when the relationship is closer and more intimate, individuals may be more likely to reach convergence.

Though the support of imbalance predicting a termination of friendship (i.e., support for the control prospective) is minimal, it is likely that the relationship quality and stability moderates the degree to which respondents alter their behavior when an imbalance between a friend is present. Adolescents experience a large degree of relationship turnover, such that during this period of their life friendship groups are extremely dynamic and may change dramatically (Warr, 2002). Friendships that are more stable could be an indication of stronger attachment levels between a subject and the nominated friend. As such, under the balance perspective we expect that those whose friendships nomination stays stable between the waves are more likely to alter their versatility to be more like one another. The attitudes of these friends could be given higher weight such that individuals are more likely to accept them, the respondents could simply spend more time around the stable friends thus allowing

more opportunities to engage in the same behaviors, or due to the strength of the friendship there could be additional pressure to conform to the best friend in order to get rid of the dissonance in the relationship and achieve closeness with one another. The moderation that friendships stability has on a respondent may vary: we would expect to see the greatest versatility convergence among those who remain best friends, some potentially lower levels of convergence among those who remain friends, and potentially little to no convergence for those who are no longer friends at all.

Current Study

The purpose of this study is to understand how peers influence versatility and identify potential mechanisms by which this process occurs by applying balance perspective. Despite its utility in understanding the risk of peers, the balance perspective has been applied only to frequency of offending (McGloin, 2009). This application is certainly an advancement; however, we have not addressed how balance may offer insight into the degree of specialization. In order to better understand how peers who engage in delinquency may be a risk, we should go further than frequency of offending and look to versatility. Understanding how specialization/versatility is influenced by imbalance between friends provides greater theoretical clarity and contextualizes the common assertion within criminology that delinquent peers are automatically risks.

Utilizing the balance perspective and applying it to offending versatility is crucial for both theoretical development and for the direct application to criminal justice interventions. Within criminology, scholars have often considered the influence of peers in a unidirectional manner simply through exposure to skills, attitudes, or opportunities. Though considering exposure is important, it is essential to move past regarding individuals as solely delinquent or non-delinquent and instead recognizing that the process is more complex and the influence

that a peer may have is dependent on the relationship dynamics and contexts between a pair. Considering peers in this way may have theoretical and methodological implications.

Much of the criminological literature on peers has been built with this underlying notion that delinquent peers can be measured as either a proportion, an average, or the number of friends who engage in delinquency. Though this measurement does provide insight in exposure, we lose contextual information on if these individuals engage in more or less delinquency relative to the subject and therefore what their influence may actually be. Network data that can link respondents to friends and compare individuals' responses in either surveys or administrative data are essential for furthering peer research because only then can we contextualize the dynamics of delinquency. Understanding peers in this way should not be simply another finding to add support to the notion that peers matter, but instead an alternative way to think about and study peers. Finding support for balance in versatility furthers this support, and sheds light on how offending repertoires change over time as well. Often when peers are studied, they are only studied in terms of offending frequency. Studying versatility however sheds crucial insight into how attitudes and behaviors are learned and transferred between individuals. The understanding of versatility is not simply an esoteric pursuit, but one that will allow scholars to understand how behavioral types might change between individuals and how might these norms be transferred.

Moreover, studying versatility and using the balance perspective can have direct impacts in criminal justice policy, in particular interventions in which individuals are put in group contexts. Often criminal justice interventions place individuals in group contexts despite lacking the knowledge of how these groups may interact and the potential adverse influence that it may have for the individual (Dishion & Dodge, 2005; Dishion et al., 1999). The consequences of failing to consider peers in placements is well known and can lead to iatrogenic effects. We should be cautious and consider the way individuals are grouped together in interventions with respect to both offending and versatility.

The notion of peers as automatic negative influences is not consistent with the literature on peer influence, and by using the balance perspective scholars are able to consider the relationships between individuals rather than solely the peers with whom one associates with. Using data from the National Longitudinal Survey of Adolescent Health (AddHealth), this thesis will assess how specialization/versatility may converge among same sex best friend pairs who have differential degrees of specialization. Regardless of the potential mechanism driving behavioral change in response to imbalance, the prediction of a convergence in specialization/versatility remains the same. Whether it be from attitudes of a best friend that an individual adopts, opportunity structures that coalesce, or an attempt to alleviate negative feelings of discomfort, I expect an individual to alter his or her own degree of specialization in a way that aligns with those of their friend. More specifically, this thesis aims to test the following hypotheses:

Hypothesis 1: The degree of imbalance in specialization/versatility between the subject and best friend will predict behavioral change consistent with reducing this imbalance.

Hypothesis 2: Whether the imbalance in specialization/versatility between the subject and best friend will predict behavioral change is conditional on the relationship stability between the subject and the friend.

Chapter 3: Data and Methods

Data and Sample

Research utilizing a balance perspective has certain data requirements, all of which are met with the National Longitudinal Survey of Adolescent Health (AddHealth). First, the data must be able to measure within-individual change of the reference individual. AddHealth data are longitudinal, and measure delinquency consistently between waves. Second, individuals must be able to be linked with a friend in order to measure the degree of imbalance between them. Within the AddHealth data, respondents are able to be linked with a nominated best friend within either the same or a sister school. Though the AddHealth data does not provide information on individuals nominated outside of the sample schools, which may include other schools or from outside school, prior research suggests that schools are where adolescent relationships are primarily formed (Ennett & Bauman, 1993; Haynie, 2001). Lastly, the data must be able to measure the same behavioral items for both the respondent and the nominated peer in order to properly calculate an imbalance in delinquency. The AddHealth data ask the same self-reported delinquency items for both the respondent and the friend. The consistency between the respondent and the best friend allow for a difference in offending to be calculated, which is the critical element of the balance perspective. Although the balance tradition is rooted in perceptions, the self-report nature of these data speak to the claim of projection of ones' own behavior to that of ones' peers (Young et al., 2011; Young et al., 2014).

Data collection for AddHealth began with in-school interviews of roughly 90,000 students in grades 7-12 during the 1994-1995 school year. These students were nested within 132 randomly selected schools that were stratified by region, urbanity, school type, ethnic mix, and size (Harris, 2013). From the original sample, 27,000 students were randomly selected for in-home interviews and followed across multiple waves. From these 27,000

comprising the in-home sample, special samples and a core sample of 12,105 were selected for a variety of research interests. This thesis uses the first two waves of subset known as the "saturation sample," because those in the sample are most likely to have information on best friend's delinquency.[1] The saturation sample is comprised of 16 schools in total, 14 small and two large. It is not meant to be nationally representative and was chosen non-randomly. The purpose of the saturation sample was to collect information on all students who attended the chosen schools in order to create social networks with complete information. The data from the saturation sample was collected during the in-home interviews and contains more serious delinquent behaviors than the in-school survey. Because these data were collected to build complete social networks, they are ideal to utilize for understanding peers and delinquency as there is less missing data on items related to friendship ties.

The saturation sample was originally comprised of 3,702 adolescents. From this original sample, 1,405 reported on their delinquency in waves I and II and reported a same-sex best friend who provided information on his or her own delinquency during wave I (see Table 1). Because the focus of this thesis is specialization/versatility, it is a requirement that individuals engage in at least one offense. Typically, specialization/versatility is measured for individuals with at least two offenses, because individuals with one offense are inherently specialized. To include more respondents and test the robustness of the findings, the sample of 1,405 is further restricted to create two analytic subsamples: a sample of all offenders, and a sample of repeat offenders.

From the 1,405 adolescents, 480 reported having engaged in at least one offense during both waves I and II, and having a best friend who also engaged in at least one offense at wave I. These 480 adolescents comprise the first analytic subsample of all offenders.

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[1] Researchers attempted to interview all students who attended the schools chosen to comprise the saturation sample. The purpose of the saturation sample was to obtain information on all individuals in order to construct social networks. All respondents in the sample completed the in-home interview portion, which includes items that ask about a host of delinquent behaviors.

Table 1. Sample Restriction Process

Sample	N
Full AddHealth Sample	90,000
In-home Sample	27,000
Saturation Sample	3,702
Subjects with delinquency information and same-sex best friend wave I	2,193
Subjects with delinquency information at wave I, and a same-sex best friend with delinquency information at wave I	1,843
Subjects with delinquency information at waves I and II, and a same-sex best friend with delinquency information at wave I	1,405
Sample of all offenders	480
Sample of repeat offenders	315

From the original sample of 1,405 adolescents, 315 reported having engaged in at least two offenses during both waves I and II, and having a best friend who engaged in at least two offenses at wave I. These individuals make up the repeat offender sample.

Table 2 shows demographic differences across the sample trims in order to investigate how the sample composition varies. Minor demographic differences are present between the saturation sample and offenders within the saturation sample. When only respondents who had reported a best friend in both waves, self-reported delinquency information, and whose friend reported delinquency information in wave I were included, there was more variability in race/ethnicity from the original sample. The sample of all offenders and sample of repeat offenders did not vary significantly from each other or the sample before cuts, though did vary from the original saturation sample.

The AddHealth delinquency responses are measured ordinally. When asked about how often a respondent engages in offending, he or she can report 0 (0 times), 1 (1 or 2 times), 2 (3 or 4 times), or 3 (5 or more times). Therefore, in order to be sure that the subject engaged in at least two offenses, they must have either indicated that they engaged in at least

Table 2. Demographic Differences Across Sample Trimming

Variables	Saturation Sample	Offenders in Saturation Sample	Offenders Linked with Best Friend[1]	Sample of All Offenders	Sample of Repeat Offenders
Male	0.51	0.57	0.49	0.58	0.58
Race					
White	0.50	0.48	0.59	0.58	0.59
Black	0.16	0.18	0.10	0.09	0.08
Hispanic	0.20	0.22	0.17	0.21	0.22
Asian	0.16	0.15	0.13	0.11	0.10
Other	0.03	0.04	0.03	0.04	0.05
Mother finished high school	0.84	0.83	0.87	0.84	0.84
Age	16.65 (1.66)	16.71 (1.64)	16.24 (1.46)	16.38 (1.31)	16.47 (1.21)
Observations	3,702	2,355	1,405	480	315

NOTE: This table shows the means and standard deviations of demographics across the sample cuts.
[1.] The offenders linked with best friend sample contains all of those individuals who had delinquency information in both wave I and II, nominated a best friend in both waves, and whose best friend reported delinquency information in wave I.

two *types* of offenses (e.g. shoplifting and fighting at least once) or indicated that they engaged in one offense type at least 3 times (e.g. shoplifting three or more times), which is the next response option. This is the only coding approach that allows us to confidently assert that individuals sample have engaged in at least two offenses. Both samples were created by treating the delinquency measures as continuous and summing them into a frequency variable. All those with a value of one or more were included for the first subsample, and all those with a value of two or more were included for the second. As a means of sensitivity, I retain the sample of all offenders and determine whether the results of the repeat offenders hold here, as well.[2]

[2] In order to determine if the sample means of the sample of all offenders and the sample of repeat offenders significantly differed from one another, analyses of two sample independent *t-test* were conducted across all independent variables and controls. At a 95% confidence level there were no statistically significant differences between the two samples.

Measures

Dependent Variable(s)

Within-individual change in specialization/versatility. The balance perspective predicts the extent to which versatility changes when there is an imbalance between the degree of specialization between an individual and his or her best friend. The dependent variable is a difference in the degree of specialization/versatility from wave I to wave II. In this thesis specialization/versatility is measured as both a variety score and a diversity index.

The in-home portion of the AddHealth data assessed how often the respondent engaged in various different delinquent behaviors within the previous 12 months. These behaviors include: got into a serious fight; used or threaten to use a weapon to get something; pull a knife or gun on someone; take something from a store without paying; steal something worth more than $50; steal something worth less than $50; go into a house or building to steal; drive a car without its owner's permission; deliberately damage property that didn't belong to you; paint graffiti or signs on someone else's property or in a public place; sell marijuana or other drugs; used marijuana; used cocaine; used inhalants; or used any other type of illegal drugs. Responses on the delinquent items were measured on an ordinal scale of 0 (never), 1 (1 or 2 times), 2 (3 or 4 times), or 3 (5 or more times), and were consistent across waves I and II. The items concerning substance abuse were measured continuously but were recoded to be on the same ordinal scale as the delinquency items.

These delinquency items were then categorized into the following nine offense types in order to measure specialization/versatility: assault, robbery, burglary, theft, motor vehicle theft, weapon use, property damage, drug sales, and substance use (see Appendix I). The degree of specialization/versatility was then measured in two ways by using a variety score and a diversity index. The variety score is a more simple and intuitive measure of specialization/versatility however it is quite blunt and does not account for the proportion of

crimes in each type. The diversity index is a more nuanced but is somewhat limited here because it should be calculated with continuous rather than ordinal measures. In this way, neither measure is perfect but using both allows for a more complete picture of specialization/versatility.[3]

The variety score is calculated as the number of different crime types in which an individual engages in. In this thesis, there are nine crime categories: assault, robbery, burglary, theft, motor vehicle theft, weapon use, property damage, drug sales, and substance use, therefore each respondent, and nominated friend, was given a score ranging from 0 to 9. For example, an individual who broke into someone's home, stole from a store, and intentionally damaged property would be given a score of three, whereas someone who only used cocaine would be given a score of one.

Originally the diversity index was used to study species variation in ecology, however it has received a great deal of attention in studying specialization (Agresti & Agresti, 1978; Mazerolle et al., 2000; McGloin et al., 2007; Simpson, 1949; Sullivan et al., 2009). Within criminology, the diversity index measures the degree to which an individual is specialized, and more specifically the probability that two offenses (drawn at random) from the same individual are drawn from different crime categories. The diversity index is calculated using the following formula, where *p* represents the proportion of offenses that are in the crime category *m:*

$$D = 1 - \sum_{m=1}^{M} p^2 m \qquad (1)$$

[3] For each sample, regressions using the variety score within-individual change and imbalance and regressions using the diversity index within-individual change and imbalance will be used. In the one or more offense sample the variety score and diversity index within-individual change have a correlation of 0.79, while in the repeat offender sample, they have a correlation of 0.77. Clearly these measures are strongly related, however they are not the same. Using both the variety score and diversity index allow us to measure offending versatility in different granularities.

The diversity index has a minimum score of 0 which indicates complete specialization, and a maximum value which equals complete versatility. This maximum value is calculated by the following formula, where *k* represents the number of crime categories *m*:

$$max \equiv \frac{k-1}{k} \tag{2}$$

Scores closer to this maximum value indicate a higher degree of offense versatility. The first step to calculate the diversity index is to calculate the value of *p*, indicating the proportion of offenses that an individual engaged in for each crime category *m*. To calculate *p*, the sum of offenses in a particular crime category was divided by the frequency of offending (for specific offenses within each category see Appendix I). For example, if a respondent reported stealing from a store 3 times and had offended 6 times in total, the *p* for theft would equal .5. The probability for engaging in each offense category was calculated for each respondent in waves I and II, and for the nominated best friend. Second, the squared value of these proportions for every crime type were then added together, and the sum was then subtracted from 1. For instance, if a respondent reported that she had engaged in a total of 10 offenses: 3 in burglary, 4 in robbery, and 3 in substance use, her diversity index score would be calculated by the following:

$$D = 1 - [(0.0)^2 + (0.4)^2 + (0.0)^2 + (0.3)^2 + (0.2)^2 + (0.0)^2 + (0.0)^2 + (0.0)^2 + (0.0)^2]$$

$$D = 1 - [.20 + .15 + .10]$$

$$D = .55$$

Where the maximum value in this thesis from the nine crime categories is:

$$max \equiv \frac{9-1}{9} = .88$$

A diversity index is typically calculated when there is a continuous count measure of delinquency. In the AddHealth data, delinquency is not measured continuously, but is instead

Table 3. Descriptive Statistics for Sample of All Offenders

Variables	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Dependent Variables					
Within individual change in variety score	480	-0.51	1.77	-8	7
Within individual change in diversity index	476	-0.09	0.32	-0.86	0.76
Independent Variables					
Imbalance in variety score with best friend	480	-0.16	2.20	-7	7
Imbalance in diversity index with best friend	475	-0.04	0.39	-0.82	0.85
Moderators					
Best friend same in WII	480	0.38	-	0	1
Still friend in WII	480	0.78	-	0	1
Controls					
Imbalance of frequency of offending with best friend	480	-0.70	6.89	-24	29
Imbalance in peer attachment with best friend	475	0.05	0.99	-2	3
Imbalance in parental attachment with best friend	477	0.03	0.73	-3	3
Imbalance in school attachment with best friend	464	0.10	1.23	-3	4
Imbalance in teacher attachment with best friend	476	0.04	1.28	-4	4
Imbalance in impulsivity with best friend	475	0.17	2.98	-9	12
Male	480	0.58	-	0	1
Race/Ethnicity					
White	479	0.58	-	0	1
Black	479	0.09	-	0	1
Hispanic	479	0.21	-	0	1
Asian	479	0.11	-	0	1
Other	479	0.04	-	0	1
Mother finished high school	480	0.84	-	0	1
Age	480	16.38	1.31	12	19

ABBREVIATIONS: WI= Wave I; WII= Wave II

measured ordinally. Recall that responses to delinquency items in AddHealth are on a scale from (0) no times, (1) 1 or 2 times, (2) 3 or 4 times, (3) 5 or more times. The diversity index is not calculated in an ideal way because we do not have a continuous measure of frequency

of offending.[4] The proportion *p* of offenses in each category *m* is calculated with these ordinal measures, which means that we may be undercounting offenses. Despite the challenges that using the ordinal variable may bring, there is a body of literature that suggests that linear may still be used on ordinal measures without large bias (Labovitz, 1970; Rhemtulla et al., 2012; Winship & Mare, 1984).

For each measure of versatility/specialization, the dependent variable was created by calculating the difference of the degree of the respondent's specialization/versatility at waves I and II. Positive values of the difference score indicate that the respondent became more versatile in wave II, and negative values indicate the respondent became more specialized. In the sample off all offenders, the within-individual change in specialization measured by the variety score ranges from -8 to 7, with a mean of -0.51 (SD=1.77). The within-individual variety score change for the repeat offender sample ranges from -8 to 4, and has a mean of -0.48 (SD=1.76). The change in variety score for both samples indicates that on average, respondents express more specialization in wave II. The within-individual change in the diversity score ranges from -0.86 to 0.76 for both samples. The sample of all offenders has a mean of -0.09 (SD=0.32), and the sample of repeat offenders has a mean of -0.05 (SD=0.28). Similar to the change in variety score, the change in diversity index indicates that respondents indicated a higher degree of specialization in the later wave.

[4] Sensitivity analyses were conducted in order to assess the degree to which the diversity index may be impacted by the ordinal measure of delinquency. A series of diversity indices were calculated and then compared by recoding the ordinal scale with the lower bounds in the ordinal measure (i.e. responses of 1 were coded as 1 and responses of 2 were coded as 3) and then altering the upper bound (i.e. responses of 3 were coded as 5, 10, 15, 50, 500, and 5000). These analyses empirically demonstrated that the ordinal measure biases the diversity index towards versatility, thus making it a more conservative estimate of specialization. For a more detailed description of these analyses see Appendix II.

Table 4. Descriptive Statistics for Sample of Repeat Offenders

Variables	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Dependent Variables					
Within individual change in variety score	315	-0.48	1.76	-8	4
Within individual change in diversity index	314	-0.05	0.28	-0.86	0.76
Independent Variables					
Imbalance in variety score with best friend	315	-0.09	2.41	-7	7
Imbalance in diversity index with best friend	313	-0.01	0.36	-0.81	0.81
Moderators					
Best friend same in WII	315	0.39	-	0	1
Still friend in WII	315	0.78	-	0	1
Controls					
Frequency imbalance with best friend	315	-0.62	7.38	-24	29
Imbalance in peer attachment with best friend	312	0.04	0.93	-2	3
Imbalance in parental attachment with best friend	315	0.03	0.75	-3	3
Imbalance in school attachment with best friend	301	0.06	1.21	-3	4
Imbalance in teacher attachment with best friend	314	-0.04	1.27	-4	4
Imbalance in impulsivity with best friend	314	0.18	2.93	-9	12
Male	315	0.58	-	0	1
Race/Ethnicity					
White	315	0.59	-	0	1
Black	315	0.08	-	0	1
Hispanic	315	0.22	-	0	1
Asian	315	0.10	-	0	1
Other	315	0.05	-	0	1
Mother finished high school	315	0.83	-	0	1
Age	315	16.47	1.22	12	18

ABBREVIATIONS: WI= Wave I; WII= Wave II

Independent Variable(s)

Imbalance with best friend's specialization/versatility. The in-home portion of the AddHealth survey asked participants to nominate up to 5 male and 5 female friends. The item requested the respondent to "First, please tell me the name of your 5 best male friends, starting with

your best male friend" and then asked the same for female friends. The researcher is able to link the identification number of the nominated friends to each individual. Identification numbers were only provided for friends who either enrolled in the same school, or a sister school. Best friends who were romantic partners or who attended other schools are not included in this analysis because there is no way to match the individuals. This "social network method" (Young et al., 2011), allows for peers to report their own offending rather than requiring respondents to report their perceptions of their friend's behavior. Some within the criminological literature argue that objective delinquency reporting is favorable in order to avoid projection bias (Haynie & Osgood, 2005; Young et al., 2011; Young et al., 2014), though others disagree (McGloin & Thomas, 2016). In this thesis, best friend is defined as a same-sex highest rank friend, which is consistent with prior literature (McGloin, 2009; Thomas, 2015). Using a best friend is consistent with the balance perspective which argues that when the individuals are more attached to one another, they may feel more inclined to converge in their behavior (Davis & Rusbult, 2001; Kandel, 1978).

Both the respondents and their nominated best friends were asked the same delinquency question. Because the measures are consistent, a difference in the degree of specialization/versatility can be calculated. This difference score was calculated by subtracting the respondent's versatility measure in wave I from the best friend's versatility measure. Imbalances of versatility/specialization were calculated by using the variety score and diversity index for both samples so that the imbalance measure matched the outcome (i.e., variety score imbalance with friend with the within-individual variety score change). Positive values of this score indicate that best friends demonstrate a higher degree of versatility relative to the respondent, and negative values indicate that the friends express a higher degree of specialization. In the sample of all offenders, the variety score imbalance measure ranges from -7 to 7, with a mean of -0.16 (SD=2.20). For the sample of repeat offenders, the variety score imbalance ranges from -7 to 7, and has a mean of -0.09

(SD=2.41). The diversity index imbalance ranges from -0.82 to 0.85, with a mean of -0.04 (SD-0.39) for the sample of all offenders. For the sample of repeat offenders, the diversity index imbalance ranges from -0.81 to 0.81, with a mean of -0.01 (SD=0.36). In both samples the imbalance in variety score and diversity index both indicate that the best friend is slightly more specialized than the respondent.

Moderator(s)

Change in friendship status. Measures of friendship stability are included in order to assess whether the relationship between versatility imbalance and within individual change is conditional on friendship quality. Heider (1958) argued that individuals may react to imbalance but either achieving balance, or by terminating the friendship tie. Termination of friendship could be suggestive of a process similar to that of selection, where behavioral homeostasis is created not through normative influence, but rather by changing friendships. Additionally, friendship stability may be an indication of friendship quality, and relationship characteristics may moderate the degree to which attitudinal changes may occur.

Friendship stability is measured as two dichotomous variables that indicate a change in best friend, or a change in friendship nomination from wave I to wave II. Respondents were asked in both waves to identify five friends of the same sex (and five of the opposite sex) starting with their best friend. After linking each respondents' friendship responses in waves I and II (where each respondent was asked to identify five same-sex friends, starting with their best friend) the friendship stability variables were created. Best friend stability was created by whether the first nomination (i.e., the best friend nomination) was the same across both waves. A value of 1 indicates that the respondent identified the same best friend, and a value of 0 indicates that the best friend at wave II was different than that nomination at wave I. In both the sample of all offenders and sample of repeat offenders, almost 40% of respondents reported the same best friend in both waves I and II.

The change in friendship status variable was created by determining whether the best friend at wave I was nominated as a friend at all in wave II (i.e., whether the nominated best friend in wave I was nominated as a friend at all in wave II). For this variable, a value of 1 indicates that the respondent identified a continuing friendship (i.e., the best friend was nominated as a friend, or a best friend in wave II) and a value of 0 indicates that the wave I best friend was not nominated as a friend in wave II. In both samples, almost 80% of respondents reported that their best friend at wave I was still a friend in wave II. In order to test for a moderating effect of friendship stability over the waves, the friendship stability variables were interacted with the independent variable(s) of imbalance in versatility.

Control Variables

With the exception of the demographic variables, the control variables are all operationalized as imbalance scores between the respondent relative to the best friend in order to stay consistent with the balance perspective. In this way the controls now reflect the relative difference between the subject and his or her best friend across a host of different items.

Imbalance with best friend's frequency of offending. Specialization and frequency of offending are strongly correlated. If an individual only engages in a few number of offenses, then he or she has a higher probability of being considered specialized. Therefore, it is important to control for frequency of offending to ensure the measure of versatility is not serving as a proxy for simply the amount of offending an individual engages in. In order to ensure that a convergence in specialization is not driven by the gap in frequency of delinquency (see McGloin, 2009), a measure of the frequency imbalance is created. Consistent with McGloin (2009), this measure was created by creating an index of all the offending measured used to construct both the versatility score and diversity index. The difference was calculated by adding the items in wave I together and then subtracting the

respondent's frequency of offending from the best friend's frequency of offending. Negative values indicate that the respondent engages in a higher frequency of delinquency, while positive indicate that the best friend engages in more delinquency. The difference in frequency ranges from -24 to 29 in the sample of all offenders, with a mean of -0.698 (SD=6.886), suggesting that the respondents engage in more delinquency on average. In the repeat offender sample, the difference ranges from -24 to 29, with a mean of -0.629 (SD=7.384), also indicating the respondent was engaged in more delinquency on average.

Imbalance of Social Controls. Measures of attachment are used as controls in this thesis in order to account for social controls rather than peer influence. Hirschi (1969) argued that the socialization perspective was misguided, and instead offered a theory of social control which argues that the bonds to prosocial institutions and relationships prevent individuals from engaging in delinquency. Rather than placing the causal mechanism on the influence of peers, Hirschi (1969) argued that it was within the relationships themselves. According to Hirschi (1969), the relationship between a peer's delinquency and one's own is spurious and can instead be explained by individuals who do not have high social control selecting into groups. Variables of attachment to parents, schools, and friends are included in order to account for this alternative theoretical perspective of social control.

In wave I of the in-home portion of AddHealth, respondents were asked questions about the degree of attachment that respondents felt to their parents, teachers, schools, and friends. Respondents were asked how much they believed their teachers, parents, and friends cared about them on a scale of (1) not at all, (2) very little, (3) somewhat, (4) quite a bit, or (5) very much. Attachment to school was measured by asking the respondent how much he or she agreed that they were part of their school on a scale of (1) strongly agree to (5) strongly disagree. These values were then reverse coded so that higher values would indicate stronger degrees of attachment. The difference of these measures was taken by subtracting the

respondent's scores from the nominated best friend. Reported attachments are virtually identical across both samples. Tables 2 and 3 show that in both samples, respondents and their best friends express similar levels of attachment though the best friend reports slightly higher levels of attachment on average.

Imbalance in Impulsivity. There is some evidence that those who have lower levels of impulsivity are more likely to engage in a wide variety of illegal behaviors while those who possess more self-control may be more specialized, therefore it is important to control for impulsivity (Gottfredson & Hirschi, 1990; Piquero et al., 1999; Thomas, 2015). Gottfredson and Hirschi's (1990) general theory of crime argues that low self-control influences both friendship selection and offending. They claim that all forms of delinquency are manifestations of a tendency to seek immediate gratification, thus consistent with their perspective, those with lower self-control engage in a wide variety of behaviors in order to achieve more pleasure.

Respondents were asked how much they agreed with the following statements on a Likert scale ranging from (1) strongly disagree to (5) strongly agree: When making decisions, you usually try to think of as many different ways to approach the problem as possible; you usually use a systematic method for judging and comparing alternatives; after carrying about a solution to a problem, you usually try to analyze what went right and what went wrong; and you usually go out of your way to avoid having to deal with problems in your life (α=.55). This scale is consistent with previous literature that measures the critical components of Gottfredson and Hirschi's theory of low self-control (Paternoster & Pogarsky, 2009; Thomas, 2015; Thomas & McGloin, 2013). This scale was coded so higher values reflect greater impulsivity. In order to calculate the imbalance in impulsivity, the respondents score was subtracted from the nominated best friend. The impulsivity imbalance score ranges from -9 to 12 in both samples, where negative values indicate that the respondent is less impulsive on

average. In the sample of all offenders the mean is 0.17 (SD=2.98), while in the sample of repeat offenders the mean is 0.18 (SD=2.93).

Demographics. Gender, race, socioeconomic status and age are used as controls in this thesis because there is evidence that suggests they are related to specialization (McGloin et al., 2007; Nieuwbeerta et al., 2011; Piquero, 2000; Piquero et al., 1999), and to the selection of friends (Giordano, 2003). Additionally, these demographic characteristics may also be associated with how influential peers may be over changing attitudes (Cairns et al., 1995; McGloin, 2009). Age is measured continuously in years, ranging from 12 to 19 in the sample of all offenders, and 12 to 18 in the sample of repeat offenders. Gender is a dichotomous variable where males are given a value of 1, and females a value of 0.

Race was coded as a dichotomous variable where all individuals who reported they are White are given a value of 1, and all those non-Whites a value of 0. Race was then interacted with a dichotomous measure that indicates whether or not the respondent identifies as Hispanic (1=Hispanic) to create mutually exclusive categories of white Hispanic, white non-Hispanic, black Hispanic, and black non-Hispanic. Maternal education status has commonly used as a measure of socioeconomic status (Bornstein & Bradley, 2014). Maternal education status is measured as a dichotomous variable where respondents whose mothers have graduated high school are given a value of 1, and respondents whose mothers have not are given a value of 0. In the sample of all offenders, respondents were white, non-Hispanic males whose mothers graduated high school and 16.38 (SD=1.31) years old on average. In the sample of repeat offenders, on average respondents were White, non-Hispanic males whose mothers graduated high school and were 16.47 (SD=1.21) years old.

Analytic Plan

The primary dependent variables in this inquiry are the within-individual changes in the degree of specialization/versatility, measured by the variety score and the diversity index. Figures 2 and 3 show the distributions of the change variety and diversity index change scores for both analytic subsamples. Because these variables are normally distributed and the nature of the outcome is essentially continuous, I plan on using ordinary least squares (OLS) regression.

The first component of the regression models will investigate the extent to which the change in a respondent's degree of specialization/versatility is related by the imbalance of specialization/versatility with a best friend. These analyses will use both the sample of all offenders and the sample of repeat offenders. For this series of regressions, I will use OLS

Figure 2. Distribution of Change Variables for Sample of All Offenders

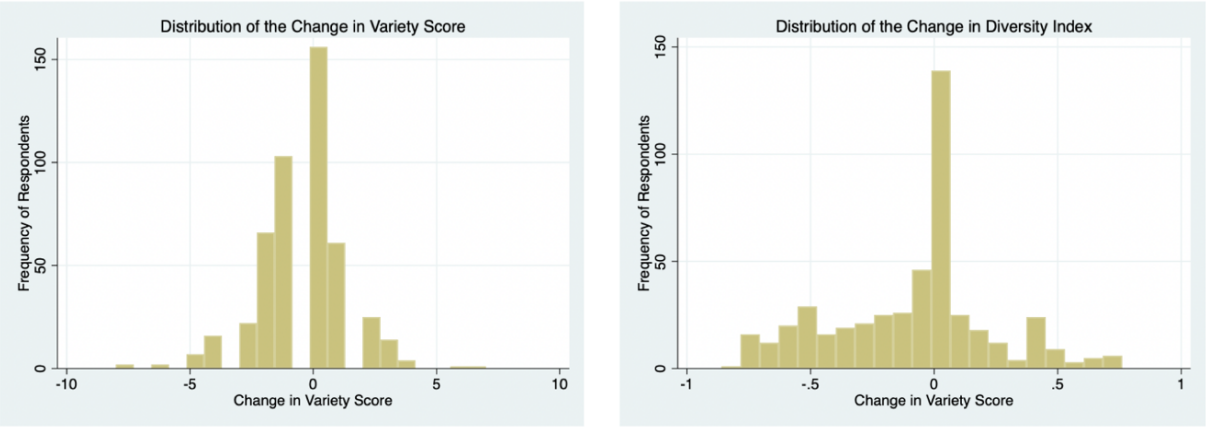

Figure 2 shows the distribution of the change in the variety score and the change in the diversity index for the sample of all offenders.

Figure 3. Distribution of Change Variables for Sample of Repeat Offenders

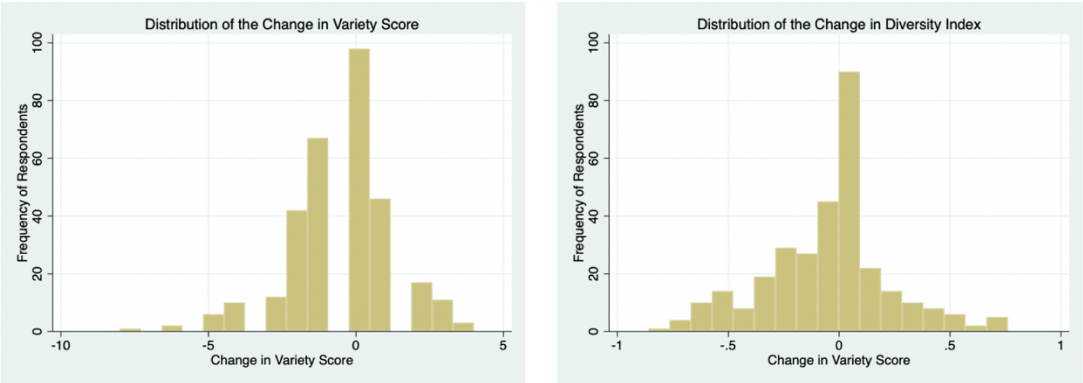

Figure 3 shows the distribution of the change in the variety score and the change in the diversity index for the sample of repeat offenders.

with robust standard errors and a school fixed-effect in order to hold constant heterogeneity attributable to the different schools. The inclusion of this school fixed-effect effectively controls for each school, replacing the constant in the model with a school specific α in order to account for variation between the schools since the saturation sample was non-random, and accounts for selection of peers into the schools. I will first estimate the relationship between the imbalance of specialization and the within-individual change in specialization, and then add controls for attachment to various prosocial institutions, impulsivity and demographic characteristics.[5]

The second component of these of regression models will investigate whether or not friendship stability moderates the relationship between an imbalance in versatility and within individual change. Heider (1958) postulated that if there was a tension or discomfort in a relationship caused by incongruence of an attitude, that the relationship would either be terminated, or the attitudes would reach congruence. In these models two dichotomous measures are separately included for friendship stability: the first indicating whether the best friend nominated is the same in wave II, and the second indicating whether the best friend in

[5] In order to empirically assess how the ordinal nature of the measurements influence the diversity index sensitivity analyses that test the upper and lower bounds of the diversity index were run (see Appendix III). These analyses show that using an ordinal measure to calculate the diversity index is a more conservative estimate of specialization.

wave I is still a friend in wave II. Interaction terms will also be included in order assess whether or not this stability moderates the relationship between versatility imbalance and within individual change in versatility. Lastly, in order to explore potential gender effects an interaction between gender and imbalance in versatility will also be included in a regression model. The controls utilized in the first component of these regressions will likewise be employed.

Chapter 4: Results

The balance perspective predicts that when there is an imbalance present between a best friend and a respondent, the individual will alter his or her behavior to be more similar with the friend. For example, when a best friend reports a higher level of versatility, the respondent would increase his or her offending repertoire to converge with the friend. We anticipate that when a best friend is more versatile the respondent should become more versatile, when the best friend is more specialized the respondent should report higher specialization, and lastly when the levels of versatility are equivalent the respondent's versatility should remain stable. Tables 5-8 indicate the percentage of individuals in both the sample of all offenders and the sample of repeat offenders who express a change in offending versatility that coincides with the balance perspective predictions.

Table 5. Predicted Directions of Variety Score for Sample of All Offenders

	Decrease in Subject's Versatility from WI to WII	No Change in Subject's Versatility from WI to WII	Increase in Subject's Versatility from WI to WII
Best friend is more specialized than subject	**28.96%**	7.08%	6.04%
Best friend has same specialization as subject	7.50%	**9.17%**	6.25%
Best friend is more versatile than subject	8.96%	16.25%	**9.79%**

Table 6. Predicted Directions of Diversity Index for Sample of All Offenders

	Decrease in Subject's Versatility from WI to WII	No Change in Subject's Versatility from WI to WII	Increase in Subject's Versatility from WI to WII
Best friend is more specialized than subject	**33.96%**	1.67%	12.29%
Best friend has same specialization as subject	1.46%	**4.79%**	4.17%
Best friend is more versatile than subject	13.96%	11.04%	**16.67%**

In order to show this relationship, the within individual change in offending versatility was recoded as either an increase, decrease, or constant change in offending versatility and was then compared to the relative offending versatility of the respondents nominated best friend in wave I. The majority of subjects in the sample of all offenders and the sample of repeat offenders became more specialized in the later wave. Within the sample of all offenders, 55 percent of respondents altered their offending versatility in the predicted direction when measured as the diversity index, and 48 percent of respondents when offending versatility was measured as a variety score. Within each category of relative

Table 7. Predicted Directions of Variety Score for Sample of Repeat Offenders

	Decrease in Subject's Versatility from WI to WII	No Change in Subject's Versatility from WI to WII	Increase in Subject's Versatility from WI to WII
Best friend is more specialized than subject	**26.67%**	7.30%	6.67%
Best friend has same specialization as subject	7.30%	**8.25%**	6.03%
Best friend is more versatile than subject	10.48%	15.56%	**11.75%**

versatility compared to the best friend at wave I, the largest percentage of people fell into the predicted categories. For example, when using the diversity index for respondents who had a best friend who was more specialized in wave I, 71 percent became more specialized in wave II (N=230); for respondents who had a best friend that was more versatile in wave I, 40 percent became more versatile in wave II (N=200). Among those respondents who reported the same degree of versatility as their best friend in wave I, 46 percent expressed no change in offending versatility in wave II (N=50). These trends remained similar when measuring offending versatility using a variety score.

Table 8. Predicted Directions of Diversity Index for Sample of Repeat Offenders

	Decrease in Subject's Versatility from WI to WII	No Change in Subject's Versatility from WI to WII	Increase in Subject's Versatility from WI to WII
Best friend is more specialized than subject	**33.65%**	1.59%	13.65%
Best friend has same specialization as subject	0.32%	**1.59%**	3.17%
Best friend is more versatile than subject	16.19%	7.62%	**22.22%**

Table 9. Fixed Effects OLS Models Assessing Imbalances with Best Friends on Within Individual Change in Variety Score for Sample of All Offenders

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Imbalance in variety score with best friend	0.322**	0.428**	0.429**	0.398**	0.425**	0.341**
	(0.034)	(0.067)	(0.067)	(0.069)	(0.067)	(0.083)
Best friend same in WII	-	-	0.052	0.073	-	-
			(0.156)	(0.152)		
Best friend same X versatility imbalance	-	-	-	0.105	-	-
				(0.073)		
Still friend in WII	-	-	-	-	-0.198	-0.177
					(0.172)	(0.169)
Still friend X versatility imbalance	-	-	-	-	-	0.125+
						(0.071)
Frequency imbalance with best friend	-	-0.031	-0.031	-0.031	-0.029	-0.032
		(0.029)	(0.028)	(0.029)	(0.029)	(0.029)
Imbalance in parental attachment with best friend	-	0.079	0.079	0.085	0.070	0.083
		(0.125)	(0.126)	(0.125)	(0.125)	(0.126)
Imbalance in school attachment with best friend	-	0.032	0.0328	0.0359	0.0357	0.0333
		(0.068)	(0.067)	(0.067)	(0.067)	(0.067)
Imbalance in teacher attachment with best friend	-	0.122+	0.124+	0.122+	0.120+	0.118+
		(0.066)	(0.0669)	(0.0670)	(0.0659)	(0.0652)
Imbalance in peer attachment with best friend	-	-0.002	-0.002	0.004	-0.008	-0.003
		(0.075)	(0.074)	(0.074)	(0.073)	(0.074)
Imbalance in impulsivity with best friend	-	0.004	0.004	0.005	0.002	0.002
		(0.028)	(0.028)	(0.028)	(0.028)	(0.028)
Age	-	-0.159*	-0.159*	-0.162*	-0.152+	-0.154+
		(0.078)	(0.079)	(0.079)	(0.080)	(0.080)
Race/Ethnicity						
White	-	-0.348	-0.363	-0.434	-0.318	-0.416
		(0.387)	(0.393)	(0.394)	(0.391)	(0.377)
Black	-	0.217	0.206	0.129	0.230	0.135
		(0.435)	(0.437)	(0.438)	(0.435)	(0.421)
Hispanic	-	0.171	0.156	0.0658	0.203	0.0697
		(0.428)	(0.431)	(0.430)	(0.430)	(0.421)
Asian	-	0.344	0.333	0.290	0.364	0.297
		(0.429)	(0.431)	(0.429)	(0.430)	(0.418)
Mother finished high school		0.250	0.247	0.260	0.240	0.241
		(0.262)	(0.262)	(0.261)	(0.262)	(0.262)
Male	-	-0.226	-0.227	-0.231	-0.240	-0.257+
		(0.150)	(0.150)	(0.150)	(0.153)	(0.153)
Constant	-0.462**	2.137	2.128	2.241+	2.157	2.297+
	(0.071)	(1.312)	(1.319)	(1.319)	(1.315)	(1.314)
Observations	480	452	452	452	452	452
R-squared	0.243	0.255	0.255	0.258	0.257	0.261

Robust standard errors in parentheses
** p<0.01, * p<0.05, + p<0.1

For the sample of repeat offenders' similar patterns also emerged. When using the diversity index 57 percent of respondents changed their offending in the predicted direction, and similarly 47 percent of respondents altered their offending in the expected direction when using the variety score to measure offending versatility. Tables 5-8 demonstrate some preliminary support for the balance perspective when simply assessing the within individual change in offending versatility relative to the imbalance in versatility with the nominated best friend at wave I. Table 9 provides evidence then when exploring this relationship further, the balance perspective still has robust support across both different samples and operationalizations of offending versatility.

Tables 9 and 10 show models that investigate variations of the relationship between an imbalance of offending versatility and within individual change in offending versatility for the sample of all offenders. Overall, these models provide some support for the balance perspective. In Table 9, model 1 is the bivariate relationship between versatility imbalance with a best friend and within individual change in the respondent when versatility is measured using a variety score. The coefficient is positive and statistically significant ($p<.01$), which indicates that when a best friend is more versatile than the respondent, the respondent increases his or her own offending versatility by the second wave. Model 2 shows that when the controls are added they generally do not explain the within individual change in offending.[6] Age of the respondent is the only statistically significant control, meaning that on average when the respondent is older they are associated with less of a change towards versatility in offending. This finding does not support the idea that individuals become more versatile over time by acquiring additional definitions.

[6] Several robustness checks were run in order to determine whether these results were conditional on gender. The substantive findings did not change with these additional analyses, and there does not appear to be gender effects between the relationship of versatility imbalance and within individual change. Appendix IV contains a detailed description of these robustness tests.

Table 10. Fixed Effects OLS Models Assessing Imbalances with Best Friends on Within Individual Change in Diversity Index Score for Sample of All Offenders

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Imbalance in variety score with best friend	0.336**	0.417**	0.418**	0.367**	0.416**	0.315**
	(0.035)	(0.050)	(0.050)	(0.057)	(0.050)	(0.082)
Best friend same in WII	-	-	0.0145	0.0197	-	-
			(0.030)	(0.030)		
Best friend same X versatility imbalance	-	-	-	0.128+	-	-
				(0.073)		
Still friend in WII	-	-	-	-	-0.0393	-0.0364
					(0.034)	(0.034)
Still friend X versatility imbalance	-	-	-	-	-	0.130
						(0.082)
Frequency imbalance with best friend		-0.005+	-0.005+	-0.005	-0.005+	-0.005
	-	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Imbalance in parental attachment with best friend		0.028	0.028	0.029	0.026	0.028
	-	(0.022)	(0.022)	(0.022)	(0.022)	(0.021)
Imbalance in school attachment with best friend		0.007	0.007	0.008	0.008	0.008
	-	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Imbalance in teacher attachment with best friend		0.016	0.017	0.016	0.016	0.015
	-	(0.012)	(0.012)	(0.012)	(0.012)	(0.012)
Imbalance in peer attachment with best friend		-0.004	-0.004	-0.002	-0.005	-0.004
	-	(0.014)	(0.014)	(0.015)	(0.015)	(0.015)
Imbalance in impulsivity with best friend		0.002	0.002	0.002	0.002	0.002
	-	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Age		-0.025	-0.024	-0.025	-0.023	-0.022
	-	(0.015)	(0.016)	(0.016)	(0.016)	(0.016)
Race/Ethnicity						
White	-	-0.070	-0.070	-0.086	-0.060	-0.073
		(0.087)	(0.088)	(0.086)	(0.087)	(0.084)
Black	-	-0.012	-0.016	-0.034	-0.010	-0.021
		(0.099)	(0.100)	(0.098)	(0.099)	(0.095)
Hispanic	-	0.039	0.035	0.016	0.046	0.026
		(0.096)	(0.097)	(0.094)	(0.096)	(0.093)
Asian	-	0.064	0.061	0.045	0.068	0.055
		(0.096)	(0.097)	(0.094)	(0.096)	(0.094)
Mother finished high school	-	0.013	0.013	0.016	0.011	0.009
		(0.047)	(0.047)	(0.047)	(0.047)	(0.047)
Male	-	-0.035	-0.035	-0.035	-0.038	-0.040
		(0.029)	(0.029)	(0.029)	(0.030)	(0.030)
Constant	-0.078**	0.353	0.350	0.369	0.357	0.363
	(0.0136)	(0.265)	(0.266)	(0.266)	(0.265)	(0.265)
Observations	473	447	447	447	447	447
R-squared	0.198	0.227	0.228	0.233	0.229	0.234

Robust standard errors in parentheses
** p<0.01, * p<0.05, + p<0.1

In order to investigate whether or not stability of the friendship conditions the relationship between the imbalance in offending and within individual change, models 3 and 4 show the addition of whether or not the nominated best friend in wave I was the same best friend in wave II, the interaction between this term and the versatility imbalance. Models 5 and 6 include the dichotomous variable for whether or not the nominated best friend in wave I was a nominated friend at all in wave II and its interaction with versatility imbalance. Both of these series of models failed to reach statistical significance when added to the model, and their addition did not substantively alter either the coefficient or the standard errors of the relationship of interest. This indicates that there does not seem to be an interaction between whether or not the friendship remains the same. This is counter to what a control perspective would hypothesis; that behavior of a friend would lead to an alteration in relationships. Instead, these models indicate support for the balance perspective, and suggest that individuals are more likely to change alter their behavior to be more similar to a friend rather than change friendships.

The same models mentioned above were run on the sample of all offenders using the diversity index in order to measure versatility. These models had the same substantive findings, however there were slight differences in which controls were statistically significant. Table 10 shows that in the regressions using the diversity index, frequency of offending imbalance with the reported best friend was marginally statistically significant. In model 4 when the dichotomous indicator for whether or not the nominated best friend in wave I was still the best friend in wave II was added, the interaction was marginally significant. Like the models using the variety score, there was no support for an interaction between the outcome and friendship stability operationalized as whether the best friend was still a friend in wave II.

All models using both the diversity index and the variety score were run again using the sample of repeat offenders. Tables 11 and 12 show that these models yielded the same

Table 11 . Fixed Effects OLS Models Assessing Imbalances with Best Friends on Within Individual Change in Variety Score for Sample of Repeat Offenders

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Imbalance in variety score with best friend	0.305**	0.466**	0.474**	0.449**	0.465**	0.371**
	(0.0423)	(0.0862)	(0.0873)	(0.0879)	(0.0868)	(0.103)
Best friend same in WII	-	-	0.177	0.188	-	-
			(0.201)	(0.200)		
Best friend same X versatility imbalance	-	-	-	0.0793	-	-
				(0.0904)		
Still friend in WII	-	-	-	-	-0.0601	-0.0464
					(0.213)	(0.211)
Still friend X versatility imbalance	-	-	-	-	-	0.147+
						(0.0883)
Frequency imbalance with best friend		-0.0502	-0.0521	-0.0520	-0.0497	-0.0545
	-	(0.0356)	(0.0357)	(0.0357)	(0.0359)	(0.0357)
Imbalance in parental attachment with best friend		0.199	0.206	0.211	0.198	0.222
	-	(0.151)	(0.153)	(0.153)	(0.152)	(0.152)
Imbalance in school attachment with best friend		-0.0363	-0.0357	-0.0341	-0.0340	-0.0410
	-	(0.0951)	(0.0947)	(0.0946)	(0.0942)	(0.0943)
Imbalance in teacher attachment with best friend		0.110	0.112	0.112	0.111	0.105
	-	(0.0864)	(0.0870)	(0.0869)	(0.0865)	(0.0848)
Imbalance in peer attachment with best friend		0.0775	0.0735	0.0804	0.0767	0.0758
	-	(0.106)	(0.107)	(0.106)	(0.106)	(0.106)
		-	-	-	-	-
Imbalance in impulsivity with best friend		0.00804	0.00931	0.00837	0.00840	0.00729
	-	(0.0360)	(0.0361)	(0.0357)	(0.0360)	(0.0359)
Age		-0.240*	-0.236*	-0.239*	-0.237*	-0.241*
	-	(0.111)	(0.111)	(0.111)	(0.112)	(0.112)
Race/Ethnicity						
White	-	-0.306	-0.335	-0.395	-0.302	-0.418
		(0.421)	(0.439)	(0.439)	(0.421)	(0.414)
Black	-	0.287	0.244	0.173	0.285	0.172
		(0.497)	(0.506)	(0.511)	(0.496)	(0.483)
Hispanic	-	0.483	0.420	0.353	0.496	0.334
		(0.474)	(0.485)	(0.486)	(0.476)	(0.473)
Asian	-	0.371	0.301	0.268	0.384	0.304
		(0.520)	(0.531)	(0.534)	(0.521)	(0.514)
Mother finished high school	-	0.519+	0.511	0.536+	0.517+	0.529+
		(0.311)	(0.310)	(0.310)	(0.312)	(0.308)
Male	-	0.00640	0.0129	0.0107	0.00287	-0.0110
		(0.195)	(0.195)	(0.195)	(0.199)	(0.199)
Constant	-0.454**	3.044+	2.956	3.049+	3.043+	3.221+
	(0.0905)	(1.801)	(1.817)	(1.810)	(1.805)	(1.806)
Observations	315	296	296	296	296	296
R-squared	0.196	0.262	0.264	0.266	0.262	0.269

Robust standard errors in parentheses
** p<0.01, * p<0.05, + p<0.1

Table 12. Fixed Effects OLS Models Assessing Imbalances with Best Friends on Within Individual Change in Diversity Index Score for Sample of Repeat Offenders

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Imbalance in variety score with best friend	0.326**	0.422**	0.428**	0.410**	0.422**	0.277**
	(0.045)	(0.063)	(0.063)	(0.074)	(0.064)	(0.104)
Best friend same in WII	-	-	0.046	0.047	-	-
			(0.032)	(0.033)		
Best friend same X versatility imbalance	-	-	-	0.041	-	-
				(0.093)		
Still friend in WII	-	-	-	-	-0.006	-0.006
					(0.039)	(0.039)
Still friend X versatility imbalance	-	-	-	-	-	0.186+
						(0.103)
Frequency imbalance with best friend		-0.005	-0.005	-0.005	-0.005	-0.005
	-	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Imbalance in parental attachment with best friend		0.051*	0.052*	0.053*	0.051*	0.053*
	-	(0.023)	(0.023)	(0.023)	(0.023)	(0.023)
Imbalance in school attachment with best friend		-0.011	-0.010	-0.010	-0.010	-0.011
	-	(0.015)	(0.015)	(0.015)	(0.015)	(0.015)
Imbalance in teacher attachment with best friend		0.016	0.016	0.016	0.016	0.015
	-	(0.013)	(0.013)	(0.013)	(0.013)	(0.013)
Imbalance in peer attachment with best friend		0.003	0.002	0.002	0.003	0.002
	-	(0.016)	(0.017)	(0.017)	(0.017)	(0.017)
Imbalance in impulsivity with best friend		-0.004	-0.004	-0.004	-0.004	-0.004
	-	(0.006)	(0.006)	(0.006)	(0.006)	(0.006)
Age		-0.023	-0.022	-0.022	-0.023	-0.021
	-	(0.018)	(0.018)	(0.018)	(0.018)	(0.017)
Race/Ethnicity						
White	-	-0.057	-0.064	-0.070	-0.056	-0.075
		(0.085)	(0.090)	(0.089)	(0.085)	(0.083)
Black	-	-0.044	-0.056	-0.062	-0.044	-0.060
		(0.096)	(0.098)	(0.098)	(0.096)	(0.092)
Hispanic	-	0.066	0.050	0.044	0.067	0.041
		(0.091)	(0.093)	(0.093)	(0.091)	(0.088)
Asian	-	0.067	0.049	0.043	0.068	0.054
		(0.091)	(0.094)	(0.093)	(0.091)	(0.090)
Mother finished high school	-	0.0367	0.0355	0.0381	0.0364	0.0383
		(0.047)	(0.046)	(0.046)	(0.047)	(0.046)
Male	-	-0.007	-0.005	-0.005	-0.007	-0.009
		(0.033)	(0.033)	(0.033)	(0.033)	(0.033)
Constant	-0.046**	0.325	0.303	0.307	0.325	0.322
	(0.0145)	(0.292)	(0.293)	(0.294)	(0.293)	(0.292)
Observations	313	294	294	294	294	294
R-squared	0.210	0.264	0.270	0.271	0.264	0.274

Robust standard errors in parentheses
** p<0.01, * p<0.05, + p<0.1

substantive conclusions and mirrored those ran on the sample of all offenders providing robust support for the balance perspective. Both the estimates and statistical significance in tables 11 and 12 are virtually identical to those of tables 9 and 10. Like the previous models, Table 11 and 12 show that there was no evidence for a gender effect, nor was there evidence for friendship stability moderating the outcome. In Table 11 age remained statistically significantly different across all models, however in Table 12 it failed to reach statistical significance and like. In Table 12, imbalance in parental attachment with best friend is statistically significant ($p<.05$) across all models. Overall, the models run on all four samples lead to similar evidence supporting the balance perspective that suggests that when a respondent's best friend is more versatile in wave I, he or she will alter their own versatility to become more similar with the friend. Neither gender nor relationship stability appear to influence this relationship, though both operationalizations in friendship stability were marginally significant.

Chapter 5: Discussion

The influence of deviant peers on one's own offending is one of the most well supported relationships in criminology (Warr, 2002; McGloin & Thomas, 2019). Though this relationship is robust, much of the extant literature holds the mere exposure assumption: that friends who engage in delinquency are automatically a bad influence. Within the past decade, some scholars have advocated for careful consideration of delinquent behavior relative to peers rather than simply embracing the exposure assumption (McGloin, 2009; Osgood et al., 2015). By shifting the attention away from the peer and towards the tie, we can understand peer risk as reciprocal, dynamic, and dependent on the relationship between the respondent and his or her friend. The balance perspective allows us to understand peers as being reciprocal influences to one another and having a constant exchange of attitudes and norms (Heider, 1958; Newcomb, 1968). Despite the insight that the balance perspective offers, it has received only modest attention with criminology.

To date, the balance perspective has been applied almost exclusively to frequency of offending (McGloin, 2009), and has not been utilized to explore offending versatility. Nearly two decades ago Warr (2002) argued that the peer influence perspective needs to address not only frequency of offending, but also offending versatility and behavioral overlap. More recently, in response to Warr's (2002) call, Thomas (2015) provided support that a friend's specialization type predicts one's own specialization type as well. This thesis proposed that by using the balance perspective, we can better understand both peer influence and versatility, and that a respondent will alter his or her offending versatility to be more similar to that of a peer.

Using linked longitudinal data with consistent measures across waves and respondents, this thesis examined the relationship between offending versatility imbalance and within-individual change in versatility. Using two measures of offending versatility (i.e.,

a variety score and a diversity index) these findings provide additional support for the balance perspective. The analyses bear evidence that imbalance in offending versatility between a respondent and a same sex best friend predicts within-individual change in offending versatility for the respondent. For instance, when a respondent has a best friend who is more versatile, on average the respondent shifts his or her offending to match the friend and become more versatile in later waves. Conversely, when a respondent's best friend indicates higher levels of specialization, the respondent shifts his or her offending versatility to become more specialized. Importantly, these results were consistent when accounting for the imbalance in frequency of offending between the respondent and his or her best friend, as well as a host of other controls.

In order to assess whether the within-individual changes in versatility were moderated by relationship quality, two measures of friendship stability were used. Heider (1958) theorized that individuals may reach homeostasis by either attitudinal alignment or a termination of the friendship. If there was evidence that the termination of a friendship moderated the relationship between imbalance and behavioral change, there may be support for a selection argument. The moderators accounted for best friend stability (i.e., the respondent nominated the same best friend across both waves) and friendship stability (i.e., the respondent nominated the best friend in wave I as a friend in wave II). In both a sample of all offenders and a sample of repeat offenders there was no support that relationship characteristics moderated the relationship between versatility imbalance and within-individual change.

These findings contribute to the substantial literature of peer effects and offer important implications. First, these findings emphasize and reaffirm the importance of not simply viewing peers who engage in delinquency as automatic 'bad' influences. Rather than taking this approach, this thesis advocates for assessing the risk of peer who engages in delinquency relative to the individual. This difference is not just one of esoteric nuance,

rather it explicitly acknowledges that peers do not necessarily have a criminogenic effect on an individual, but rather the influence is relative to both the frequency of delinquency and the offending versatility of the reference individual. For instance, a friend with similar repertoire of offending may not shift the versatility of an individual because an imbalance may not be present. This perspective argues that risk is not an inherent to the friend, but rather a dynamic characteristic of the relationship itself. The risk of a peer who engages in delinquency should not rest solely on the individual, but rather the relationship between the two. As McGloin (2009) explained, simply having a friend who engages in delinquency does not mean that the individual is a risk. This work provides support that balance has support not only for frequency of offending, but offending versatility as well.

Second, this thesis offers support beyond simply peer effects but begins to address a growing literature on offending versatility and several potential mechanisms of the balance perspective. Consistent with prior literature (McGloin et al., 2007; Piquero et al., 1999; Sullivan et al., 2006), this thesis offers support that offending profiles both expand and contract dependent upon the peers with whom an individual is associated with. Though mechanisms were not directly tested, these findings suggest that there is support for the normative influence perspective, namely attitudinal transference in multiple ways. The expansion and contraction of offending versatility is most similar to attitudinal transference rather than the criminal capital perspective which would predict only expansion in the short term.

In addition to providing support for the potential ways in which attitudes may be transferred, this thesis also offers additional support on recent literature that suggest that attitudes may be crime specific (Thomas, 2018). Sutherland (1947) was not explicitly clear in his theory of differential associations on whether people endorse more general global attitudes towards delinquency or more specific attitudes tailored around the situation, causing some debate within criminology. The findings in this thesis show that offending repertories

are altered to become more like a friend, which indicates that the attitudes that are transferred and adopted are specific to offenses that the respondent may not have previously engaged in. Although this thesis could not directly test the mechanisms of attitudinal transference, or whether attitudes were global or specific, the findings lend some support to the notion that within the best friend dyad, respondents became more specialized indicating that they picked up more specific attitudes. Considering versatility from the balance perspective can shed light on the specificity of attitudes favoring delinquency, particularly if future research considers not just the degree of offending versatility, but specialization types. Viewing attitudes as crime specific can urge scholars to consider the methodological implications of attitude measurement, and how careful consideration of these measures may help better understand theories of attitude transfer.

Third and finally, this study contributes in its use of the balance perspective as a methodological tool. The growing body of evidence regarding the balance perspective should encourage scholars to consider the relative behavior of a dyadic pair not just conceptually but also in measurement. Indeed, this is a front in need of expansion. Typically, researchers have operationalized peer delinquency as an average number of delinquent peers, an average level of frequency of delinquency, or the proportion of individuals who engage in delinquency (Haynie, 2001; Haynie, 2002; Akers et al., 1979). This thesis suggests those interested in peer influence should consider individual relationships rather than aggregate measures that may miss nuances of peer relationships, and specifically delinquency relative to these relationships. It also urges scholars to move past frequency of offending and consider offending profiles and offense types as well.

This study provides a first look into how the balance perspective can be applied to versatility in offending and how peers should be considered, and naturally has several limitations. First, limitations in measures manifested in multiple ways throughout the thesis. The measurement of offending versatility was less than ideal due to the ordinal nature of the

data. Alternative methods to measuring offending versatility should be considered in order to test the robustness of these results. Measuring versatility and specialization is an important first step, but it does limit the extent to which mechanisms can be explored.

In his original conceptualization, Heider (1958) was confident that attitudes are an inherently perceptual process. Within criminology, there is a large debate over whether perceptual or objective offending measures are more suited to answer questions of peer delinquency. Within the AddHealth data, only objective measures of delinquency are captured, and used to create the offending profiles. Although this is an important addition to the literature, it fails to capture the original balance concept. It is imperative to find data that allow scholars to use perceptual measures of delinquency in order to test Heider's original notion of balance. Using perceptual data would allow for a unique contribution surrounding the debate of perceptual versus objective measures as well. Linking perceptual and objective measures of delinquency we could determine what occurs offending behavior does not match the perceptions of the respondent.

This thesis suggests several exciting avenues for future research in order to flesh out the balance perspective and offending versatility both theoretically and methodologically. Although several potential mechanisms were considered as potential explanations for the within-individual shift in offending versatility, this work was unable to directly test these mechanisms. It would be beneficial to use other data and measures to explore these mechanisms and explicitly test mechanisms such as attitudinal transference, opportunity structure convergence, and alleviation of dissonance. Understanding these mechanisms could provide insight into how behavior spreads both with respect to frequency and type. Future work would benefit from understanding and operationalizing relationship qualities in order to determine how they may have further impacts on convergence in versatility. Research in these mechanisms is also imperative in order to understand potential iatrogenic effects of programs that group adolescents together.

The consequences of failing to consider peers in placements is well known within the peer literature. Dishion et al. (1999) discuss the impacts iatrogenic effects in the Cambridge Somerville project where adolescent boys who were either at risk or who engaged in delinquency were grouped together in a camp setting and given time to spend with one another. Placing these boys together had an iatrogenic effect and the boys displayed more delinquency later on. Welsh and Rocque (2014) conducted an empirical review on harmful effects of programs and found that many of the programs that had harmful effects have group settings. Some of the most common reasons for iatrogenic effects were due to programs that were not implemented correctly, had deviancy training in a group setting, or based in theory that was not correct. Gest et al. (2011) discuss the importance of using social network analysis to both evaluate and implement programs in to assess the settings in which these programs are implemented to ensure that there are not harmful effects. Simply placing adolescents together in these programs may have unintended consequences, particularly when the relative nature of their delinquency is not considered and when versatility is not considered. Without understanding how versatility may be altered in group settings, placing individuals together may shift individuals offending to become both more serious and more versatile.

Though evidence of iatrogenic program effects due to peers is well documented with respect to frequency of offending (Dishion & Dodge, 2005), few if any have assessed these effects with respect to versatility and offending repertoires. Evaluating these programs in versatility outcomes is essential, because it allows us to see if individuals are picking up skills and techniques in these programs that will then potentially alter their versatility. For example, under the balance perspective if two adolescents that are placed together become friends with one another in one of the intervention programs and one has a history of shoplifting while the other has a more versatile repertoire of burglary, robbery, auto-theft, and assault we might expect that the more specialized individual may pick up some of the attitudes and techniques

of his or her friend. In light of the research on iatrogenic effects of programs, we should be more cautious in the way that people are grouped together during interventions with respect to both relative offending and versatility.

Methodologically there are several areas that future research should explore. First and foremost, this thesis studies profiles of offending through versatility and does not have the capabilities to consider type of offending. Considering type of offending would allow a deeper understanding to the mechanisms by which behavior is transferred, as well as allow us to measure attitudes in more granular ways. Scholars should consider alternative ways to measure specialization that can be difference between individuals and across time. Perhaps just as important, future work should note that the literature on balance by and large consists of dyads though relationships exist within complex networks where other peers and individuals may also influence individuals. Considering these networks with regard to the balance perspective can offer insight into how the mechanisms works as well as how individuals within the network differentially influence offending behavior.

Overall, this thesis provides support for the balance perspective and for the idea that individuals may converge not only in their frequency of offending but also in their offending profiles. This promotes the idea that peers who engage in delinquency should not be seen as automatic bad influences, but instead the relationship between the peer and the individual should be considered. This study identifies key ways in which the peer literature could benefit through further exploration, namely through the usage of social network analysis with the balance perspective and alternative measures of versatility. This study provides potential mechanisms that can offer insights into how attitudes are passed from peers to individuals, which allow us to understand theory and inform policies that group individuals together.

Appendices

Appendix I

This appendix includes the crime categories used for the specialization measures, and the specific items within each category. Respondents were asked how often they engaged in the following behaviors:

1) Assault
   "How often did you get into a serious physical fight?"
2) Robbery
   "Use or threaten to sue a weapon to get something from someone"
3) Burglary
   "Go into a house or building to steal something"
4) Theft
   "Take something from a store without paying for it"
   "Steal something worth more than $50"
   "Steal something worth less than $50"
5) Motor vehicle theft
   "Drive a car without its owner's permission"
6) Weapon use
   "Pull a knife or gun on someone"
7) Property damage
   "Deliberately damage property that didn't belong to you"
   "Paint graffiti or signs on someone else's property or in a public place"
8) Drug sales
   "Sell marijuana or other drugs"
9) Substance use
   "Used illegal drugs including: marijuana, cocaine, glue, solvents, prescription medication without a prescription, any other type of illegal drug"

Appendix II

Technical Appendix: Diversity Index Sensitivity Analyses

In order to empirically assess how the ordinal measure of the delinquency items influenced the diversity index several sensitivity analyses were conducted. I calculated the diversity index by recoding the ordinal measures into a continuous measure using the upper and lower bounds of each bounded response (i.e., responses of 1 which indicate 1 or 2 offenses, and responses of 2 which indicate 3 or 4 offenses), and by using various upper bounds. Because the ordinal measures of delinquency have no maximum, we cannot be certain what the upper number of reported offenses are. Because this upper value is unknown, the diversity index may be biased because it is calculated using the ordinal values. It is important to understand whether the diversity index is biased towards specialization or versatility.

First, I calculated the diversity index by using the lower bound of the ordinal scales (i.e., 1=1, 2=3, 3=5), and then again by using the upper bounds in the ordinal scale (i.e., 1=2, 2=4, 3=5). I then calculated a series of diversity indices using the lower bounds of the bounded responses and coding the unconstrained response (i.e., reported values of 3) to 5, 10, 15, 50, 500, 5000. I repeated this process using the upper bounds of the bounded response. Because the ordinal values were recoded in this way, it effects both the numerator and the denominator of the diversity index which thusly allows us to test how different maximum values affect the score. Recall that higher values reflect a greater degree of versatility or diversity in offending, while scores towards zero indicate more specialization. Because the same nine crime categories are used, the maximum diversity index score of .88 remains.

Tables 13 and 14 demonstrate that higher values of the upper response skew the diversity index towards lower values, indicating a higher degree of specialization. These tables indicate that by using the ordinal values the diversity index is biased towards higher versatility, and thus are a more conservative measure of specialization. Recall that for the

sample of all offenders, the within-individual change ranged from -0.86 to 0.76, with a mean of -0.09 (SD=0.32), and in the sample of repeat offenders the within-individual change ranged from -0.86 to 0.76, with a mean of -0.05 (SD=0.28) (see Tables 13 and 14). Tables 4 and 5 present values of within-individual change in the diversity index using the various upper bounds. Negative values of the change of diversity index indicate that the respondent became more specialized in wave II, while positive values indicate the respondent expressed more versatility in wave II. The within-individual change in the diversity index calculated by the ordinal measure indicate that respondents became more specialized in wave II on average. In the sensitivity analyses as values of the upper bound increased respondents expressed less specialization in wave II on average, and in fact they demonstrated increased versatility in the subsequent wave.

The imbalance with a best friend in wave I was influenced in a similar way. Negative values indicate that the friend expressed a higher degree of specialization in offending, while positive values indicate the friend is more versatile in his or her offending. When calculated using the ordinal scale best friends are slightly more specialized than respondents (see Tables 13 and 14). As higher values of the upper bound are used friends express less specialization, and when values of 500 and 5000 are used friends are more versatile in offending on average. Overall, these analyses show that using the ordinal measure to calculate the diversity index is a more conservative estimate of specialization, such that it is biased towards versatility.

Table 13. Diversity Index Sensitivity Analysis with Lower Bounds of Ordinal Measure

	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Respondent at Wave I					
Maximum of 5	314	0.479	0.249	0	0.876
Maximum of 10	314	0.439	0.246	0	0.871
Maximum of 15	314	0.414	0.247	0	0.868
Maximum of 50	314	0.356	0.262	0	0.862
Maximum of 500	314	0.320	0.284	0	0.860
Maximum of 5000	314	0.316	0.287	0	0.860
Respondent at Wave II					
Maximum of 5	315	0.437	0.262	0	0.869
Maximum of 10	315	0.409	0.259	0	0.865
Maximum of 15	315	0.392	0.258	0	0.864
Maximum of 50	315	0.352	0.268	0	0.861
Maximum of 500	315	0.326	0.285	0	0.860
Maximum of 5000	315	0.323	0.288	0	0.860
Best friend at Wave I					
Maximum of 5	314	0.467	0.260	0	0.862
Maximum of 10	314	0.431	0.252	0	0.859
Maximum of 15	314	0.409	0.251	0	0.859
Maximum of 50	314	0.358	0.263	0	0.859
Maximum of 500	314	0.326	0.284	0	0.859
Maximum of 5000	314	0.323	0.287	0	0.860
Within-individual change					
Maximum of 5	314	-0.044	0.278	-0.859	0.719
Maximum of 10	314	-0.031	0.279	-0.854	0.667
Maximum of 15	314	-0.023	0.284	-0.852	0.667
Maximum of 50	314	-0.004	0.313	-0.849	0.667
Maximum of 500	314	0.006	0.349	-0.847	0.726
Maximum of 5000	314	0.008	0.355	-0.847	0.748
Imbalance with friend at WI					
Maximum of 5	313	-0.013	0.352	-0.830	0.800
Maximum of 10	313	-0.009	0.344	-0.816	0.800
Maximum of 15	313	-0.006	0.345	-0.807	0.800
Maximum of 50	313	0.000	0.367	-0.790	0.800
Maximum of 500	313	0.004	0.399	-0.832	0.816
Maximum of 5000	313	0.005	0.404	-0.846	0.844

NOTE: For this table response values of 1 were coded as 1, 2 were coded as 3, and 5 recoded with the values above.

Table 14. Diversity Index Sensitivity Analysis with Upper Bounds of Ordinal Measure

	Number of Observations	Mean	Standard Deviation	Minimum	Maximum
Respondent at Wave I					
Maximum of 5	422	0.482	0.286	0	0.874
Maximum of 10	422	0.467	0.281	0	0.863
Maximum of 15	422	0.454	0.277	0	0.857
Maximum of 50	422	0.407	0.272	0	0.857
Maximum of 500	422	0.356	0.295	0	0.857
Maximum of 5000	422	0.347	0.302	0	0.857
Respondent at Wave II					
Maximum of 5	421	0.388	0.303	0	0.864
Maximum of 10	421	0.379	0.298	0	0.858
Maximum of 15	421	0.371	0.294	0	0.851
Maximum of 50	421	0.342	0.285	0	0.844
Maximum of 500	421	0.311	0.293	0	0.840
Maximum of 5000	421	0.306	0.297	0	0.840
Best friend at Wave I					
Maximum of 5	421	0.451	0.302	0	0.860
Maximum of 10	421	0.439	0.295	0	0.847
Maximum of 15	421	0.428	0.290	0	0.847
Maximum of 50	421	0.391	0.282	0	0.847
Maximum of 500	421	0.354	0.297	0	0.847
Maximum of 5000	421	0.348	0.302	0	0.847
Within-individual change					
Maximum of 5	420	-0.096	0.324	-0.857	0.762
Maximum of 10	420	-0.090	0.319	-0.845	0.750
Maximum of 15	420	-0.085	0.316	-0.839	0.750
Maximum of 50	420	-0.066	0.324	-0.831	0.750
Maximum of 500	420	-0.044	0.368	-0.827	0.750
Maximum of 5000	420	-0.041	0.380	-0.826	0.802
Imbalance with friend at WI					
Maximum of 5	420	-0.032	0.402	-0.865	0.856
Maximum of 10	420	-0.030	0.394	-0.855	0.836
Maximum of 15	420	-0.027	0.388	-0.832	0.836
Maximum of 50	420	-0.017	0.385	-0.832	0.836
Maximum of 500	420	-0.002	0.418	-0.832	0.836
Maximum of 5000	420	0.001	0.427	-0.832	0.837

NOTE: For this table response values of 1 were coded as 2, 2 were coded as 4, and 5 recoded with the values above.

Appendix III

Correlation Matrices

Table 15. Correlation Matrix: All Offender Sample

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Within individual change in DI	1																
2. Within individual change in VS	0.79	1															
3. Best friend same in WII	-0.00	-0.01	1														
4. Still friend in WII	-0.07	-0.06	0.42	1													
5. Imbalance in DI	0.41	0.37	-0.02	-0.02	1												
6. Imbalance in VS	0.31	0.43	-0.03	-0.01	0.85	1											
7. Frequency imbalance with best friend	0.18	0.30	0.02	-0.01	0.61	0.81	1										
8. Parental attachment	-0.08	-0.02	0.05	0.05	0.05	0.10	0.06	1									
9. School attachment	-0.04	0.04	0.07	0.02	-0.01	0.03	0.08	0.13	1								
10. Teacher attachment	-0.04	-0.01	0.02	0.02	0.05	0.06	0.06	0.21	0.26	1							
11. Peer attachment	-0.02	-0.02	0.05	0.09	0.03	0.03	0.01	0.14	0.17	0.16	1						
12. Impulsivity	-0.04	-0.05	0.00	0.08	-0.05	-0.09	-0.12	-0.05	-0.20	-0.14	-0.02	1					
13. Age	-0.06	-0.08	-0.00	0.06	0.07	0.05	0.07	-0.11	-0.18	-0.13	-0.03	-0.03	1				
14. White	0.01	-0.03	0.04	0.08	-0.09	-0.09	-0.09	-0.11	0.08	-0.01	0.08	0.11	-0.16	1			
15. Hispanic	0.00	-0.06	-0.00	-0.00	-0.02	-0.07	-0.08	0.11	-0.13	-0.01	-0.07	0.03	0.08	-0.34	1		
16. Male	-0.05	-0.05	0.02	-0.06	0.03	0.03	0.03	-0.03	-0.04	0.00	-0.17	-0.02	0.15	-0.03	-0.01	1	
17. Mother finished high school	0.02	0.04	0.02	-0.05	-0.01	-0.04	-0.04	-0.09	0.11	-0.00	-0.02	-0.05	-0.12	0.07	-0.44	0.05	1

Number of Observations: 460

ABBREVIATIONS: WI=Wave I; WII=Wave II; DI=Diversity Index; VS=Variety Score

Table 16. Correlation Matrix: Repeat Offender Sample

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1. Within individual change in DI	1																
2. Within individual change in VS	0.77	1															
3. Best friend same in WII	0.03	0.00	1														
4. Still friend in WII	-0.04	-0.05	0.43	1													
5. Imbalance in DI	0.41	0.38	-0.06	-0.04	1												
6. Imbalance in VS	0.30	0.42	-0.06	-0.02	0.85	1											
7. Frequency imbalance with best friend	0.17	0.28	0.00	0.01	0.60	0.82	1										
8. Parental attachment	0.03	-0.04	0.05	0.00	0.11	0.10	0.03	1									
9. School attachment	-0.01	0.08	0.09	-0.07	0.01	0.04	0.08	0.16	1								
10. Teacher attachment	0.05	-0.04	0.00	-0.01	-0.00	0.01	0.00	0.17	0.19	1							
11. Peer attachment	-0.02	-0.06	0.03	-0.01	-0.02	0.00	-0.01	0.13	0.16	0.15	1						
12. Impulsivity	-0.04	-0.08	-0.01	0.04	-0.06	-0.08	-0.10	0.00	-0.22	-0.10	-0.03	1					
13. Age	-0.05	-0.10	-0.01	0.11	0.05	0.02	0.02	-0.14	-0.20	-0.11	-0.06	0.00	1				
14. White	-0.01	-0.03	0.03	0.04	-0.11	-0.08	-0.06	-0.13	0.07	0.02	0.07	0.06	-0.11	1			
15. Hispanic	0.04	-0.03	0.02	0.06	-0.02	-0.08	-0.12	0.15	-0.14	-0.02	-0.12	0.02	0.08	-0.39	1		
16. Male	-0.03	-0.03	-0.02	-0.03	-0.00	-0.02	-0.01	-0.11	-0.06	-0.01	-0.18	-0.02	0.19	0.00	0.09	1	
17. Mother finished high school	0.01	0.07	0.01	-0.06	-0.04	-0.03	-0.01	-0.11	0.16	0.03	-0.01	-0.02	-0.07	0.09	-0.48	0.07	1

Number of Observations: 304

ABBREVIATIONS: WI=Wave I; WII=Wave II; DI=Diversity Index; VS=Variety Score

Appendix IV

Technical Appendix: Gender Differences

Often there may be gender effects that reflect different experiences that individuals may have. In order to test for any gender effects, several robustness checks were used. First, I created an interaction variable between gender and the independent variable of versatility imbalance with best friend. I then ran an OLS regression in the sample of all offenders and the sample of repeat offenders using this term. Table 17 demonstrates that for both sample cuts, across both measures there is no support for gender effects. The inclusion of the interaction term failed to reach statistical differences, and across each model the gender interaction inclusion did not substantively alter the coefficient or the standard errors of the versatility imbalance with a best friend.

Table 17. Gender Effect Fixed Effects OLS Models Assessing Imbalances with Best Friends on Within Individual Change in Offending Versatility

	All Offenders: VS		All Offenders: DI		Repeat Offenders: VS		Repeat Offenders: DI	
VARIABLES	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2	Model 1	Model 2
Imbalance in versatility with best friend	0.428**	0.433**	0.417**	0.397**	0.466**	0.453**	0.422**	0.413**
	(0.067)	(0.076)	(0.050)	(0.061)	(0.086)	(0.092)	(0.063)	(0.072)
Male	-0.226	-0.228	-0.035	-0.033	0.006	0.006	-0.007	-0.007
	(0.150)	(0.148)	(0.029)	(0.029)	(0.195)	(0.196)	(0.033)	(0.033)
Male X Imbalance with best friend	-	-0.008	-	0.038	-	0.0225	-	0.019
		(0.065)		(0.072)		(0.077)		(0.098)
Observations	452	452	448	448	296	296	294	294
R-squared	0.255	0.252	0.229	0.229	0.262	0.262	0.264	0.264

Robust standard errors in parentheses
** p<0.01, * p<0.05, + p<0.1

In order to test for additional differences between males and females, I re-created both the sample of all offenders and the sample of frequent offenders and

linked together the respondent and the opposite sex best friend (e.g., any nominated best friend that was not a romantic partner). I then ran each model and found no substantive differences across each model. As a final check, I tested for the statistical difference of coefficients across the sample of males and females. It should be noted that this method cuts down the sample size considerably, and thusly was only used as a final check. Paternoster et al. (1988) provides an efficient test of differences between coefficients as shown in equation 3:

$$Z = \frac{b_1 - b_2}{\sqrt{SEb_1^2 + SEb_1^2}} \tag{3}$$

. The results from the Paternoster equality of coefficients test further demonstrate that there were no differences across males and females for the main effect of versatility imbalance when running the regression with all controls. Table 18 displays the test of difference coefficients using both the diversity index and the versatility score.

Table 18. Paternoster Test for Gender Differences

		Male		Female		Paternoster Test	
		Coefficient	SE	Coefficient	SE	Difference of Coefficients	Z-Score
Sample of All Offenders	DI Model	0.463	0.067	0.300	0.078	0.162	1.57716
	VS Model	0.458	0.085	0.334	0.106	0.123	0.909049
Sample of Repeat Offenders	DI Model	0.445	0.097	0.397	0.086	0.047	0.368484
	VS Model	0.464	0.123	0.462	0.116	0.001	0.00771

ABBREVIATIONS: DI=Diversity Index; VS=Variety Score

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