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Homophily and online networks: Young adult relationships in MySpace

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HOMOPHILY AND ONLINE NETWORKS: YOUNG ADULT
RELATIONSHIPS IN MYSPACE

A Thesis
Presented to
the Graduate School of
Clemson University

In Partial Fulfillment
of the Requirements for the Degree
Master of Science
Applied Sociology

by
Jennifer Ann Turchi
May 2007

Accepted by:
Dr. James Witte, Committee Chair
Dr. Melinda Denton
Dr. Ellen Granberg

ABSTRACT

This paper examines the characteristics of online social networks. The researcher collected the data used in the study between January 3, 2007 and January 10, 2007. 150 networks were collected from MySpace.com, an online social networking site, along with six features from the profiles of those in the networks—race/ethnicity, education, religion, reasons for joining, profile background, and music. Two regression models were used to determine the effects of homophily on network density and network embeddedness.

The regression models show that homophily for race/ethnicity, religion, music, and reasons for joining did not significantly affect network embeddedness or network density. Background and education homophily were the only significant variables in the models. These results support current research that suggests individuals are becoming friends online for very different reasons than in face-to-face contexts.

DEDICATION

I would like to thank my family for all of their love and support. My academic success is due to their constant encouragement and unconditional love. More specifically, I would like to say thank you and dedicate this piece of work to my father-my best friend, my mentor, my hero. Without you, I would be nothing. Finally, I would like to say thank you to Kelly Davis. You have been the best friend a girl could ever ask for. Good luck and my God bless you wherever he may lead you.

ACKNOWLEDGMENTS

I would like to say thank you to my thesis committee for helping me throughout this process. A special thank you to Dr. Witte for all of your guidance and support. You are not just my mentor, but you have been a dear friend. Thank you for all of the opportunities you have given me while at Clemson. I will never be able to repay you. Thank you, Dr. Denton, for all of your help and patience. You were always there to offer advice and lend a supporting hand. You truly went above and beyond. I am so grateful to you. Dr. Granberg, thank you for your direction and help. Your suggestions guaranteed a successful end product. You were always there cheering me on when things got tough, and that meant more than you will ever know.

Finally, I would like to say a special thank you to Kyungsoo Im for creating the MySpace FriendGrabber and making my data collection process more efficient. Truly without you and your programming expertise, my thesis would never have been completed.

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CHAPTER ONE INTRODUCTION

Homophily is a theory in social network research that provides evidence to support the idea that there are predisposed reasons for why we choose certain people to befriend. Homophily can affect several aspects of social networks such as embeddedness and network density. Sociologists have used the strength of ties to examine the indirect effect of levels of homophily on the level of embeddedness and density.

Because an indirect effect between homophily and embeddedness has been explained partially through strength of ties, one might hypothesize that a *direct* effect between the two also exists. This paper explores the relationship between these concepts by first outlining previous research about homophily, network density, and network embeddedness. Further, because very little research has looked at these relationships in online communities, I hope to expand the literature to include the relationship between homophily, embeddedness, and density in the virtual world.

Historically network analysts have been interested in the pattern of ties within networks that allow for greater access to resources such as “information, wealth, and power” (Wellman, 1983, p.157). For example, Granovetter’s (1973, 1983) work explores how strength of ties affects the flow of information. Those who have more strong ties than weak ties will be more central in their network. Centrality has been used to explain several different phenomena in social

networking including interorganizational network influences, power, employment, and adoption of innovations (Borgatti & Everett, 2006).

Separate from centrality, but very closely related, is a concept called network density. Network density is the degree to which all members of a network know each other. Just as centrality is affected by strength of ties, so is network density. As the number of strong ties increases so does the density of the network.

What has been an interesting debate among online researchers is the idea that relationships and interpersonal communications that were at one time only seen in the offline world have now moved online (Wellman et al., 1996; Wellman and Gulia, 1999). In the past decade, millions of individuals have begun to make social connections with others online. Some observers are disturbed by this and fear that those who are using the Internet as a means for interaction and connection with others are actually isolating themselves. Others feel the Internet is a positive and healthy addition to social interaction and relationship building. Because of this increase in online interactions, it is important to recognize these relationships and begin to try to understand them. Research suggests these relationships have similar foundations to those rooted in real life (Wellman et al., 1996; Wellman and Gulia, 1999). If this is true, one might hypothesize that the same principles applied to face-to-face social settings would also apply to social networks found online, such as MySpace. The sites are merely the location, or host, in which personal relationships and networks can be formed.

MySpace is an online website that allows people to create accounts and post profiles. Information on the profiles can include things such as hometown, age, relationship status, religion, types of music, etc. Choosing a unique background or posting photos of friends, family, and pets can help personalize the profile. In order to expand on this literature, this study uses characteristics found in face-to-face relationships that often act as homophilous forces and applies them to networks found in MySpace in hopes to help bridge the gap between online and offline relationships. When researchers ask what young people are doing when they spend their time on these online sites, danah boyd (2006) put it best saying, “Simple: they're hanging out” (4).

First, I will explore previous research about homophily, levels of embeddedness, and density within social networks. A brief discussion about the history of the Internet and current online research will be included. Hypotheses are proposed to determine how homophily levels for education, race/ethnicity, religion, background, music, and reasons for joining MySpace affect network embeddedness and network density.

CHAPTER TWO LITERATURE REVIEW

Homophily

Homophily can be described as a predisposition to form interpersonal relationships with others who are inherently similar to us (Cohen, 1977; Jussim, and Osgood, 1989; Kandel, 1987; McPherson et al., 2001; McPherson and Smith-Lovin, 1987). In other words, we actively seek out other people who are similar on certain characteristics, such as race/ethnicity, social economic status, and age in order to form friendships. Lazardfeld and Merton (1954) define homophily as “a tendency for friendships to form between those who are alike in some designated respect” (23).

Early homophily studies focused on small group relations, where the center of attention was on similarities in demographic characteristics, such as race/ethnicity, gender, age, and social economic status. This continues to be the focal point in homophily research. Doyle and Kao (2004) examined “best friend choices” based on homophily of race/ethnicity and the effects of being multiracial. Their work found that adolescent Native American-White students and Native American-Black students were almost two times more likely and almost three times more likely, respectively, to choose a multiracial best friend, than their white counterparts. Other results showed that white adolescent students listed a white best friend 85% of the time and black adolescent students listed black best friends 76% of the time (Doyle and Kao, 2004). This trend continued

across all single-race groups. These results provide evidence, at least at the adolescent age, that similarity in race and ethnicity is a driving force in choosing best friend. While multiracial students had connections or ties to either of their racial backgrounds, still those students tended to make friends with other multiracial students. What could have had potential influence on these decisions was the fact that multiracial students feel as though they could never completely identify with either racial/ethnic group because of the dual racial background. However, the results clearly show an overwhelming bias towards picking friends with the most similar racial/ethnic backgrounds.

McPherson et al. (2001) provide more evidence to support racial or ethnic homophily. In their 2001 article “Birds of a Feather: Homophily in Social Networks”, a concept they call baseline homophily can be seen in a majority of demographic characteristics, including race and ethnicity, where homophily could affect relationships. Baseline homophily is the homophily effects dependent on the make-up of the pool where potential ties can be formed. Some of the most common environments that produce baseline homophily include work and classrooms (Ibarra, 1995; Hallinan & Smith, 1985 as cited in McPherson et al., 2001). They create baseline homophily because they automatically place people in contexts where very little diversity exists. Classrooms organize students in homogenous environments through the school system’s requirements of age at start of education and academic ability, if systems have different academic tracks. Work environments tend to be homogenous based on social economic status, education level, and gender.

Race/ethnic homophily is not only affected by baseline homophily, but also inbreeding homophily. McPherson et al. (2001) define inbreeding homophily as “homophily measured...explicitly over and above the opportunity set” (419). The opportunity set is the group of potential ties that could be formed with others. The patterns seen with baseline homophily are also seen with inbreeding homophily. As cited in McPherson et al. (2001), Shrum et al. (1988) show that African American youth and adults tend to choose relationships with others racially or ethnically similar. Marsden’s (1987) results follow Shrum et al. He found that only 8% of those in his sample listed alters of a different race. Furthermore, in his 1987 piece, Marsden also finds that inbreeding tendencies were highest for the African American participants, suggesting a high level of homophily associated with race, in that subgroup.

Researchers have often recognized race and ethnicity as one of the most driving characteristics for homophily; however, there are several other characteristics that consistently show similar results. Some of those characteristics include education, age, and religion. These will be discussed in the following paragraphs.

Significant results of homophily in education exist just as racial and ethnic homophily exists. Louch (2000) shows that as alters (alters are whom individuals are tied to) and egos share similarities in education level, the likelihood of contact and the formation of a relationship increases. Marsden (1988) also finds high levels of homophily in education. His results differed by education level. For example, those who were in high school, just graduated, and had some college

were more similar than those who were in middle school or less and who had a college degree. Also, those who had earned a bachelors degree were more homophilous with those who had earned a graduate degree than with any other group. Brashears (2005) finds that women were more homophilous on education than males. There appear to be consistent affects of homophily on education and relationships over time.

Homophily on age has a slightly different result than what is observed for education or race and ethnicity. Researchers find differences across different classifications of relationships. For example, age homophily in marriage is highly significant. Close friendships are also homophilous based on age. For Fischer (1977), 38% of the males in his Detroit study listed a close friend that was within two years of their age. If you expand the age difference to eight years, 78% of the males in his sample were homophilous based on age. Fischer (1977) notes that this pattern carries over to weak tie relationships as well.

Marsden (1988) however finds an interesting pattern in age homophily. In his study, those who are very young and who are over the age of 60 had higher rates of age heterogeneity. This is not as surprising when one takes in to account that young children tend to communicate most with adults and that the elderly tend to communicate more with their children who are quite a bit younger. Therefore, it might be accurate to conclude age is homophilous as a young child and until you reach a certain age group, such as retirement, where the strength of homophilous effects then diminishes.

Finally, religious beliefs show similar results to education. In Robicheaux's 2003 paper, she found significant levels of religious homophily. McPherson et al. (2001) state that in the United States, Protestants are more likely to have the highest level of religious homophily, based on size of group. Fischer (1977) finds similar results for his Jewish respondents; 80% of those who reported their religious affiliation as Jewish listed friends who were also Jewish.

McPherson et al. (2001) and Fisher (1977) find that homophily is strongly tied to religious sect, but it also relates to other contexts within religious organizations. It is not just observed based on sect, but also based on parenthood. In 1982, Fischer discovered that those individuals who were religious and were also parents had greater religious homophily in their social network than those who were not parents.

While homophily research historically focused on individual characteristics affecting personal networks, there has been a shift in attention. Now studies are beginning to focus more towards group characteristics. As researchers began to explore the concept of homophily, the focus quickly expanded from simple dyadic relationships to include peer groups and their influence on behavior. Researchers began to recognize that the social forces controlling simple person-to-person interactions could be expanded to the group context, and their affect on group creation and survival. Peer contexts, as well as individual characteristics, are now considered influential pieces in social network analysis. In Kiesner, Poulin, and Nicotra's (2003) study they find that in fact middle school adolescents chose in school and after-school peer groups

differently based on the context and similar behavior patterns relative to each group and each context. The results show that students chose groups in school based on similarities in behavior observed in the school context. The same was also true for the after school networks where students chose their after school groups who had similar after school behaviors. This study supports the idea that homophily can expand across multiple contexts, where individuals could possibly have different homophily standards for each context, including online versus offline. For this particular study, behavior was the characteristic adolescents were using to judge homophily, which confirms that group behavior within the overall group context could have a significant affect on peer group formation. My study touches on the conflict as well. This analysis makes a distinction between traditional offline characteristics and online characteristics thus examining the potential effects of the online context on homophily embeddedness and density.

Focusing on race/ethnicity, McPherson et al. (2001) have supporting evidence to show baseline homophily exists in most of these groups. Based on the literature examining individual relationship choices surrounding race, it follows that the trends seen at the micro level (dyadic relationships) would also be seen at the macro level (between different groups). Anglo groups are more racially homophilous than any other racial or ethnic group. African American and Hispanic groups have lower levels of racial homophily however it is still significant (McPherson et al., 2001).

Finally, more recently, researchers are beginning to concentrate on social networks at the “organization” level. Several pieces of literature have considered

the effects of homophily in the work force, and more specifically on the resources required to complete tasks often found within the business world (McPherson, Smith-Lovin, and Cook, 2001). For example, Roth (2003) shows that homophily often occurs in the work force, where professionals tend to seek out colleagues and potential employers/employees in the market that are similar. Moreover, clients tend to search for professionals who are demographically equal to them. In this qualitative study homophily was viewed as both a positive and negative influence on professional-client interactions and relationships. Professionals in the study felt that by serving clients who resembled them in some way, decisions were made more quickly and tasks were completed more efficiently. However, those professionals who did not fit the “traditional standard” for the particular job position often found themselves isolated and lacking interpersonal relationships with co-workers and clients (Roth 2003).

Other researchers have taken a different point of view about homophily. This research has considered homophily as the result rather than the basis of peer group selection. McPherson and Smith-Lovin (1987) hypothesize that the composition, structure, and context of groups offered members different opportunities for tie creations, thus affecting homophily. For example, those ties created in a particular environment such as work, would be similar on certain characteristics such as socioeconomic status. Other contexts where relationships are formed will have their specific characteristics that affect homophily as well. Their argument is based on the idea that activities organize individuals around ‘foci’ and foci tend to be homogenous. They argue as homogeneity increases

around the foci so does homogeneity in the types of ties formed around those activities.

From this study (McPherson and Smith-Lovin, 1987), two types of homophily were identified—induced and choice. The theory of induced homophily states that being in a group causes homophilic pairs. Therefore, similarities on certain characteristics, such as race and ethnicity or age, are a result of being involved in certain groups because of the demographic make-up or nature of the group. On the other hand, choice homophily resembles what has been discussed previously, where individuals become friends because they choose to be friends based on similarities of characteristics that already exist. Within this framework, group structure is more heterogeneous and pairs are created strictly on the basis of peer similarity—and choice. Induced homophily basically states that if a group is made up of only similar people, then only similar ties can form and homophily is the result. Choice homophily states that even if a group is made up of a diverse set of individuals where people who are not similar to one another can become friends, only ties between similar members will form. Therefore, homophily is the cause. Based on choice homophily even though the ability to form dissimilar ties exists, only homophilic ties will actually be created by choice.

One context in which it might be interesting to compare these two homophily types, is online. MySpace is just one example of a context in which to study homophily. Due to the very nature of MySpace, where millions of different individuals have the choice to log on every day and create profiles, it is assumed that the relationships between individuals created on the space are by choice, and

therefore choice homophily dominates. It is possible that induced homophily exists online in MySpace as well. Only certain types of individuals are going to join these types of “online communities” therefore creating a context in which underlying traits exist which might affect homophily. Also, if it were possible to examine the networks over time this is where induced homophily would be most prevalent. Initially, however choice homophily plays, or should play, a greater role in the formation of ties and embeddedness.

If individuals have a choice with whom they become friends, one would assume the connection between the two would be salient and important to both parties in the relationship. Several researchers have discovered two specific types of connections that can occur between a pair of people and networks. The following section describes those two types of connections.

Strength of Ties

Gronovetter (1973) defines the strength of ties as “a combination of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services which characterize the tie” (p.1361). Strong ties are the types of relationships between two people or organizations that provide support and a strong sense of belonging to the group. These ties are often intimate and very salient to the ones linked. Granovetter (1983) also states that information that does flow between strong ties tends to have a higher level of influence and be more credible.

But, strong ties are not the only connections important between two individuals. Weak ties provide important resources as well. Granovetter (1973,

1983) proposes weak ties are beneficial in several ways, the most important being information flow. He demonstrates this with his example of job hunting. Individuals who are consumed with strong ties often have a more difficult time finding a new job. This is because when strong ties connect two individuals (a dyad) or an entire network, new information is incapable of penetrating the group. Another benefit of weak ties is that they often act as what Granovetter (1973, 1983) calls bridges. All bridges must be weak ties, but not all weak ties are bridges. Bridges are generally individuals who possess very few strong ties to any particular group or network, allowing them to move between these clusters. The movement from group to group, for bridges, is what allows information and resources to flow in and out of several networks (Granovetter,1973,1983, Wellman,1983, Wellman,1988). Strength in ties also affects the level at which the individual is rooted in his or her network and the density of the ties between all the individuals involved. The following section provides evidence to support this relationship.

Network Density and Embeddedness

Expanding on Granovetter's idea of bridges, one can see how the strength of an individual's ties can account for how embedded that person is in his or her social network. How connected a person is in his or her network is called density (Louch,2000; Wellman,1983). Density is described as the number of observed ties in a network relative to the number of possible ties that could be formed (Campbell,1990; Bott,1971; Wellman, 1983). A highly dense network is one characterized by a multitude of closely connected individuals.

Several things can help account for density—transitivity being one of them. The theory of transitivity states: if the relationship between *A* and *B* exists, and the relationship between *A* and *C* exists, then it would be expected that the relationship between *B* and *C* would exist. Figure 1 displays this triadic relationship. Granovetter (1973) would argue if the tie from *A* to the two alters, *B* and *C*, were strong ties, the relationship between *B* and *C* would always exist.

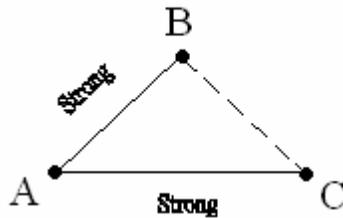


Figure 1. Transitivity theory for a triad.

As stated previously, Granovetter (1983) argues that as the number of mutual ties increases the likelihood of two people knowing each other increases as well. This is the basis for his transitivity theory that as the number of transitive ties increases the probability of knowing each other increases. However, this positive relationship is not that simple. There are potentially other factors, such as strength in the ties, affecting the likelihood of two individuals becoming friends who share a mutual friendship with a third party. Affirming this idea, Granovetter (1983) states the strength of the ties connecting two alters to a mutual friend will also affect the likelihood of those two people knowing each other.

Louch expands on Granovetter's theory in his 2000 study. Louch (2000) agrees with Granovetter's theory of transitivity and strength of ties. But, he also feels there is something missing. He asks, "Are individuals who are similar more likely to be connected than those who are different?" (Louch, 2000, 48). He hypothesizes homophily plays an important role in triadic closure. Marsden (1988) and Fischer's (1982) research suggest that densely knit groups tend to be more homogenous. Because it has been shown that as density increases the number of transitive ties also increases, this leads Louch to hypothesize that as homophily increases transitivity will also increase. What he finds is support for his hypothesized relationship between homophily and transitivity. The alter ties in his sample were homophilous on characteristics such as race, education, and religion. Gender did not have significant effects. One explanation could be that as we get older we tend to form more gender heterogeneous relationships. Therefore, one place you might find gender homophily would be in grade school contexts where girls tend to play with other girls and boys tend to play with other boys.

Another study conducted by Palmonari et al. (1990) takes into account not only the number of individuals in a group knowing each other and the similarities between network members, but also the level at which the individuals identify with the group. This study discovered that the more closely an individual identified with the ingroup, meaning the group the ego belongs to, the more positively the member rated that group. It might also be assumed the more closely a member identifies with the group, the greater the number of strong ties

that can affect how embedded the member is within the group. While measuring the level at which the member identifies with the group is beyond the scope of this project, it brings up an important point that might affect group embeddedness or density.

The literature on density and embeddedness is not always clear. Some researchers use the two terms interchangeably, while others discuss them as separate concepts. For this project the two terms have been discussed as separate concepts, where embeddedness (centrality) is the relationships between the ego and his/her alters and density is the ratio of friends within the network who know each other.

Embeddedness, also called centrality, is the measure of location of an ego relative to his or her alters within a network. Since Bavelas' pioneering work on centrality in 1950, several different measures of this concept have been explored. One of the most extensive has been the importance of an ego to his or her alters within the network (Borgatti and Everett, 2006; Klein et al, 2004). Another focus has been on Freeman's measures of degree, closeness, and betweenness (Borgatti and Everett, 2006). This paper focuses on the concept of point centrality. It is easiest to think of this measure as "the sociometric concept of a 'star'" (Scott, 2000, 83). An individual who is at the center of his or her network is that network's central point. Figure 2 illustrates this concept.

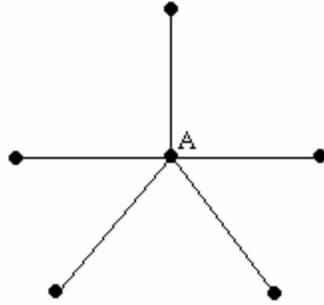


Figure 2. Centrality for point A.

Scott (2000) measures point centrality as the degree of one point relative to other points on a graph. Furthermore, the degree is simply measured as “the number of other points to which a point is adjacent” (83). For the purpose of this study, due to limitations with the data only reciprocal adjacent ties will be used to measure centrality.

Klein, Lim, Saltz, and Mayer (2004) expand on the centrality concept in their article “How do they get there? An examination of the antecedents of centrality in team networks”. The team includes homophily effect measures on network centrality. What they discover is that homophilous characteristics such as values and behavior have significant affects on level of centrality in friendship and advice relationships. However, homophilous demographic characteristics did not have the same effects.

As seen with the previous literature, the relationship between homophily and strength in ties has been studied, and the relationship between transitive ties and density has also been studied (Granovetter, 1973, 1983; Louch, 2000; Campbell, 1990). Little research has looked at the direct relationship between

homophily and embeddedness or density. My study suggests that the more similar and the more transitive the relationships, the stronger the tie between the central respondent and his or her eight friends; the stronger the ties, the more embedded the individual is in the social network. Previous research about the effects of homophily on network centrality is unclear; therefore this research aims to fill part of the gap that asks: what is the relationship between network homophily and network embeddedness for egos? Not only will the project add to the literature of centrality, but it will also advance the research in online social networking in general. For example, it will examine if similar homophily trends for race, religion, and education are found in online relationships that previous literature finds in face-to-face relationships.

Online Social Networks

When the Internet was first developed it was used for a very different purpose than what it is primarily used for today. Therefore, to be connected to the Internet had a very different purpose just a few decades ago. When the modem was first used it was cumbersome, making online communication and information sharing complex. While, early “networks” could link multiple computers at once, it was not a network that the end-user would use all of the time. This technology was bogged down with errors in the connection and incompatibility between machines. Up until the 1960’s, if an individual wanted to exchange information it was easier to physically carry the information to the other person. At this point, social networking was restricted to the offline world. Interaction with friends and neighbors often occurred at town meetings, the local hang out spot or on front

porches during the evening walk. Your personal network generally included those within a close proximity. Other technology, such as the telephone, helped to keep distant relationships close, however it was still an arduous task to maintain a long distance tie.

For those who were not “virtual pioneers”, in the 1980’s, more help for maintaining ties arrived when the Internet changed. The initial expectations were to create a tool that would allow for easier information exchange between scientists. Decades later the Internet is a twisted web of connections. Abbate (1999) argues the Internet is a result of its social environment. As more and more people begin to understand the implications and value of the Internet, the use of it changes.

In 1995 the World Wide Web was launched, and now it is the most widely sought after (and used) medium for interpersonal communication (Abbate, 1999). Be it through instant messenger, online journals, forums, message boards, or email (the most highly used element on the web), people are now more connected than ever, and it is continuously growing. With faster connections the amount of time and the types of activities engaged in on the Internet has increased. “We are now creating a space in which the people of the planet can have [online] kind[s] of communication relationship” (Barlow et al, 1995). These relationships are being shaped on domains the U.S. Defense Department originally called computer support social networks (Wellman et al., 1996).

Some of the first recognized computer support social networks (CSSN) included email, bulletin boards, multi-user domains, newsgroups, and relay chats

(Wellman and Gulia, 1999). Today those networks have expanded to include virtual communities. Virtual communities are websites online where individuals become members and meet others. A majority of the interaction between members happens online in the “community” just as communication and interaction traditionally occurred in offline communities.

The first set of research that looked at these types of websites focused on a site called Friendstr.com. Since then, several similar sites have developed including Classmates.com, Facebook.com, and the most prominent, MySpace.com. Sites such as those listed above attract thousands of users on a daily basis. Among other reasons, the popularity of these sites is just one motivation for researchers to be interested in and study the comparisons between online and offline relationships. Wellman et al. (1996) were some of the first to explore those comparisons.

In 1996, Wellman et al. pointed out some interesting comparisons between off line social ties and virtual ties. They suggest that just as there are strong, weak, and bridging ties in the offline world, there are also strong, weak, and bridging ties online. Another similarity Wellman has found is that weak ties online are beneficial for diverse sources of information and resources, just as Granovetter found in face-to-face networks.

It is no secret that one of the most important benefits to social ties is the support and sense of belonging one receives through interacting with others. For a while sociologists believed the only way to truly gain those benefits, such as social capital and a sense of identity, was through face-to-face interaction.

Researchers continue to debate whether or not an individual can receive the same sort of support and sense of belonging from relationships online that they would get from relationships that occur face-to-face. What Wellman et al. (1996) suggest is

despite the limited social presence of CMC [computer-mediated communication], people find social support, companionship, and a sense of belonging through the normal course of [Computer supported social networks] or work and community, even when they are composed of persons they hardly know(220).

This could have huge sociological implications for social networking. If individuals are able to obtain online the “social resources” once thought only accessible through face-to-face interaction this then might force researchers to examine the ways in which these relationships are created and sustained online.

Wellman and Gulia (1999) also point out that people are contributing many of the same things to their on and offline relationships. People still bring “personal baggage”, such as past experiences, to online relationships that they would bring to face-to-face interactions (Wellman and Gulia, 1999). Just because the *medium* in which the interaction has changed, the cognitive schemas in *how to act* with a particular alter has not. For example, how one acts with someone of the opposite sex in a face-to-face situation (shy, quiet), might be similar to the way one acts in an online situation. The nature of the Internet provides the opportunity to mask certain characteristics individuals possess, however what researchers have found is that concealing those characteristics doesn't often occur. Those characteristics, such as social economic status, education, race, that tend to separate individuals in the offline world still exist in the virtual world.

Moreover, people continue to communicate with others, online and off, who are similar on the qualities listed above (Witte, 2000). This once again, reinforces the idea that researchers now must expand upon the traditional social networking theory to include virtual communities.

One difference Wellman, Salaff, Dimitrova, Graton, Gulia, and Haythornthwaite (1996) have discovered is the types of homophilous characteristics in online networks versus off-line networks. When people log on to the Internet they have the potential ability to change their identity. This allows for things that dictate off line interactions to have different affects online. Because the Internet has the potential to hide certain characteristics of people, Wellman et al. (1996) argue those who form ties with one another are generally more alike on characteristics other than those commonly found offline such as, socioeconomic status, gender, race, and age.

One of these similarities could be personal interest. Papacharissi (2002a, 2002b) suggests that people in fact explore other's web pages based on interests. Web page owners tend to create their pages to express their interests and to attract others who are similar. It is a delicate game that web page owners and page browsers tend to play in order to manage impressions given and given off.

Other areas such as online music sites have also been explored. Peter Nieckarz, Jr (2005) and Steve Lee and Richard Peterson (2004) suggest one thing bringing people together online is music. Lee and Peterson (2004) notice that with virtual music scenes, individuals join because of the music, but maintain their status with the groups for other reasons. Quite often the virtual relationships

are reaffirmed when face-to-face meetings are arranged. For example, members to the list serve P2 get together on a yearly bases for “putting faces to names and (email) signatures...and relationships flowed from the list serve to ‘real life’” (Lee and Peterson, 197). Once the online relationships became offline relationships, stronger ties were formed and attachment to the group became stronger.

Virtual communities where individuals trade music and information about genres, bands, and concerts are also being recognized as a “community” once thought of in the traditional sense, yet in a different context. Niecharz recognizes that virtual communities are providing people with support, reciprocity, common goals, and meaningful interaction, and urges researchers to acknowledge these new phenomena as significant pieces of every day life. He states, “The sum of these elements suggests that Internet communities are possible, and in many ways are not very different from non-Internet community networks in their characteristics” (406).

Through this research I explore three different characteristics unique to MySpace to examine if homophily on those characteristics affects the number of reciprocal ties between respondents and their friends. Those three will be the type of music attached to the page, the type of background applied to the page, and the reason for becoming a member of MySpace and creating a page. Race/ethnicity, education, and religion will also be included in the analysis along with the unique characteristics listed above.

Using demographic characteristics consistently found to have homophilous effects on network creation and new characteristics unique to MySpace, relationships between homophily, embeddedness, and density will be explored. By creating three unique and three traditional homophily scores, comparisons between the two different contexts can be explored. This will provide an increased insight in to the differences in relationships between the online and offline worlds. It will also help fill the gap that researchers, such as Wellman et al., Niecharz, and Lee and Peterson, are currently suggesting exists in the literature.

The previous literature is clear that individuals who share a high number of reciprocal ties with other individuals in their networks are considered highly embedded. Those reciprocal ties are often described as either strong or weak. The more a network is comprised of strong ties between members, the denser the network is considered to be. According to Louch (2000) homophily plays a role in the level of density of networks. Wellman suggests that there is a difference between similarities online and offline in social networks. Again, by using traditional homophily characteristics (race, education, and religion), I can compare those trends to characteristics Wellman and other online researchers (Papacharissi, 2002a, 2002b; Niecharz, 2005; Lee and Peterson, 2004) believe to have a great influence on the formation of friendships online (music, interests, and reasons for joining online communities). This leads to hypotheses I and II.

Hypothesis I: The higher the level of homophily on the six characteristics between the individual and their top 8 friends, the more embedded the individual will be in his/her network.

More specifically:

Hypothesis 1a. The higher the level of homophily for race/ethnicity, the more embedded the individual will be in his/her network.

Hypothesis 1b. The higher the level of homophily for religion, the more embedded the individual will be in his/her network.

Hypothesis 1c. The higher the level of homophily for education, the more embedded the individual will be in his/her network.

Hypothesis 1d. The higher the level of homophily for music, the more embedded the individual will be in his/her network.

Hypothesis 1e. The higher the level of homophily for background, the more embedded the individual will be in his/her network.

Hypothesis 1f. The higher the level of homophily for reasons for joining, the more embedded the individual will be in his/her network.

Hypothesis II: The higher the level of homophily on the six characteristics between the individual and their top 8 friends, the denser the individual's network will be.

More specifically:

Hypothesis 2a. The higher the level of homophily for race/ethnicity, the denser the individual's network will be.

Hypothesis 2b. The higher the level of homophily for religion, the denser the individual's network will be.

Hypothesis 2c. The higher the level of homophily for education, the denser the individual's network will be.

Hypothesis 2d. The higher the level of homophily for music, the denser the individual's network will be.

Hypothesis 2e. The higher the level of homophily for background, denser the individual's network will be.

Hypothesis 2f. The higher the level of homophily for reasons for joining, denser the individual's network will be.

Because Hypothesis I and II are very broad, more specific hypothesis for both network embeddedness and network density are included in the research design.

Final Comments for Literature Review

This research is important because it addresses a gap in social networking theory. The number of MySpace web pages increases by thousands every day. More and more individuals are logging on to the Internet in order to meet new people or reconnect with those they already know. While researchers recognize this shift from the analog world to the digital world little research has been done examining homophily within these new networks. Through this study I hope to show how homophily affects the level of network embeddedness and network density.

CHAPTER THREE METHODS

The data for this research came from an online social community called MySpace.com. MySpace is a place where any individual 14 years of age or older, can create a profile, meet new people, or keep in touch with old friends. Once an individual has created his or her profile, he or she then invites others to be his or her “friend”. Friends can include off-line friends, people only acquainted through the website, actors/actresses, athletes, musical groups, etc. John Anderson founded MySpace in 2003. On August 9, 2006 the site hit a milestone, boasting 100 million members. It grows at roughly 230,000 members per day. In 2005 News Corporation bought the company. MySpace currently has over 106 million users.

Profiles can include information such as the members’ age, sex, geographic location, personal photos, personal blogs, likes/dislikes, and much more. In order to insure security, profiles of those members who are under the age of 18 are automatically classified as private for those who are 18 years of age or older. Members who are 18 years of age or older have the option to set their profiles to public or private.

Sample

150 profiles were selected from a randomly compiled list provided by MySpace. The search criteria were restricted to only those who are between the ages of 18 and 21. Also, only those who have recently logged in to their profiles

were included in the sample. There were a relatively even number of males and females included in the sample when sorted by this criterion. This allowed me to access those profiles of members who check their MySpace pages on a regular basis. Other sort options included recently updated, new to MySpace, and geographic location, but all of these posed unique problems for the sample. A small initial sample of profiles was collected, based on recently updated and interestingly the only profiles listed were female. This suggests that females are more likely to update their profiles on a regular basis than males. Those who were new to MySpace were assumed to have less extensive networks than those who have been involved with the site for a while. Finally, when sorted by geographic location (e.g., distance) I was limited to the Southeast, due to my location listed on my profile. I felt this would potentially skew the results as well.

Every twentieth profile was selected; this was the first profile on every other page included in the general search provided by MySpace. By choosing every twentieth profile it allowed me to get further in to the list. Any profiles that were not personal profiles (i.e. bands, advertisements, etc) were considered ineligible and excluded from the sample. In the case that an ineligible profile was the first one listed on the selected page, the second profile was used in the sample, and so on. 52.7% of the sample was female and 47.3% of sample was male. All of the central respondents were between the ages of 18 and 21, while the friends of the respondents' age ranged from 16 to 102, but those over the age of 60 were thought to be exaggerating their age and were compiled into a single age category.

The original 150 profiles were collected over a span of three days, during January 2007.

Measures for Independent Variables

Several pieces of information were collected from each of the 150 ego profiles. Information that was collected included things such as the age, location, sex, reasons for joining, relationship status, sexual orientation, ethnicity, religion, zodiac sign, if they smoke/drink, opinions about children, education level, names of schools, income, name of occupation, any music attached to the profiles, background applied to the profiles, and finally, the identification numbers of all of the friends in the “Top Friends” space. The music, names of schools and occupation and background were collected by hand, all other characteristics were collected through a software program called MySpace Friend Grabber¹.

A sample of friends was also collected from each of the ego profiles. MySpace provides an area on each profile for members to list their friends, which until recently was known as “the Top 8”. Now MySpace members have the freedom to include up to twenty-four friends on their “Top Friend” space. Members also have the ability to order or rank their “Top Friends” in any way they chose. This suggests that those who are closer to the top of the space might have stronger ties to the respondent and could be more similar. The friends who are added to the space, the “ranking” of the friends, and the number of friends displayed in the “Top Friend” space can change over time and often does for those members who actively keep up with their profile.

¹ MySpace FriendGrabber is a software program created in December 2006, by Kyungsoo Im, a Computer Science Graduate Student at Clemson University. The program grabs information from the profiles and creates .txt files, which can then be transferred into SPSS for data analysis.

From the “Top Friends” space on each 150 initial profiles, eight publicly available profiles were selected. If the ego profile had more than eight friends listed, the first eight *publicly available* profiles were chosen. If there were fewer than eight friends listed or fewer than eight publicly available profiles, the analyses for those networks were based on the total number of publicly available profiles in the “Top Friend” space. These profiles were collected over a span of seven days and were also saved electronically. The same characteristics collected from the egos’ profiles were also collected from the friends’ profiles. These were used to measure network embeddedness, network density, and homophily.

The Statistical Package for the Social Sciences (SPSS) was used in order to create the six homophily variables included in the regression analysis. The following outlines the independent variables included in the regression models to answer the two hypotheses: the more homophilous the central respondent is with his or her eight friends, the more “ego” will be embedded in the network, and the more homophilous the central respondent is with his or her eight friends, the denser the overall network will be.

Total number in the network. The total number of people in the network was used as a control variable. It was simply the sum of those included in the networks and could range from one (just the central respondent) to nine (the central respondent plus his or her eight friends).

Race. The race homophily score was created by calculating a percentage of the total number of similar responses on race between ego and his/her eight friends divided by the total number of members in the network. This accounted for the

differences in network size between the 150 networks. Responses in MySpace were restricted to include Asian, African American/black, Latino/Mexican, Middle Eastern, native American, other, pacific islander, and white.

Education. The education homophily score was created in the same manner as the race homophily scores, where the total number of similar responses was divided by the total number of individuals in the network. MySpace provided members with specific education levels. Those levels included high school, in college, some college, college graduate, professional/graduate school, and postgraduate.

Religion. The religion homophily score was also created in the same manner as the race score. Again, the total number of similar responses was divided by the total number of valid responses. MySpace provided fourteen different religions that members could choose from and place on their profile. Categories included agnostic, atheist, Buddhist, catholic, Christian, Hindu, Jewish, Mormon, Muslim, other, protestant, scientologist, Taoist, and Wiccan. Table 1 provides a list of the different types of responses, provided by MySpace, for each of the “traditional” characteristics used in the regression analysis for all respondents in the data set. Table 2 provides the same information, but only for the central respondents in the networks.

Table 1. Percent response for “traditional variables” for all persons in the data set.

	Education	Race	Religion
	High school 29.6%	Asian 1.1%	Agnostic 2.9%
	In college 34.7%	African American 8.4%	Atheist 2.1%
	Some college 8.5%	Latino/Hispanic 8.1%	Buddhist 1.0%
	College graduate 3.2%	Middle Eastern 0.1%	Catholic 15.2%
	Professional/graduate school 3.2%	Native American 1.3%	Christian 27.4%
	Post graduate 0.9%	Other 3.9%	Hindu 0.1%
		Pacific Islander 0.7%	Jewish 1.8%
		White 46.5%	Mormon 0.1%
			Muslim 0.4%
			Other 3.0%
			Protestant 1.4%
			Scientologist 0.8%
			Taoist 0.3%
			Wiccan 0.6%
Missing	205	309	443
Total N	826	722	588

Table 2. Percent response for “traditional variables” for central respondents to the networks.

	Education	Race	Religion
	High school 30.8%	Asian 0.7%	Agnostic 5.7%
	In college 49.3%	African American 8.2%	Atheist 3.5%
	Some college 9.6%	Latino/Hispanic 12.3%	Buddhist 0.7%
	College graduate 3.4%	Middle Eastern 0.0%	Catholic 28.4%
	Professional/graduate school 5.5%	Native American 2.1%	Christian 41.8%
	Post graduate 1.4%	Other 4.8%	Hindu 0.7%
		Pacific islander 0.0%	Jewish 5.0%
		White 71.9%	Mormon 0.0%
			Muslim 2.1%
			Other 5.0%
			Protestant 4.3%
			Scientologist 1.4%
			Taoist 0.0%
			Wiccan 1.4%
Missing	4	4	9
Total N	146	146	141

For purposes of this paper, the previous three independent variables were considered the “traditional” homophily characteristics. The following three characteristics were considered unique to MySpace on virtual communities. Those included music, background, and reasons for joining MySpace.

Reasons for joining. The reasons for joining MySpace were separated into four dichotomous variables: networking, dating, serious relationships, and friends (0=non response, 1=indicated as a reason for joining). A single score for joining was then computed by increasing the value of joining by double of the previous joining value for each additional reason listed. For example if ego or friends only listed “friends” as a reason for joining MySpace, then the single joining score would equal 1. If ego or friends listed all four reasons for joining (friends, networking, serious relationship, and dating) then the joining score would equal 15. Members are allowed to list a single reason for joining MySpace or any combination of the reasons provided above. Homophily scores were based on the total joining score, which provides a more stringent comparison for homophily of joining reasons. Ego and ego’s friends had to list the exact same combination of reasons for joining in order for the relationship to be considered homophilous.

Music. MySpace allows members to attach a song of choice to their profile, which plays every time the profile is opened/viewed. MySpace, and their music library, provided the genres. Most of the songs applied to the profiles were classified under two or three different genres. For purposes of this study, the music types were coded separately as individual genres, where a “1” indicated that that particular music type was used to classify the song applied to the profile

and a “0” did not. In order to calculate the homophily score for music a dichotomous variable was created for each friend that indicated whether that friend was similar on music over the 77 genres (1=same genre, 0=not listed). Therefore, a “1” indicated that ego and friends were similar on at least one type of music over the 77 genres, where a “0” indicated that ego and friends were not similar on any type of music genre. A count variable was then created that tabulated the total number of homophilous friends with ego. The number of people in the network then divided that count variable, in order to get the percentage of homophilous music throughout each network.

Background. MySpace allows members to apply different backgrounds to their profiles in order to make it more personal or to express themselves. A “background” for a MySpace profile is most comparable to a computer’s desktop wallpaper. I created the categories that were used in order to classify the backgrounds. The backgrounds were collected as individual categories and then frequencies were run in order to see which backgrounds were used the most over the 1031 individuals in the 150 networks making up the sample. Those backgrounds that were used three or more times by the sample were coded as a specific type. Those that were used by fewer than three members were placed in a general “other” category. The new background types were assigned a value label (1 thru 32) for the final variable, called *background*. The homophily score was then produced from that variable. A count of the number of similar responses between ego and friends was created. The total number of similar responses between ego and his/her eight friends was then divided by the total number of

valid responses. Table 1 through Table 3 (in Appendix A) provide complete lists of music genres, types of backgrounds, and the reasons for joining.

For each of the six independent variables, the greater the number of similar matches between ego and friends, the higher the percentage of network homophily for those characteristics. Including three characteristics shown in the literature to be traits people are homophilic on offline, allowed me to compare a new social medium (computer mediated communication) to traditional face-to-face networks. Wellman et al. (1996) point out that participants of online communities often are homophilic on characteristics other than demographics, such as personal interests. Table 1, in appendix B, provides descriptive statistics for all six of the homophily variables and the two dependent variables.

Measures for Dependent Variables

The dependent variables were network embeddedness and network density. Both of the dependent variables were continuous. The first dependent variable was the level of embeddedness in the network. This percentage was calculated as the number of reciprocal ties between the ego and the ego's eight friends divided by the total number of possible ties. If a friend listed on an ego's profile also listed the ego (mutual listing), this was considered a reciprocal tie and was used to measure embeddedness. Embeddedness ranged from 0% to 100%; the mean embeddedness was 47.8%. The greater the number of reciprocal ties the more embedded the respondent was in his or her network.

The second dependent variable was network density. For density, ties between the ego and his or her eight friends and their friends as well as the ties

between ego's total number of friends up to twenty-four and all other friends were included in the measure. Density was described as the number of observed ties in a network relative to the total number of possible ties that could be formed within the entire network. Due to data error, 149 of the original 150 networks were used in the density measure. The range for network density was from 0% to 100%. The average density score was 27.76%. The greater the proportion, the denser the network. The homophily variables were measures of individual members, but were used to explain how the central respondents affected the entire network density. Therefore the analysis becomes a measure of the relationship of the individuals to the network, and not the network as a whole.

A linear or ordinary least squares regression was used to calculate the relationship between embeddedness and homophily of race, religion, education, background selection, music, and reasons for joining MySpace. An OLS was also used to calculate the relationship between network density and homophily of race, religion, education, background selection, music, and reasons for joining MySpace.

CHAPTER FOUR RESULTS

Table 3 provides the correlation coefficients between the six different homophily variables. The correlation analysis was used to check for any multicollinearity issues between the six independent variables. None of the variables were highly correlated with one another, indicating that there were very little multicollinearity issues with the data. The greatest correlation was between reason for joining and background.

Table 3. Correlation coefficients for homophily variables.

	Em	Den	Race	Rel	Edu	BG	RfJ	Mu
Em	1							
Den	.451**	1						
Race	-.074	-.061	1					
Rel	.010	.002	.242**	1				
Edu	-.172*	-.093	.239**	.143	1			
BG	.011	-.185*	.177*	.157	.222**	1		
RfJ	.042	-.130	.082	.024	.011	.303**	1	
Mu	.066	-.124	.034	.174*	.027	.056	.067	1

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

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

Em = the percentage of network embeddedness

Den = the percentage of network density

Race = the percentage of homophily for race

Edu = the percentage of homophily for education

BG = the percentage of homophily for backgrounds

RfJ = the percentage of homophily for reasons for joining

Mu = the percentage of homophily for music

Table 4 gives the three models which describe the relationship between embeddedness and homophily. The first model provides the standardized coefficients for embeddedness and the control variables, which includes gender, religion, ethnicity, and the total number of individuals in the network. The overall model is significant, where $F=3.636$, $p=.001$. Total number in the network ($\beta=.375$) is the only variable in the model that is significant, $p=.000$. This suggests that those individuals with larger networks are more embedded than those who have fewer people in their network.

Model two provides the standardized coefficients for all variables included in the regression analysis. The results indicate that the overall model is significant. The standardized coefficients for the model show that homophily for education ($\beta= -.182$) and the total number of people in the network ($\beta= .370$) are the only variables significantly contributing to embeddedness level within the networks. The standardized coefficient for homophily for background ($\beta= .148$) is only slightly non-significant where $p=.090$ and would be significant at the $p< .10$ level. All other standardized coefficients are non-significant.

Based on those results, additional statistical analyses were conducted to produce the final model. Model three shows the standardized coefficients for the control variables and the five homophily variables left in the regression analysis. Once again, only three variables significantly contribute to the model. Those with a larger number within the network are more embedded in their networks than those with smaller networks ($\beta=.337$); those with higher levels of network homophily for education are less embedded in their networks ($\beta=-.200$). Finally,

those individuals with higher percentages of homophily for background are more embedded in their network ($\beta=.158$). The standardized coefficient for being African American ($\beta= -.158$) is only slightly non-significant where $p=.075$ and would be significant at the $p< .10$ level. All other variables are not statistically significant, however percentage of homophily for religion, race, and music are included because they seem to affect other variables in the model. Homophily for reasons for joining is left out of the regression model because of potential multicollinearity affecting the overall model. Once, reasons for joining is left out of the model, homophily for background became significant. Table 3 shows that reasons for joining has the highest correlation with background, which suggests that either background or reasons for joining should be left in the model, but not both. Homophily for background has a greater affect on all of the other variables and that is why it is left in the model. The results from Table 4 are not consistent with Hypothesis I, which stated that the more homophilous one's network is for the six independent variables the more embedded the central respondent is in his or her network. The model for embeddedness did not support the more detailed homophily hypotheses 1a, 1b, 1c, 1d, and 1f. While homophily for education is significant, it negatively affects network embeddedness. However, the embeddedness model did support hypotheses 1e.

Table 4. Regression analysis for network embeddedness.

	Level of Embeddedness		
	Model 1	Model 2	Model 3
Women	-.008	.010	.024
Religion			
Catholic	-.071	-.046	-.065
Other	.056	.062	.058
Race			
African American	-.111	-.139	-.158
Latino/hispanic	.074	.057	.062
Other	-.072	-.086	-.094
Total number in the network	.375**	.370**	.337**
Homophily			
Race/ethnicity		.022	-.017
Education		-.182*	-.200*
Religion		.074	.072
Background		.148	.158*
Music		.030	.025
Reasons for joining		.106	
N	142	134	134
R ²	.159	.163	.154

* p<.05

** p<.01

Table 5 provides the standardized coefficients for the control and independent variables included in the regression model for network density. The first model consists of the control variables, which include gender, religion, race, and the total number of people in the network. The overall model is significant, $F= 8.413, p= 0.000$. The total number of people in the network was the only variable significant at the $p=.05$ level. This suggests that those who have a larger

network have denser networks than those who have smaller networks. The reason for this is unclear and counterintuitive based on previous literature.

Model two gives the standardized coefficients for all of the variables included in the regression model (gender, religion, race, total number of people in the network, six homophily variables). The overall model was significant, $p = .007$, and explains 20.3% of the variability in network density. Again, the only variable that is significant is the total number of people in the network ($\beta = .424$). All other variables are non significant at the $p = .05$ level.

Reduced models were explored, but none of the variables were significant, therefore the full model will be reported.

Based on results from Table 5, the overall hypothesis II is not supported. Furthermore, none of the individual hypotheses are supported in the model.

Table 5. Regression analysis for network density.

	Level of Density	
	Model 1	Model 2
Women	-.118	-.149
Religion		
Catholic	.010	.038
Other	-.077	-.089
Race		
African American	-.129	-.146
Latino/hispanic	.133	.061
Other	-.002	-.002
Total number in the network	.504**	.424**
Homophily		
Race		.094
Education		.052
Religion		-.093
Music		.035
Background		.052
Reasons for joining		.050
N	149	134
R ²	.293	.203

Only the standardized beta coefficients are reported

*p<.05

** p<.01

Because background has a significant impact on the level of embeddedness, compared to the other variables, further exploration of the data was conducted in order to discover what aspects of background are making the greatest impact. Homophily for background ranges from 13% to 100%, and the average is 33.0%. Those networks that are 75% homophilous for background and greater are examined more closely. When one considers the highest levels of

homophily for background, it becomes apparent that pages using shapes (N=20), the MySpace default (N=29), and solid colors (N=32) are the types of backgrounds that people are most homophilous on in this sample. One explanation for homophily on these three categories could possibly be that those categories are the broadest of the background types. For example “shapes” included graphics such as stars, stripes, squares, and others displayed on them. Applying solid colors to the background is one of the easier ways to add a personal touch to the profile. For those members who have little to no web page design skills, this could have been an easy way for them to express themselves in a unique way. Those who used the default as their background could be using some other form of personal expression or ways to relate to their friends. The reason for why individuals joined MySpace could have an effect on the types of backgrounds applied to the profiles as well. Those who joined for networking purposes have to manage how they portray themselves on their page; whereas those who joined to meet new people and make new friends do not have to do as much “managing” and might want to express themselves in a very different manner. Or simply it could be that there is a greater portion of individuals in the sample who are more recent members of MySpace and therefore have not had a chance to change their profile. Finally, it could be that members in the sample are simply not interested in taking the time to change their profile background.

Overall, homophily does not seem to affect embeddedness or density for networks found in MySpace. The characteristics that do seem to play a small role in levels of embeddedness include the total number of people in the networks,

level of homophily for education, and level of homophily for background. The total number of people in the network seems to be the only characteristic that plays a significant role in the level of network density.

CHAPTER FIVE DISCUSSION

Social networking has been a topic researchers have been interested in for quite some time. They have uncovered and studied several different aspects of networks, such as who becomes friends with whom, differences between different types of relationships and ties, reasons why certain networks continue to thrive while others dissipate, and so on. Some of the more interesting distinctions in social networking research are the underlying reasons for *why* people become friends with others. Is it because of our social context in which we have placed ourselves and provided the opportunities to meet new people (McPherson and Smith-Lovin, 1987) or is it because we are similar in some particular way to other individuals and an unspoken attraction draws us together to form relationships with one another? Furthermore, what does it mean if those relationships have been formed or maintained in a non-traditional context, such as online in “communities” like MySpace.com? This study attempted to address those specific issues by examining six particular points of interest found on MySpace members’ profiles.

The results from the study are intriguing. Initially it was hypothesized that as the level of homophily for each of the six characteristics increased so would the ego’s level of embeddedness within his or her network of eight friends. The data shows very little support for this hypothesis. It was also hypothesized that as levels of homophily increased so would the overall network density. The data

shows no support for this hypothesis. Not only is very little of network embeddedness and network density explained by the models, but in fact over half of the characteristics reduced the level of embeddedness for the ego within his or her network and the overall network density.

Educational homophily is one of the three characteristics that were significant in the model explaining network embeddedness. The greater the percentage of homophily on education the less embedded the central respondent is in his or her network ($\beta = -.173$). This is opposite of what one might expect to find. Previous literature for offline relationships finds high levels of homophily for education (Louch, 2000; Marsden, 1988; Brashears, 2005), which would then increase the level of embeddedness. However, these results support the idea that networks online are not created based upon traditional characteristics one might find influencing face-to-face ties (Wellman and Gulia, 1999 ; Wellman et al., 1996). In fact, education level is having an adverse effect on the level of embeddedness for the online networks.

One explanation for this result could be the limited variability within the education variable. MySpace members are only allowed to choose one of six levels of education and because of the age selection criteria, most of those included in the data are expected to fall between “high school” and “in college”, thus potentially making the variable seem more homophilous and significant than had the initial age range been larger. MySpace does allow members to list different schools they have attended. However, this list is excluded from the analysis and would be something to explore in future research. Utilizing specific

school names as an indication for education may have yielded a better understanding of homophily for education.

Second, being African American is only slightly non-significant ($\beta = -.158$) in the models for embeddedness. African American egos are less embedded in their networks than white egos. One explanation for this could be the context in which embeddedness is measured. There are cultural differences between African Americans and Caucasians that might be affecting the ways in which African Americans create and sustain their relationships online. For example, African Americans tend to remain in close contact with their family and often stay in the same networks as their family, thus eliminating the need for online contact. Therefore, while online African Americans appear to be less embedded in their networks, if the face-to-face networks for these same individuals were examined, based on previous literature, it might be that their level of embeddedness is the same if not greater than those for the white egos. While being African American has an effect on network embeddedness, it does not have an effect on network density.

The third and final characteristic that is influencing the level of embeddedness among the networks is the differences in background types applied to profiles and the level of homophily for that variable. In this study, background is significant in the final model and provides a strong indication for increasing network embeddedness ($\beta = .158$). The average level of homophily for background is about 33.0%. Types such as shapes, solid colors, and the default provided by MySpace were the driving forces increasing the overall average. It is

not surprising that individuals are homophilous on backgrounds such as solid colors and shapes because those tend to be the broadest categories in the analysis, thus capturing a greater percentage of similar backgrounds.

But how do profile backgrounds bring individuals together? Research suggests that individuals use their web pages and online profiles to express things about their identity and their interests. Papacharissi (2002a) believes that a web page “allows people to present a multi-media self...and [engage] in establishing a sense of self on virtual terrain” (346). He suggests the Internet and personal pages allow individuals to weave a portrait of information by portraying interests and identity in an online context. In his findings, certain web page components and design capabilities are used to express identity and interests (Papacharissi, 2002a, 350). Using scales to measure multiple characteristics of the pages in his sample, he discovered that a majority of the web pages were used to express personal interests (353). More specifically, web page owners use different tools to communicate that information to visitors of their pages such as icons, images, and graphics. Marcus, Machilek, and Schütz (2004) found similar results in that they describe web pages as “a playground for postmodern personalities, where people can create and experiment with multiple identities” and “web pages offer an unprecedented opportunity to present almost anything they want to...” (1014).

In Papacharissi’s (2002b) second article he finds even stronger evidence to conclude that the appearance of the pages was indications of personal interests and that web templates or other authoring tools were used in order to “set the stage” (654). Even more so, these “indicators” were used to compensate for the

lack of social information often exchanged in face-to-face relationships at the first meeting. Things such as “exchanging likes and dislikes...favorite drinks, movies, hobbies, and other interests” (655) are generally discussed during initial encounters with others in offline relationships, but online they have to be portrayed in another way. That “other way” is through web page design. Papacharissi (2002b) concludes that his study finds that “personal home page authors try to present an online portrait of themselves, working with a palette of design elements like guestbooks, banners [i.e. backgrounds], favorite links, and other Web addons” (657).

Furthermore, Papacharissi (2002a) argues that individuals use web pages to attract others in virtual communities based on shared interests. For example, he cites Baym’s 1995 and 1997 work that finds that in online soap opera fan-based communities, members use forms of expression in their profiles to present and affirm their identity and interests which then helps to develop online relationships and guides interactions (348).

Papacharissi would most likely agree that MySpace members are using their profiles to visually express different characteristics and interests about themselves. Profile backgrounds might be a key way in which individuals are doing this (amongst posting pictures, links, blogging, etc). For example, some members applied military type backgrounds to their pages. Those who applied a very specific background, such as military, were often soldiers in the military and listed friends who were also enlisted. Others used backgrounds for different types of sports or athletes. Again like those associated with the military, those who

used athletic type pages were typically athletes and expressed that with their pages. Wellman et al. (1999) suggests that relationships online are formed in very different ways than offline. One of those key differences is that what pulls people together are not demographic characteristics, such as age, race, and religion, but rather common interests. In fact, research such as that conducted by Papacharissi finds that people visit certain web pages based on information, such as particular interests, listed on those pages. One might suggest that people are finding individuals in MySpace to befriend based on those common interests as well.

Papacharissi (2002a, 2002b) makes it very clear that the use of web page design is to paint a particular picture of ones interests and characteristics in order to attract others who are similar. People are then drawn together based on those interests and foci. According to Granovetter's (1973, 1983) definition of strong ties, these relationships found in Papacharissi's online communities are those one might consider to be highly embedded within the specific networks because of the shared interests and common traits. In this study, embeddedness was measured as the number of reciprocal ties, which required both the ego and the ego's friend to list each other in the "Top Friend" space. Those friends who mutually listed one another were assumed to have strong ties based upon shared interests. Since background had such a profound affect on embeddedness, the results from this study reaffirm those conclusions found by Papacharissi (2002a, 2002b) and Marcus, Machilek, and Schütz (2004).

These results also provide evidence to indicate that McPherson and Smith-Lovin's (1987) idea of choice homophily does in fact exist on MySpace. The

theory of choice homophily states that in environments where there is a greater percentage of diversity, friendships between similar people would occur by choice because people have the option to choose friends who are not similar. With backgrounds in particular, there is a wide variety of types of backgrounds on MySpace that allows members to have diverse interests in the ways in which they want to express themselves. This alone creates an environment in which choice homophily would be most prevalent because there is always the option to choose friends who do not have similar interests. In fact, we see an overwhelming trend in homophily for backgrounds for the groups in MySpace.

Members also have the choice to leave a background off of their profiles and stick with the default provided by MySpace. As stated earlier, those who do not have a background on their profiles make up one of the greatest proportions of the highest homophily levels for backgrounds. This means that a high portion of profiles in the sample do not have backgrounds and those individuals who have chosen to leave a background off have also chosen to become friends with others who decided to do the same thing. One reason for this could be associated with why they joined MySpace to begin with. This relationship was not specifically looked at in this project, but would be interesting to explore in future work. Again, the lack of backgrounds on friends' profiles says something about the ways in which they choose to express themselves, just as having a background attached that is classified as shapes, solid colors, sports, alcohol, etc. says something.

It is clear that similarities in interests and possibly education level play a role in the level of embeddedness in a network, but nothing in this study affected the level of network density. Because none of the variables are significant in the model, histograms are used to examine the data further. The distribution for the percentage of network density (DV2) is not normally distributed. There are a greater number of low network density percentages within the sample. Because there is low density initially, it makes it difficult to predict density levels in the models. Due to the non-normality in the data it is difficult to capture accurate results. Table 6 shows the distribution for the percentages of network density.

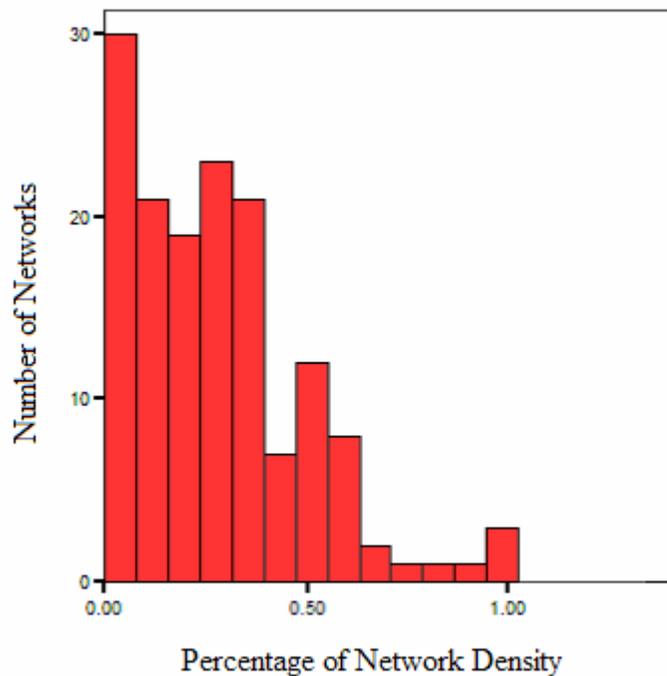


Figure 3. Distribution of network density
Overall hypotheses I and II are rejected. Hypothesis 1e is supported for network embeddedness. The results for background begin to show signs of

homophilic effects on network embeddedness. None of the specific hypotheses are supported for network density; however, the distribution of network density could be playing a major role the regression analysis results. The other characteristics specific to MySpace, music and reasons for joining, are not as significant, but with a larger sample of networks and greater variability might become significant. Finally, the lack of homophily for the traditional variables supports Wellman's theory that people are becoming friends online for reasons very different from face-to-face friends.

Limitations

There are four major limitations to this study. The first is related to the homophily score for music. Even though there are 70 genres of music the results for this variable could be a little misleading. MySpace classifies the music genres by categorizing each song within three specific genres. For example, within the genre of rock a song might be classified as "rock/hardcore/metal". The average homophily score on music would have been even lower, had the specific classifications been used instead of the general music genres.

The second limitation to the study deals with the method for studying social networks. The biggest issue within social network research is the difficulty in gathering the data. This difficulty is increased when the networks being investigated are moved to the virtual world. One problem I encountered while gathering the data was that members who's profiles were "public" at the time when they were originally saved, had later changed their status to "private" making it impossible to gather needed information (such as the type of music

attached to their profile) at a future time. One way to alleviate this problem might be to contact those individuals and ask them for their participation in a survey that would collect the same information that was collected from the profiles that were public.

The third issue presented itself when trying to decide who would be included in the network as part of the eight friends. Because friends of the egos had the same capability to keep their profile private, the first eight publicly available profiles were used. This becomes a problem because members in MySpace can place friends in any order they want which might suggest that those who are placed at the top of the list are somehow different than those who are placed at the bottom of the list. This implies that the person added as the first “friend” might be significantly different than friend twenty-four who is listed last. Online social network researcher, danah boyd, has observed some indication of ranking, and suggests significant differences in the strength and types of relationships found in the top friends. In recent personal correspondence she stated that she has found evidence to conclude the first friend listed within the “Top Friend” space is generally someone very close to the MySpace member, such as a family member, significant other, or best friend. The only way a researcher could get this information is through direct contact with the MySpace members. However, to do that is outside the scope of this research project. Therefore first publicly available friends were used as members for the individual networks.

Finally, the number of networks and the range of individuals included in the sample collected for the project is limited. The small number of networks and the limited range of age for egos could be influencing some of the results from the regression analysis. It would be recommended for future projects of this nature to include a wider age range with greater potential for variability on each characteristic for the central member of the networks and a greater number of networks.

Future Research Suggestions

One suggestion for future research would be to consider how network embeddedness and density applies to different social types online. For example, further research might discover significant differences in the types of things displayed on those pages where members portray themselves to be school jocks, class nerds, or Goths and thus affecting homophily levels. If so, would groups who portray themselves as different from the social norm and often individualistic, such as the Goths, have lower levels of homophily than other groups, such as the preppies, who are generally seen as conforming?

Secondly, McPherson and Smith-Lovin's (1987) theory of choice homophily should be explored further within MySpace. Because MySpace.com is a social community where individuals chose to join as members and pick who they will "become friends" with, choice homophily might play a greater role in the formation of friendships than induced homophily. For this study profile background was the strongest characteristic affecting the networks, however other characteristics, such as blogging topics or movies and photos attached to the

profiles, which could have a wide range of topics and choices, could provide a greater indication that choice homophily is significant in the formation of network ties on MySpace.

Finally, it might also be interesting to follow these networks over time and record changes in the top friends, types of music and backgrounds applied to the profiles, and other characteristics added or deleted. Because interaction with the members is limited, these are the only clues we have in order to gain a sense of who these individuals truly are. It would be interesting to discover if as these characteristics or aspects change, do the individuals' networks change as well?

One trait of the Internet is that it is fluid and allows users to reinvent themselves time and time again. Because of this, as someone manipulates and changes how he or she portrays himself or herself to the network or community, does this directly affect who he or she is friends with or the types of things chosen to be displayed on the profile as information for others to see? While social networks are intriguing to numerous researchers and face-to-face networks are often the source of information, online social relationships are becoming the new focus. Because of difficulties in the data collection process for larger networks overtime online, a limited amount of research has been conducted specifically looking at these types of personal relationships. However, as computers and the Internet become more and more ubiquitous, I have no doubt this research will become more extensive.

APPENDICES

APPENDIX A. Categories for the variables specific to MySpace.

Table 1. Reasons for joining.

Friends
Dating
Serious relationship
Networking
No response

Table 2. Profile backgrounds.

Abstract	Love
Actor/actress	Model
Alcohol	Movie
Animals	Music
Anomea	Photo
Art	Plaid
Cars	Playboy
Cartoons	Polka dots
Checkered	Quotes
Christmas	Scenery
Clothes	Sexual
Death	Shapes
Default	Solid color
Fantasy	Sports
Floral	Stripes
Food	Weapon
Gaming	Weather
Jewelry	Winter

Table 3. Music genres.

A'Capella	Indie
Acoustic	Industrial
Afrobeat	Jazz
Alternative	Jungle
Alternative Rock	Latin
Ambient	Lounge
Americana	Metal
Bigbeat	Newwave
Bluegrass	None
Blues	Oldschool
Breakbeat	Other
Christian	Pop
Classic Rock	Powerpop
Club	Progressive
Comedy	Psychedelic
Country	Psychobilly
Crunk	Punk
Deathmetal	R&B
Disco	Raggaton
Drum and Bass	Rap
Dub	Rock
Electro	Rockabilly
Electronica	Rootsmusic
Emo	Screamo
Experimental	Showtunes
Folk	Ska
Freestyle	Soul
Funk	Southern
Gothic	Surf
Grindcore	Techno
Hardcore	Thrash
Hip-hop	Trance
House	Triphop
Hyphy	Turntablism
IDM	Two-Step

APPENDIX B. Descriptive statistics tables.

Table 1. Descriptive statistics for the independent homophily variables and the two dependent.

Variables	N	M	SD
Independent Variables			
Race	142	.563	.407
Education	143	.444	.337
Religion	136	.374	.386
Music	150	.706	.287
Background	139	.330	.217
Reasons for joining	143	.461	.242
Dependent Variables			
Embeddedness	149	.478	.275
Density	149	.278	.237

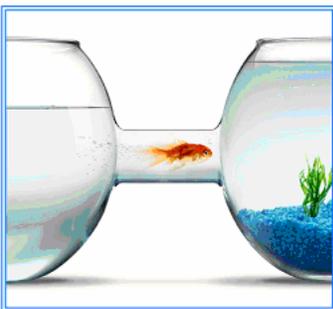
APPENDIX C. Example of a MySpace.com profile.

jenn

Female
24 years old
CLEMSON, South Carolina
United States

Last Login:
4/20/2007

View My:
Pics | Videos



Contacting jenn

Send Message | Forward to Friend
Add to Friends | Add to Favorites
Instant Message | Block User
Add to Group | Rank User

jenn's Interests

General: Cycling, Running, Swimming, Triathlons, My Pupil, My boyfriend, My family, cooking, baseball, CLEMSON BASEBALL, COLTS football, sport in general.

Music: Sister Hazel, 80's Rock

Movies: What Dreams May Come, Syriana, The Good Shepherd, The Godfather I, Mune

Books: Angels and Demons, Anything Clive Cussler, The Life of Pi

Heroes: My DAD! :)

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jenn's Latest Blog Entry [Subscribe to this Blog]

[View All Blog Entries]

jenn's Blurbs

About me:
I am currently a graduate student at Clemson University studying social networks online. I love to be outdoors and doing anything that involves being on the water. I have a retired greyhound named ZamDye who is fabulous. Looking forward to whatever next adventure I decide to take! :)

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Who I'd like to meet:

Find More Myspace Layouts | Pimped by Hyprofilepimp.com

jenn's Details

Status: In a Relationship
Here for: Friends
Orientation: Straight
Hometown: D.C.
Body type: Athletic
Ethnicity: White / Caucasian
Religion: Christian - other
Zodiac Sign: Scorpio
Smoke / Drink: No / No
Children: Someday
Education: Grad / professional school
Occupation: student

jenn's Friend Space
jenn has 1 friends.

Tom

View All of jenn's Friends

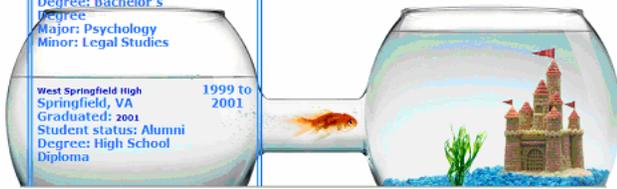
jenn's Friends Comments
Add Comment

jenn's Schools

Clemson University 2005 to Present
Clemson, SC
Graduated: N/A
Degree: Master's Degree
Major: Applied Sociology, Research Methodology

Clemson University 2001 to 2005
Clemson, SC
Graduated: 2005
Student status: Alumni
Degree: Bachelor's Degree
Major: Psychology
Minor: Legal Studies

West Springfield High 1999 to 2001
Springfield, VA
Graduated: 2001
Student status: Alumni
Degree: High School Diploma



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