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DISSERTATION

**THE EFFECT OF SELF-MONITORING AND
THE BIG FIVE PERSONALITY TRAITS
ON SOCIAL RELATIONSHIPS DEVELOPMENT:
A MIXED METHODS CASE STUDY OF OFFICER AND
ENLISTED INTELLIGENCE MARINES IN
CAREER-LEVEL TRAINING**

by

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June 2021

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CAREER-LEVEL TRAINING**

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ABSTRACT

This mixed methods comparative case study examined the effects of the Big Five personality traits and facets, and acquisitive and protective self-monitoring constructs, on the development of social relationships in two classes of Marine Corps officer and enlisted personnel attending career-level intelligence training. The most significant finding to extant Big Five and self-monitoring network research is that understanding participants' network of relationships and how they make sense of and approach social situations is critical when assessing and explaining personality's effect on relationship development. The findings illustrate that both preexisting and other relationships between participants can have an outsized role in developing additional relationships, which, in turn, can limit personality's relevance to relationship development. Personality was found to be less relevant in developing relationships in the case when there was considerable familiarity between participants and most relevant in the case when there was little familiarity. However, how actors make sense of situations and relationships also influences relationship development, and impacts which characteristics, such as personality, they seek in alters. Other contributions to extant research include the effects of the Big Five traits and facets and self-monitoring constructs on the development of both positive and negative relationships.

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LIST OF ACRONYMS AND ABBREVIATIONS

BFI-2	Big Five Inventory—2
EAS	ego-alter similarity
ERGM	exponential random graph model
MAGTF	Marine Air Ground Task Force
MIAC	MAGTF Intelligence Analysis Course
MIOC	MAGTF Intelligence Officer Course
MOS	military occupational specialty
QAP	quadratic assignment procedure
R-SMS	revised self-monitoring scale
SAOM	stochastic actor-oriented model
SMS	self-monitoring scale
SMS-R	self-monitoring scale-revised
SNA	social network analysis
USMC	United States Marine Corps

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I. INTRODUCTION

In this study, I investigate the effects of the Big Five personality traits and facets, and self-monitoring constructs, on the development of social relationships. I seek to address four gaps in extant Big Five and self-monitoring social network research and make several conceptual contributions by doing so. First, for the Big Five, I use descriptively precise facet-level scales to measure personality's effect on social relationships. This allows me to attain greater insight into the specific personality factors relevant to the development of social relationships. For self-monitoring, I use the bivariate model of self-monitoring, which recent evidence suggests is superior to the more common univariate one, to generate results for both the acquisitive and protective self-monitoring constructs that can guide future research. Third, in addition to personality, I also integrate actor agency and sense-making into my analysis of actors' social relationships. Doing so helps me more accurately assess the conditions and considerations actors make in their relationship choices and personality's relevance to it. Fourth, as called for by several network scholars, I integrate situation and situation strength, and analysis of multiplex relationships into my analysis. By considering how these factors interact together, and with personality, I am able to more thoroughly explain social network outcomes in my study and develop an understanding of how these factors affect social relationship development. Finally, in addition to the conceptual advances of my study, my practical goal is for the findings to be relevant to "talent management" efforts being undertaken by the United States Marine Corps (USMC).

A. CONCEPTS AND ISSUES

Previous Big Five and self-monitoring research illustrate that personality is an important phenomenon in the development of social relationships. In both work-related contexts (Landis, 2015) and more generally (Selden & Goodie, 2018), personality is argued to help explain and predict the development of social relationships and even "job performance and career success" (Fang et al., 2015, p. 1253). Despite these findings, however, important questions remain unanswered and ultimately limit understanding of

personality's role in social network development. Here, I briefly introduce the Big Five and self-monitoring, their relevance to social network research, current gaps, and how I address them. I also explain my study's practical goal.

The Big Five personality traits are among the most studied personality constructs in social network research (Fang et al., 2015; Selden & Goodie, 2018) and their popularity appears to be due to their taxonomical coverage and broad acceptance in personality psychology literature. The Big Five “model posits that individuals differ in dispositional traits along five major dimensions [i.e., traits]” (Wilmot et al., 2015, p. 335), with each trait having a descriptive characteristic associated with it. Broadly, social network researchers have found that these traits are important in explaining different social network outcomes (Selden & Goodie, 2018), such as which traits are most associated with *positive* or *negative* relationships. However, the traits themselves capture personality details at a broad level of abstraction (John et al., 2008) and can be broken into and measured by more detailed and precise “facet” level descriptors (Soto & John, 2019). Nearly all Big Five social network studies have used trait-level measures to distinguish personality differences between actors and the relationships between them, meaning that precise information is not captured. For example, if two actors share the same score at the trait level, they do not necessarily share the same facet level scores (DeYoung, 2015), and the significance is that the individuals, and hence the relationships between them, are not differentiated as precisely as they could be. The consequence of using trait level scores means social network researchers limit the conceptual depth of their findings. Ultimately, I can address this gap by using hierarchical measurement scales that measure the Big Five at both the trait and facet level (Soto & John, 2017), allowing me to develop an understanding of personality's influence on relationship development at both a broad and detailed level, then compare my findings to previous research to inform extant Big Five-network understanding.

Self-monitoring is another popular personality construct in social network research (Fang et al., 2015; Landis, 2015). Its popularity is likely due to its focus on interpersonal matters—that is, it “proposes that people differ in the extent to which they regulate and control how they present themselves in social settings and interpersonal settings” (Fang et al., 2015). “High” self-monitors are said to be social chameleons, while “low” self-

monitors are “true to themselves” (Kilduff et al., 2017), and social network researchers are particularly interested in how self-monitoring affects an actor’s position (e.g., centrality or brokerage position) and outcomes in different social networks (e.g., Fang et al., 2015; Kilduff et al., 2017; Landis, 2015). However, all self-monitoring network studies have used a univariate conceptualization of the construct, in which individuals are characterized as either “high” or “low” self-monitors. Recent and previous research (John et al., 1996; Wilmot, 2015; Wilmot et al., 2017) cast doubt on the efficacy of the univariate model and argues instead for a bivariate one, in which self-monitoring has both acquisitive and protective constructs (Wilmot, 2015; Wilmot et al., 2017). The consequence of Wilmot’s (2015) research is that many previous self-monitoring network studies have likely only considered the acquisitive construct and that the results are confounded by the protective construct (Wilmot 2015; Wilmot et al., 2017), potentially calling these findings into question. Additionally, no self-monitoring network research has researched what effect the protective self-monitoring construct has on relationship development or network outcomes and how it interacts or compares with the acquisitive construct. I address this gap by considering and measuring both the acquisitive and protective constructs of self-monitoring, and my findings can both inform previous research and guide future research.

The social network framework recognizes that actors have agency and are purposive in their actions (Robins, 2015; Tasselli et al., 2015), but I found no Big Five or self-monitoring social network studies that considered its effect on relationship outcomes. The significance is that relationships may involve different motivations and purposes (Robins, 2015), and how an actor makes sense of a social relationship such as friendship may affect their selection of others, to include the characteristics they seek in others; their choices may even defy what their personality scores suggest. In my review of previous studies, I found several mixed and contradictory findings for *friendship* and *negative* relationships, and one reason may be because of actor agency. In this study, I explore the role of actor agency by integrating how actors defined, made sense of, and explained their relationships into my analysis, and reconciled their choices with Big Five and self-monitoring personality data.

Personality-network scholars recognize that multiple factors likely interact with and on personality to affect its relevance to relationship outcomes (Fang et al., 2015; Selden & Goodie, 2018; Tasselli et al., 2015). These factors are situation and situation strength and multiplex social relationships. Situation strength is thought to affect personality expression and relevance (Kenrick & Funder, 1991), actors are more constrained in “strong” situations, limiting personality’s relevance and expression, and less so in “weak” ones (Barrick et al., 2003). Situation, more broadly, involves understanding an actor’s immediate environment, how they make sense of it and is important in explaining phenomena (Johns, 2001; Miles et al., 2014; Mishler, 1979). Multiplex relationships are the idea that actors have many different relationships with each other, some *positive*, such as *friendship*, and some *negative*, such as difficulty, but these relationships interact and may affect the formation of other relationships. Despite calls from personality-network researchers to address these concerns (Fang et al., 2015; Selden & Goodie, 2018), I found no research that did. Furthermore, few studies considered the effect of personality on the development of *negative* relationships, and how these relationships affect the development of *positive* ones (Selden & Goodie, 2018). I begin to address these issues by exploring how situation, situation strength, and different social network relationships interact with each other and with personality to help explain social network outcomes.

Finally, there are practical implications to my study as well. That is, one organization that wants to better understand its personnel is the United States Marine Corps. Specifically, the Marine Corps has recently emphasized the concept of “talent management,” and although it is a ubiquitous and imprecise term, its most recent Commandant elevated the concept in his inaugural planning guidance (USMC, 2019), stating “everything starts and ends with the individual Marine” (2019, p.6). Given the relevance of personality traits to social networks, and previous research indicating their importance to life and work outcomes, my hope is for my study to inform these efforts and prove useful in the Corps’ efforts to understand and manage its talent.

B. METHODS

For this study, I use a mixed methods comparative case study with a convergent core design. For each case, I collect qualitative and quantitative data in parallel, analyze the two types of data separately, merge and integrate my findings, and then present integrated findings as part of the case comparison. The two cases are a class of Marine Corps officer and enlisted intelligence personnel, respectively, as they attended career-level intelligence training courses. While the courses were in session, I collected three waves of both qualitative and quantitative data. I gathered qualitative data through observation, informal and semi-structured interviews, and questionnaires. I collected quantitative data through personality and social network surveys. In using both forms of data, I develop an in-depth understanding of each case, make a more informed comparison between the cases, and provide important contributions to extant Big Five and self-monitoring social network research.

C. CHAPTER ORGANIZATION

The second chapter consists of the literature review. In it, I provide the conceptual background necessary to understand gaps in current Big Five and self-monitoring social network research and introduce the research questions intended to answer them. The chapter is organized into five sections. The first defines personality and introduces the Big Five and self-monitoring. The second introduces social network research, its theory and concepts, and its research design considerations. The third highlights the conceptual linkage of personality into social network research. The fourth introduces relevant Big Five and self-monitoring social network findings and highlights gaps in extant research. Finally, the last section introduces my study's research questions.

The third chapter considers the study's research methods. It discusses the rationale and epistemological framework for using a mixed methods design and details how both quantitative and qualitative data were collected and analyzed, how the two data sets were integrated, and how the research questions were answered.

The fourth and fifth chapters consist of written case studies of the Marine Air Ground Task Force (MAGTF) Intelligence Officer Course (MIOC) and MAGTF

Intelligence Analysis Course (MIAC), respectively. I provide a detailed examination of personality's effect, in addition to situation and context, on each examined social relationship through the use of quantitative, qualitative, and mixed methods analysis.

The sixth chapter compares the two cases and provides integrated answers to my research questions by highlighting where the cases converge and diverge, explaining discrepancies when needed.

The seventh and final chapter discusses the study's contributions to extant research, examines its implications and limitations, and recommends future work.

II. LITERATURE REVIEW

This chapter's purpose is to provide the conceptual background necessary to understand gaps in current Big Five and self-monitoring social network research and introduce the research questions intended to answer them. I chose the Big Five and self-monitoring as my focus because previous meta-analysis and reviews (Fang et al., 2015; Landis, 2015; Selden & Goodie, 2018) suggest they are the most popular personality variables used in social network research, and highly relevant and important to social network relationships and outcomes.

I organize the chapter into five sections. The first defines personality and introduces the personality variables relevant to this study, the Big Five personality traits, and the self-monitoring constructs. The second introduces social network research by providing a definitional and conceptual overview of important concepts, while also briefly discussing social network research design considerations. The third section highlights the conceptual linkage of personality psychology and social network research by providing a brief history of how the two disparate disciplines are integrated. The fourth reviews relevant Big Five and self-monitoring social network research findings and highlights gaps in current research. Finally, the last section introduces this study's research questions.

A. PERSONALITY, THE BIG FIVE, AND SELF-MONITORING

In this section, I define personality and personality psychology and introduce the Big Five personality traits and self-monitoring constructs, the two sets of personality factors I examine in this study. I end the section with a brief discussion of the role of situation and situation strength, which are important considerations in personality assessment and my study.

1. Defining Personality

The term personality is ubiquitous in everyday usage, and arguably, most everyone agrees that a person has a "personality," though what is meant by it that is debatable. It is well beyond the scope of this literature review, however, to dive into the many disciplines,

definitions, and theories of personality and personality psychology. Instead, I offer that personality and personality psychology is about generalizing human nature and exploring individual differences between people (Hogan, 2005). Personality, then, describes “the array of constructs that identify variables in which individuals differ, but also refers to the specific mental organization and processes that produce an individual’s characteristic patterns of behavior and experience” (DeYoung, 2015, p. 33). The two personality constructs and variables central to my research are the Big Five traits and facets and the self-monitoring constructs.

2. The Big Five Personality Traits

The Big Five’s popularity in network research appears to be due to its taxonomical coverage and broad acceptance in personality psychology literature. The Big Five (alternatively known as the Five Factor Model (FFM)) was developed as a taxonomy to “facilitate the accumulation and communication of empirical findings by offering a standard vocabulary, or nomenclature” (John et al., 2008, p. 116), which helped resolve what is known as “jingle-jangle” problems.¹ The five traits, factors, or domains that make up the Big Five have received widespread acceptance among personality researchers, in part because two separate personality research traditions—lexical and questionnaire—found their research converged to the five traits (John et al., 2008; McCrae & Costa, 2008). Thus, the development of the Big Five served the practical function of providing “a systematic framework for distinguishing, ordering, and naming individual differences in people’s behavior and experience” (John et al., 2008, p. 118), with the basic idea being that five traits could describe an individual’s personality (McCrae & Costa, 2008). An important caveat, however, is that “the Big Five structure does not imply that personality differences can be reduced to only five traits” (John et al., 2008, p. 119) but rather that “five dimensions represent personality at a very broad level of abstraction” (p. 119) as “each dimension summarizes a large number of distinct, more specific personality characteristics” (p. 119).

¹ A “jingle” fallacy is when “a trait is referred to by different names,” and “jangle” occurs when “different traits are referred to as the same name” (Markon, 2009, p. 812)

There is no single authoritative definition of each of the Big Five traits. Some of the differences in trait names and/or definitions reflect the different theoretical backgrounds of personality researchers, but also “because each of these broad personality domains ‘is not so much one thing as a collection of many things that have something in common’” (Soto & John, 2017, p. 119). The five traits are extraversion, agreeableness, conscientiousness, negative emotionality (alternatively known as neuroticism), and open-mindedness (alternatively known as intellect or openness) (John et al., 2008; Soto & John, 2017). A general conceptual definition for each is as follows:

Extraversion “implies an energetic approach toward the social and material world and includes traits such as sociability, activity, assertiveness, and positive emotionality” (John et al., 2008, p. 120). “Extraverts want to be where the people are” (Harris & Vazire, 2016, p. 652) and socialize with others (2016).

Agreeableness “contrasts a prosocial and communal orientation towards others with antagonism and includes traits such as altruism, tender-mindedness, trust, and modesty” (John et al., 2008, p. 120). The trait is most relevant to interpersonal interactions (Harris & Vazire, 2016).

Conscientiousness “describes socially prescribed impulse control that facilitates task-and-goal directed behavior, such as thinking before acting, delaying gratification, following norms and rules, and planning, organizing, and prioritizing tasks” (John et al., 2008, p. 120).

Negative Emotionality (or Neuroticism) “contrasts emotional stability and even-temperedness with negative emotionality, such as feeling anxious, nervous, sad, and tense” (2008, p. 120). The use of the term *negative emotionality* versus *neuroticism* is to distinguish it from the trait’s “focus on negative emotional experiences while more clearly distinguishing it from psychiatric illness” (Soto & John, 2017, p. 120). Individuals high in negative emotionality “tend to experience more negative affect,” are “more emotionally reactive” (Harris & Vazire, 2016, p. 657), and are more sensitive to negativity than those scoring lower in the trait (2016).

Open-Mindedness (or **Openness / Intellect**) “describes the breadth, depth, originality, and complexity of an individual’s mental and experiential life” (John et al., 2008, p. 120). The use of the term open-mindedness is used to maintain “Openness’ sense of breadth” but clarify its “focus on an individual’s mental rather than social life” (Soto & John, 2017, p. 120). Of all the Big Five traits, openness remains the least settled, both conceptually and definitionally among personality researchers (John et al., 2008; Soto & John, 2017).²

a. The Big Five in Personality Theory

The Big Five as an overarching taxonomy does not represent a particular theoretical perspective, but several personality theories integrate it (John et al., 2008). The atheoretical nature of the Big Five taxonomy and “the perception that there was no single Big Five” due to the various researchers and personality labs that developed it, led to the taxonomy’s initial lack of acceptance (John et al., 2008). However, that five traits emerged from separate personality research traditions led to greater and more widespread acceptance (John et al., 2008; McCrae & Costa, 2008). The Big Five model as a whole “provides an account of personality that is primarily descriptive rather than explanatory, emphasizes regularities in behavior rather than inferred dynamic and developmental processes, and focuses on variables, rather than on individuals or types of individuals” (John et al., 2008, p. 140).

b. The Big Five in Outcome Prediction

The Big Five are commonly associated with life outcomes. Specifically, it is assumed that an individual’s traits interact with “environmental factors (such as aspects of a job or a relationship partner)” to “produce behavioral and experiential outcomes that accumulate over an individual’s lifespan” (John et al., 2008, p. 141), and multiple studies

² That is, other labels include, “Intellect, defined by intellectual interests and enjoyment of thinking (e.g., Goldberg, 1999),” “Imagination, defined by creativity and originality (e.g., Saucier, 1992),” and “Openness to Experience... defined by intellectual and artistic interests but also includes a number of other characteristics (e.g., McCrae, 1994)” (Soto & John, 2017, p. 122).

have reviewed its association with consequential life³ and work-related⁴ outcomes. Most recently, Soto (2021) found that “most trait-outcome associations do generalize across gender, age, and ethnicity,” but, “controlling for overlap⁵ between personality traits substantially reduces the strength of many associations”; however, “several...trait-outcome associations proved highly generalizable across all analyses” (p. 118). Finally, research suggests that personality is stable over time (Hogan, 2005; John et al., 2008; McCrae & Costa, 2008), although it is not fixed (John et al., 2008), and that specific facets of personality, rather than traits, can change in response to certain factors⁶ (Mund & Neyer, 2014).

c. Assessing and Measuring the Big Five

One of the critical ideas of this study is how social network researchers have measured the Big Five and the consequences associated with doing so. That is, conceptually, the Big Five captures personality at a broad level of abstraction, such that it is “to personality what the categories ‘plant’ and ‘animal’ are to the world of biological objects” (John et al., 2008, p. 140). Because the Big Five traits are so broad, researchers are challenged to measure and differentiate personality at more detailed and precise levels (John et al., 2008). This is the bandwidth-fidelity problem or tradeoff; the Big Five traits provide “enormous bandwidth” (p. 140), but consequently, provide low-fidelity. The advantage of high bandwidth is that “it efficiently summarizes a large amount of behavioral information, and can predict a variety of relevant criteria” (Soto & John, 2017, p. 118). But, “a narrowly defined trait has the advantage of high fidelity: it provides a more precise description of behavior, and can predict closely matched criteria with greater accuracy” (2017, p. 118). For the social network researcher, their choice of measurement scale affects

³ See, for example, Wilmot and Ones, (2019); Soto, (2021); and as noted in Soto, (2021): Ozer and Benet-Martinez, (2006); Roberts et al., (2007).

⁴ See, for example, Barrick and Mount, (1993); Barrick et al., in Barrick and Ryan, (2003), Eds.; Barrick and Mount, (2005).

⁵ That is, when other Big Five traits are covariates, the strength of the trait-outcome association is diminished. The implication is that researchers should use a multidimensional framework rather than measuring single traits. Then, see if the trait-association remains robust when controlling for the personality covariates (Soto, 2021, p. 125).

⁶ Such as therapy and intervention programs (John et al., 2008).

whether they measure a trait (and the personality differences of actors in their network) broadly or narrowly. Fortunately, the Big Five is conceptualized as a hierarchy⁷ in which each personality trait represents a broad level of abstraction, but can be differentiated by more specific components, known as “facets” or “nuances” (Soto & John, 2019, p. 445).

In conceptualizing the Big Five as a hierarchy, personality researchers have found a way to overcome the bandwidth-fidelity problem in Big Five assessment. Specifically, in nesting “narrow, facet-level scales within broad, domain-level scales” (Soto & John, 2019, p. 454), “a single instrument can simultaneously assess personality at both the domain and facet levels” (Soto & John, 2017, p. 118). These are known as hierarchical measurement scales, and they provide both broad descriptive information and a finer degree of differentiation between individuals, because “a high score on a higher-level trait, therefore indicates high scores on some, but not necessarily all, of the lower-level traits [i.e., facets] to which it is related” (DeYoung, 2015, p. 35). For example, if two individuals have the same score on extraversion, but the researcher is not using a hierarchical measurement instrument, there is no way to distinguish differences between the two on that specific trait. With a hierarchical measurement instrument, however, two individuals may score the same on extraversion, but a researcher could also determine what, if any, differences exist at extraversion’s facet level.

Despite the advantages a hierarchical representation of the Big Five provides, there are still shortfalls. Specifically, because the Big Five traits are so broad, and because they can be operationalized and defined differently, “no single instrument represents the gold standard” of measurement (John et al., 2008, p. 130). Ultimately, when personality researchers create measurement scales, they make choices about how they want to conceptualize a trait and which facets are subordinate to it. Consider that, “in principle, the number of specific distinctions one can make in the description of an individual is infinite” (2008, p. 141). Thus, while hierarchical scales seemingly resolve much of the bandwidth-fidelity problem (Soto & John, 2019), even they face the pragmatic issue of how broadly to define each Big Five domain and how many and which facets most accurately define it.

⁷ What constitutes the top of the hierarchy is a separate discussion and briefly explored in Appendix A.

I discuss Big Five measurement in social network research in this chapter's final section.

d. The Lexical Hypothesis

In addition to personality scales, another Big Five assessment option relevant to this study is the lexical hypothesis. The lexical hypothesis (Goldberg, 1993) suggests that “the most important individual differences in human transactions” are “encoded” in language (p. 26). This is useful “because the lexical hypothesis is essentially a functionalist argument about the trait concepts in the natural language...because language encodes the characteristics that are central, for cultural, social, or biological reasons, to human life and experience” (John et al., 2008, p. 145). The implication is that the words individuals use to describe themselves and others are relatable to the personality traits and may be useful as a form of personality assessment (Funder, 1995; Srivastava, 2010).

3. Self-monitoring

Unlike the Big Five, self-monitoring is a specific personality construct rather than a taxonomy of personality traits. At its inception, Snyder (1974), defined self-monitoring as a “social psychological construct” that involves the “self-monitoring of expressive behavior and self-presentation” (1974, p. 526). More recently, it has been redefined as “the monitoring and regulation of expressive behaviors and public appearances” (Fuglestad & Snyder, 2010, p. 1031) and is said to “captures one’s willingness and adeptness at modifying their social images in line with situational demands, and behaving in line with social role expectations of others” (Kudret et al., 2019, p. 194). Those scoring highly on self-monitoring, known as “high” self-monitors, are said to be social chameleons, while “low” self-monitors are said to be “true to themselves” and independent in social situations (Kilduff et al., 2017).

From the construct’s outset, however, the conceptualization and measurement of self-monitoring has been scrutinized (John et al., 1996; Lennox, 1988). The basis of criticism emerged after factor analytic studies into Snyder’s (1974) original 25-item Self-

Monitoring Scale (SMS) revealed it contained multiple factors,⁸ some of which were orthogonal (uncorrelated),⁹ presenting contradictions in how the construct should be interpreted (John et al., 1996; Lennox, 1988; Lennox & Wolfe, 1984).

The controversy surrounding the self-monitoring construct has been ongoing for over four decades. Ultimately, what emerged from this debate were two competing models of self-monitoring—the conventional univariate model based on Snyder’s original theory (1974), which has been updated through the years (e.g., Gangestad & Snyder, 1985; Gangestad & Snyder, 2000; Snyder & Gangestad, 1986), and an alternative bivariate model or interpretation (e.g., John et al., 1996; Lennox, 1988; Lennox & Wolfe, 1984; Wilmot, 2015) consisting of two constructs, known as acquisitive and protective self-monitoring. The traditional univariate model has remained the most popular in self-monitoring research (Kudret et al., 2018; Wilmot et al., 2017), to include social network research as well. For readers interested in the history of the two competing models, I provide a discussion in Appendix A.

a. Re-examining Self-Monitoring

More recent examinations of the construct, however, give strong and perhaps overwhelming evidence that the univariate model should be replaced by the bivariate model (Wilmot, 2015; Wilmot et al., 2015; Wilmot et al., 2017).¹⁰ Specifically, Wilmot’s (2015) analysis suggests that acquisitive and protective self-monitoring are separate and distinct constructs. His (2015) analysis further indicates that the preponderance of previous self-monitoring research using either Snyder’s (1974) SMS or Snyder and Gangestad’s

⁸ Snyder (1974) “sought to assess five hypothetical components of the construct: (A) concern for appropriateness of social behavior, (B) attention to social comparison information, (C) ability to control or modify self-presentation, (D) use of this ability in particular situations; and (E) cross situational variability of social behavior” (Lennox & Wolfe, 1984, p. 1349). However, factor analysis revealed the scale “dependably yields three factors: Acting ability, extraversion, and other-directedness” (p. 1349).

⁹ Self-monitoring as conceived by Snyder (1974) is supposed to be unitary, meaning an actor must possess all five components. This was unsupported, and research suggested that the scale measured multiple distinct and competing factors rather than one (Lennox & Wolfe, 1984; Lennox, 1988; John et al., 1996).

¹⁰ I provide more details of this study in Appendix A. Here, I focus on the key findings.

(1986) SMS-R¹¹ represents the acquisitive self-monitoring construct and that reviews such as those by Fuglestad and Snyder (2010) can be associated with acquisitive self-monitoring.

b. Definitional Discrepancies in Self-Monitoring

Although Wilmot (2015) maintains that the theoretical findings of acquisitive self-monitoring could be maintained, he does not define either acquisitive or protective self-monitoring. This is significant because the univariate construct maintains two classes of self-monitors, high and low, while in the bivariate model, individuals have both acquisitive and protective self-monitoring and they exist as continuous (rather than class) variables.¹² Ultimately, I could not locate a consensus definition of either construct, but relevant literature offers further background and potential definitions.¹³

I begin with Wolfe et al. (1986) who, for protective self-monitoring, associates the ideas of seeking acceptance, approval, and popularity, with “getting along” and for acquisitive self-monitoring, links seeking power, control, and status, with “getting ahead.” Thus, a potential definition of the protective style of self-monitoring “is in the service of avoiding social disapproval and is associated with social anxiety, reticence, and conformity” (Wolfe et al., 1986, p. 356). The acquisitive style of self-monitoring “serves to enhance undefined favored treatment in unknown future circumstances via the accumulation of social approval” (Wolfe et al., 1986, p. 356).

Lennox (1988)¹⁴ suggests “the protective self-presenter tends to approach each social encounter with fear and pessimism; one false move might bring about interpersonal disaster in the form of social disapproval” (1988, p. 66) and they are “motivated to avoid

¹¹ The Self-Monitoring Scale-Revised (SMS-R), a shorter 18-item scale (Snyder & Gangestad, 1986).

¹² Said differently, in the univariate model, a person was either a “high” or a “low” self-monitor. In the bivariate model, everyone has both constructs, but it is continuous, so people are separated by degrees rather than a distinct class.

¹³ I suspect it is because the bivariate model is not as popular as the univariate one. In my research, I found discussion, but never a definition of either construct.

¹⁴ Both Wolfe et al., (1986) and Lennox (1988) discussion of acquisitive and protective self-monitoring are influenced from Arkin’s (1981) two self-presentation constructs.

the possibility of rejection” (p. 66). On the other hand, “the acquisitive self-presenter presumably tends to approach each social encounter with an eye toward interpersonal rewards to be gained if one can only be ‘the right person’—that is, present oneself as the circumstances demand” (p. 66), and thus “acquisitive self-presenters are apt to be optimistic about social outcomes” (p. 66).

There is some similarity between the descriptions of acquisitive self-monitoring and the univariate definition of high self-monitoring. That is, the quintessential high self-monitor are those individuals “particularly attuned to situational contexts and are willing to modify their expressive behavior to fit a given situation or role” (Fuglestad & Snyder, 2010, p. 1031), and is clearly in line with Lennox’s (1988) definition of the acquisitive self-presenter. Conversely, the definition for low self-monitors, as those individuals who “are less responsive to social context, preferring to behave in ways that reflect their inner attitudes and dispositions” (2010, p. 1031), does not relate to Wolfe et al.’s (1986) or Lennox’s (1988) conceptualization of protective self-presentation/monitoring.

Although I could not locate a common definition, acquisitive self-monitoring appears to relate to the original univariate definition of “high” self-monitoring. The protective construct remains undefined, however, which presents an opportunity for researchers.

c. Consequences and Future Work for the Bivariate Model

The consequence of recent studies is that previous work using the univariate scales of the original SMS (Snyder, 1974) or SMS-R (Snyder & Gangestad, 1986) have effectively obscured and conflated two constructs into a single score, making them psychologically uninterpretable (Kudret et al., 2019; Wilmot, 2015; Wilmot et al., 2017; Wilmot, M. P., personal communication, July 12 & 15, 2019).¹⁵ However, Wilmot (2015) argues that studies using these scales are likely representative of the acquisitive self-monitoring construct, meaning that previous work and findings remain relevant, although

¹⁵ Alternate self-monitoring scales, such as Lennox and Wolfe’s (1984), have not been studied in sufficient detail to determine whether they overlap or are equivalent with the SMS (Snyder, 1974), SMS-R (Snyder & Gangestad, 1985) or tap a different construct.

compromised.¹⁶ As a result, the protective self-monitoring construct remains unstudied, both in wider self-monitoring research but also in social network research.

For future work, Wilmot et al. (2017) provides a bivariate scale from Snyder's (1974) that can be used to measure both constructs. Further, both Wilmot (2017) and John et al. (1996), suggest exploring acquisitive and protective self-monitoring independently, jointly, and in interaction, to better define and represent them.

4. Person-Situation Influence in Assessing Personality

In personality psychology, a debate (or topic) that is relevant to my study is the person-situation debate.

The crux of the debate, started by Mischel (1968) and others (e.g., Gergen, 1968; Farber, 1964, as noted in Kenrick & Funder, 1988, 1991), is the suggestion that traits do not exist (Goldberg, 1993; Stewart & Barrick, 2004; Swann & Seyle, 2005). They “are not an important cause of behavior. Instead, behavior is determined by the environment” (Kenrick & Funder, 1991, p. 150). The debate ultimately led personality psychologists to more closely evaluate their field and led to further discoveries (Swann & Seyle, 2005), such as “we cannot really separate the study of the person (the topic of personality research) and the study of the situation (the usual focus of research in social psychology). Although the ‘situational’ hypothesis is often seen as an alternative to the trait position, they can be integrated” (Kenrick & Funder, 1991, p. 167). Kenrick and Funder (1991) suggested four principles learned from person-situation-related research. First, “specific traits show up only in relevant situations” (1991, p. 167). For example, if one is “anxious, it is likely to show up only in situations that you find threatening, like a first date or a class presentation, not... sitting in front of the TV with a beer in your hand” (p. 167). Second, “all traits are more easily expressed in some situations than others” (p. 167). For example, “people show their distinctive personalities more on a picnic than at a funeral (where everyone is reserved)” (p. 167). Third, “a person’s traits can actually change a situation” (p. 167). For

¹⁶ Because both the acquisitive and protective (to a lesser degree on the SMS-R) constructs are present in both scales, findings derived from the SMS or SMS-R are confounded to an unknown degree by the protective self-monitoring construct (Wilmot, 2015).

example, “an aggressive child can turn a previously peaceful playground into a brawl in a few minutes” (pp. 167–168). Fourth, “people choose different settings to match their traits” (p. 168). For example, a high extravert is likely to choose social situations such as parties more so than an introverted person would (1991).

a. *Situation Strength*

Important to the person-situation conversation is how situations are characterized, specifically, the level of behavioral constraint a situation imposes on a person. What constitutes a situation can be considered both “the individual’s surrounding environment” but can be expanded to include “the behaviors that are expected of a person in that setting” (Stewart & Barrick, 2004, p. 63). Kenrick and Funder (1991), for instance, provided a list of situations and proposed that situations such as a church, job interviews, and elevators would likely impose high constraint, meaning little variation in behavior would be expected; conversely, at a football game, park, or one’s room there is low constraint, and there would likely be more variation in behavior.

More generally, situations tend to be characterized as strong and weak. In strong situations, there is “considerable pressure or demands to induce conformity” and “press the individual to behave in a specific way or exhibit a very narrow range of behaviors” (Barrick et al., 2003, p. 72). Conversely, “weak situations present few demands or presses to conform. In such settings, the individual determines which behaviors, if any, to undertake” (2003, p. 72). Research shows that “when situations are exceptionally strong, all individuals tend to behave in the same way regardless of their personality traits” (Barrick, 2005, p. 364), decreasing the relationship between personality and behavior (2005). Conversely, in weak situations, “individuals have considerable discretion in how to behave” and “the validity of personality traits in predicting performance...[is] larger” (p. 364).

b. *Person-Situation in Personality Research*

At present, the need to account for situation’s influence on personality prediction is accepted (Barrick et al., 2003), however, “the basic concept that traits and situations interact to influence behavior seems to be frequently overlooked when we conduct studies

and interpret research findings” (Stewart & Barrick, 2004, p. 62). As Barrick (2005) laments, “a framework for characterizing the psychologically influential aspects of situations is sorely needed, as is a method for assessing these variables” (p. 365) and suggests future research must investigate the interaction between personality and situation. In turn, the impact of situation and situation strength¹⁷ on personality is relevant to personality-focused social network research as well.

B. SOCIAL NETWORK THEORY, ANALYSIS, AND RESEARCH

My study integrates personality into a social network framework. To help provide an understanding of what this means, I introduce four topics relevant to social network research, analysis, theory, and design. First, I provide a definitional overview of social network research and analysis. Second, I cover components of social networks, specifically, relationships or ties, levels of analysis, and basic statistical considerations involved in social network analysis (SNA). Third, I provide an overview of important elements of social network theory, and fourth, I introduce aspects of social network research design.

1. Definitional Overview

A network is “a way of thinking about social systems” which focuses “attention on the relationship among the entities that make up the system” often called “actors or nodes” (Borgatti et al., 2013, pp. 1–2). A social network is “a finite set or sets of actors and the relation or relations defined on them” (Wasserman & Faust, 1994, p. 20). The key feature of social networks is the relationship between actors, called a tie or a link, which represent relationships such as trust, friendship, kinship, animosity, among many others.

Broadly, “social network research rests on the theoretical claim that outcomes are affected by a structure of relations among people: dependence among individuals” (Robins,

¹⁷ Although situation and context are often used interchangeably, situation (or context), as it refers to personality assessment, is concerned with discerning the strength of a situation in terms of how it influences personality expression. Context and situation, when used more broadly, involves understanding how individuals make sense of the “immediately relevant aspects of the situation (where the person is physically, who else is involved, what the recent history of the contact is, etc.), as well as the relevant aspects of the social system in which the person appears” (Miles et al., 2014, p. 167).

2015, p. 4), and thus “conceptualizes social relationships as central to both individual and systemic outcomes” (p. 13). Social network research and social network analysis require several assumptions because “a network perspective is not just a methodological decision, it carries quite explicit theoretical commitments about structure and dependence” (Robins, 2015, p. 4). Everton (2012) provides some of these key assumptions:

- Actors and their related actions are interdependent, rather than independent, with other actors.
- Ties between actors are conduits for transfer or flow of various types of material and/or nonmaterial goods or resources (e.g., funds, supplies, information, trust, enmity).
- Social structures are seen in terms of enduring patterns of ties between actors (i.e., social networks).
- Repeated interactions between actors give rise to social formations that take on a life of their own, follow their own logic, and cannot be reduced to their constituent parts even though they remain dependent on those parts.
- An actor’s position in the social structure (i.e., its structural location) impacts its beliefs, norms, and observed behavior.
- Social networks are dynamic entities that change as actors, subgroups, and ties between actors enter, form, leave, or are removed from the network. (pp. 14–15)

With these assumptions in mind, it is important, however, to consider that in studying social networks, “actors in the network have intentionality” (Robins, 2015, p. 5). That is, “social network ontology includes both network relationships and social actors,” and both need to be observed “in as much detail as necessary to understand the social processes” studied (p. 5) because both individual and network effects are present and interact (2015).

2. Components of Social Networks

This next section briefly covers three components of social networks critical to social network research and analysis: relationships (ties), node-level and network-level measures, and an overview of its statistical considerations.

a. Relationships

Within social network research and analysis, the emphasis is on the relationships (Wasserman & Faust, 1994), called connections, edges, lines, links, or ties between sets of actors (Borgatti et al., 2013; Everton, 2012; McCulloh et al., 2013). Actors may also be referred to as vertices, nodes, or agents, and can represent more than just people, but also locations, events, or specific entities or objects (Everton, 2012; McCulloh et al., 2013). The social relationship may be referred to as a **dyadic attribute** (McCulloh et al., 2013) and can represent several different types of relationships, such as friendship, trust, animosity, kinship, etc. In social network analysis, the ties between two actors or nodes may be **directed** (i.e., the ties point from one node to another node), or **undirected** (i.e., the ties between nodes are reciprocated) (Everton, 2012). There are both social and mathematical ramifications of whether a tie is directed or undirected. In the social sense, an example is when one person nominates another as a friend, but the person being nominated does not reciprocate the friendship tie. Mathematically, the set of relationships among all actors in a network is often represented by matrices—and a directed network means the matrix will be asymmetric (McCulloh et al., 2013). On the other hand, reciprocated ties, such as kinship, or networks constructed such that only reciprocated ties are counted, create an undirected network and thus a symmetrical matrix (McCulloh et al., 2013). A matrix made up of the same actors in the rows and columns is known as an **adjacency matrix** (Everton, 2012).

A matrix's **mode** is defined by the number of actors, nodes, or entities that make up the network—a matrix that is single-mode would then have the same actors in the rows and columns (Everton, 2012; McCulloh et al., 2013). Because social networks are inherently about actors and the relationships between them, a relationship may be inferred from two or more actors attending the same event, being in the same location, or having some common feature between them. It is possible to have two-mode or even multimode, or meta-networks in which rows and columns represent different actors, nodes, or entities, for example, actors may represent the rows, and the columns represent a list of events they attended (Everton, 2012; McCulloh et al., 2013).

Central to this research is the idea of **multiplexity** or multiplex (or multivariate) networks¹⁸ in which more than one type of relational tie between nodes is possible (Robins, 2015). For example, actors in a network may have *friendship*, *trust*, and *negative* (e.g., *difficult to work with*) ties, in which each relationship is a different tie, and each actor could be tied to another through all, none, or some combination of those relationships. The examination of multiple types of ties between actors is important because “human relationships involve a number of motivations and purposes” (Robins, 2015, p. 36), and studying multiple relationships together helps in understanding the social network under examination, for instance, by helping to answer questions as, “do trust ties precede friendship ties or vice versa?” or “do multiple *positive* ties reduce the chance of receiving *negative* ties?”

To elaborate on multiplexity, ties between actors may be considered *positive* or *negative*. **Positive** ties or relationships may be said to facilitate information/knowledge transfer (Labianca & Brass, 2006), and are typically associated with concepts such as friendship and trust. **Negative** ties or relationships may impede knowledge/information transfer (2006) and are “ongoing and recurring relationships... in which at least one person dislikes another” (p. 596). The idea is that a *negative* relationship is still a relationship, although its forces are dissociative rather than associative, and in that sense, one cannot assume the same dynamics as with *positive* ties (Labianca, 2014).¹⁹ A central idea in the study of *negative* relationships is that they may, at times, better explain social network outcomes than *positive* ones, and represent an important component of one’s “social ledger” (Labianca & Brass, 2006, p. 596).

The formation (or lack thereof) of social ties is central to social network theory, and Lusher and Robins (2013) offer a useful framework from which to conceptualize it. They (2013) provide “three broad categories of tie formation processes... self-organizing

¹⁸ Not to be confused with multilayer networks. In a multilayer network, layers represent the types of actor or types of relationships between actors, and the same actor can be present in different layers (Dickison et al., 2016).

¹⁹ Many of the social network metrics which I am about to cover may be used in “positively” signed networks, but do not make sense when applied to negative ties. Overall, the topic of negative ties is a research area in social network studies and is regularly a topic in social network journals and conferences.

network processes, attribute-based processes, and exogenous dyadic covariates” (Lusher & Robins, 2013, p. 23), which I briefly explain.

In the **network self-organization** category, “ties can organize themselves into patterns because the presence of some ties encourages others to come into existence” (Lusher & Robins, 2013, p. 23). These are often known as “‘purely structural’ effects because they do not involve actor attributes or other exogenous factors” (p. 23) but are rather “endogenous effects in that the network patterns arise solely from the internal processes of the system of network ties” (p. 23). Four broad examples of network self-organization are activity/popularity; reciprocity; closure; and brokerage. These terms are reviewed in greater detail later.

Attribute-based processes, also referred to as individual attributes, are the capacities, capabilities, and predispositions that individuals bring to a social system (Lusher & Robins, 2013, p. 26). **Attributes** are “nonrelational characteristics of the individual actors in the network” (Everton, 2012, p. 397) and may include personality, gender, race, ethnicity, age, years of education, etc. (2012). In SNA, attributes may be continuous (age, personality trait measurement, etc.) or categorical variables (gender, married or not married, etc.) (Robins, 2015). Actor-based processes are also known as “actor-relation effects” and three general categories are the effects of the sender, receiver, and sender and receiver (Lusher & Robins, 2013). A sender effect may be some attribute that makes an actor more likely to send ties—such as being high in the personality trait extraversion. A receiver effect is some attribute of an actor that makes them more likely to receive a tie—perhaps they have an especially agreeable personality, or have a lot of money, etc. A receiver and sender effect may be because their attributes match (known as “homophily,” which I discuss shortly). For example, males may form friendships at a higher rate with other males than they do with females; or perhaps because the attributes do not match (heterophily), at a school dance, for example, males may tend to dance with females. This research treats personality as a node attribute, as one’s personality is unique to the individual, and it is assumed to be independent of other nodes in the network.

Finally, **exogenous contextual factors** refer broadly to other networks (e.g., multiplex relationships) and spatial factors that may affect tie formation (Lusher & Robins,

2013). One example is how the hierarchy of a formal organization may affect communication ties within the organization—i.e., the informal communication chains that develop outside of the bounds of the formal communication hierarchy (2013) and other factors such as geospatial proximity and context may also be important.

b. Levels of Analysis

Two common levels of analysis in social network research and analysis are node-level and network-level measures (Everton, 2012).

In node-level analysis, the focus is on a node's location within the structure of the network to determine its importance relative to other nodes (Everton, 2012). One such representation of a node's importance relative to others is its **centrality**, which is “a property of a node's position in a network,” thought of as “the contribution the node makes to the structure of the network” (Borgatti et al., 2013, p. 164). There are many kinds of centrality, for example, degree, betweenness, closeness, eigenvector, and many more, all of which can be represented mathematically and represent different things. As Borgatti et al. (2013) note, centrality “is not one thing but rather a family of concepts” (p. 164); however, my research is primarily concerned with degree, in-degree, and out-degree centrality, which I cover here.

Degree centrality is “the number of ties of a given type that a node has” (Borgatti et al., 2013, p. 165). For an undirected network, it is a count of the number of ties into a node (Everton, 2012). In a directed network, there is in-degree and out-degree centrality (Everton, 2012). **In-degree centrality** is a count of the number of ties coming into an actor (McCulloh et al., 2013), while **out-degree centrality** is a count of the number of ties a particular node directs toward other nodes (2013).²⁰ Depending on the context, interpretation of degree centrality may be more or less meaningful. It may measure a node's popularity in a given network (if it has high in-degree centrality in a friendship network, for example). Conversely, it could also state the obvious—a teacher in a classroom network would presumably have ties to all the students and thus high degree centrality.

²⁰ When speaking of in-degree centrality, one may say how many nominations/ties an actor has received. For out-degree, one may say how many ties/nominations an actor sent.

Network-level measures consider the entire network and may offer information about processes or factors affecting the entire network (Everton, 2012).

Density is a “network-level measure of the ratio of the number of links [or ties or relationships] present given the total number of links possible” (McCulloh et al., 2013, p. 70). “The densities of larger networks... are typically less than those of smaller networks” (Schotter, 2015, p. 15) and an alternative measure to density is called average degree (Schotter, 2015). **Average degree** is “the average number of ties among all actors in a network” (Everton, 2012, p. 397). Overall, the density or average degree of a network is most informative when compared to other networks; however, interpretation depends upon the context and network under consideration (McCulloh et al., 2013; Schotter, 2015). For example, the density or average degree of two friendship networks for two university classes may be vastly different because one class is taught in residence and one is instructed via distance learning. On the other hand, if network density for friendship networks is considered for all in-residence courses, differences may be more meaningful and potentially cause for further investigation.

Centralization “provides a network-level measure of potentially exceptional nodes in the network. In other words, is there a node in the network that is much more central than typical nodes” (McCulloh et al., 2013, p. 73). As the name implies, centralization is applied to centrality, for example, degree centralization “reflects the relative dominance of a single node over all other nodes in the network” (2013, p. 73). The concept is pertinent to this research because if a network is high in degree centralization, it means that an actor or actors has a significant number of ties (or, if applied to in-degree and out-degree centrality, receives or sends a significant number of ties, respectively). For example, if an actor is highly central in a *negative* network, it means they have many *negative* relationships.

A final concept, though technically not a network-or node-level measure, are **subgroups** or **subnetworks**, which are a cohesive subset of nodes (Robins, 2015) defined as “portions of the network in which actors interact more with each other than they do with actors who are not in a group” (Borgatti et al., 2013, p. 205). Broadly, types of subgroups are distinguished by different names, each of which refers to specific features of them, such

as components, factions, cores, Newman groups, and cliques (Everton, 2012). For instance, a **clique** “is a complete subgraph: a subset of nodes with all possible ties present” (Robins, 2015, p. 26). Analyzing subgroups is important because their presence suggests a similarity in behavior and attitude (Burt, 1992); and behaviors or dispositions of one subgroup may be different than another, and the rest of the network, and so identification of subgroups is important in understanding the network under study.

c. Social Network Statistical Considerations

Like with any discipline that relies on statistical methods and models, the question of which method or model to use depends in part on the question or problem at hand and the assumptions that go along with it. This discussion briefly covers what sets social network analysis apart from traditional statistical analysis.

Fundamentally, network statistical models differ from traditional (or classical) statistical models because, first, independence of observations is not assumed, and second, the network often represents the population, not a sample of it. In the first case, “standard inferential statistical tests assume that observations are statistically independent” (Borgatti et al., 2013, p. 126), but as noted earlier, social network research assumes nodes are interdependent; the relationships nodes develop (or do not develop) are dependent on other relationships or attributes (Borgatti et al., 2013; Everton, 2012). In the second case, classical inferential statistical tests assume that test variables “are drawn from a population with a particular distribution, such as normal distribution” but, “often times in network data, the distribution of the population variables is not normal or simply unknown” and the “data is probably not a random sample, and may not be a sample at all, but rather a population” (Borgatti et al., 2013, p. 126). In other words, samples of networks typically are not analyzed; rather, in theory, whole or complete networks are.²¹ Hence, one usually does not generalize to the population at large (Everton, 2012). Thus, because of these

²¹ The primary exception to this general rule is when social network analysts collect random samples of ego networks (often with surveys), which can be generalized to a larger population. See discussion of ego networks below.

considerations, special methods that “can deal with the interdependencies” (Borgatti et al., 2013, p. 147) of social networks are required.

One of the methods that is pertinent to this research is a permutation or randomization procedure known as Quadratic Assignment Procedure (QAP). This approach allows for the generation of statistical distributions from the given network (or networks) data against which one can compare actual observed (measured) network data (Borgatti et al., 2013). A permutation or randomization test (i.e., QAP) calculates all the ways a set of empirical network data could have been observed (without modifying the data itself), compares it to the empirical data, and provides a “p-value” for the probability that the actual data would have been observed by chance (Borgatti et al., 2013). From this, a researcher could test for associations between networks, such as the correlation between a *friendship* and *trust* network, or “model a dependent network using multiple independent networks using regression” (2013, p. 148). There are several ways QAP is used in social network research. In this study, I correlate personality variables (attributes) to networks, which is known as “dyadic-monadic hypotheses,” and networks to networks, which is known as “dyadic hypotheses” (Borgatti et al., 2013). The interested reader is recommended to consult Appendix A for more information on QAP hypothesis testing and other social network statistical models.

3. Social Network Theory

Social network analysis and social network research more generally, defy a simple theoretical definition. In speaking of social network analysis, Wasserman and Faust (1994) allude to its inherent multidisciplinary nature and Kilduff and Tsai (2003) question “whether the network approach is a collection of methods, or whether it represents a distinctive theoretical perspective” (p. 35). Conversely, there is an argument to be made that social network research (and subsequently SNA) falls under the larger umbrella of “Network Science” as articulated by Brandes et al. (2013) who suggest that there is not a “Grand Unified Network Theory” (p. 4); thus, “just because a network idea is prominent...does not mean that it will necessarily apply in the particular social context” under evaluation (Robins, 2015, p. 28).

The general points of agreement, however, are that social networks are fundamentally about relationships, with borrowings from mathematics (most notably graph theory), social psychology, as well as “home grown” theories (such as “weak ties” and “structural holes”) (Kilduff & Tsai, 2003; Wasserman & Faust, 1994;). Besides the node-level and network-level terms previously discussed and borrowed from mathematics, there are also borrowings from social theory, which when brought together, help construe deeper meaning and interpretive value to mathematical calculations and terms. What follows is a brief review of some network theoretical ideas.

Reciprocity is the concept that humans tend to reciprocate relationships—that is, “whether agents [actors or nodes] tend to form relationships with alters who initiate relationships with them” (McCulloh et al., 2013, p. 113).

Homophily is “the principle that a contact between similar people occurs at a higher rate than among dissimilar people” (McPherson et al., 2001). In other words, people tend to “form relations with those like themselves” (McCulloh et al., 2013, p. 113) and invokes the adage, “birds of a feather flock together” (McPherson et al., 2001). Homophily is said to influence **social selection** in which actors select network partners based on attributes (perhaps gender, ethnicity, age, personality, etc.) (Robins, 2015). The opposite of homophily is known as **heterophily** in which people with different attributes or shared characteristics may form social ties—perhaps because of access to diverse resources (Kilduff & Tsai, 2003).

Kadushin (2012) considers homophily to be a kind of **propinquity**, and defines it as “being in the same place at the same time” (p. 18). The basic idea is that actors are more likely to develop a relationship if they are physically or geographically near one another. The distinction between propinquity and homophily is that propinquity refers to co-location, whereas homophily requires co-presence, which “implies a social relationship that is within the framework of a social institution or social structure” (2012, p. 18). For example, if two actors form a relationship because they attended the same school at the same time, this would be co-location and hence, propinquity. A school’s alumni network, however, features actors who attended the same school but at different times and is an example of homophily, as relationships may develop through the common attribute or

characteristic of having attended a common social institution, the school (Kadushin, 2012). Synonymous with the concept of propinquity, and sometimes used instead, is **proximity**, which is the idea that distance, either organizational, conceptual, or physical between nodes, influences relationships and the creation of social structure (McCulloh et al., 2013). As an example, two employees with adjacent offices are more likely to form a social tie than two employees with offices on separate floors (all else being equal).

Three related terms are “transitivity,” “closure,” and “balance.” **Transitivity** is the idea that given three actors, A, B, and C, “if there is a link [relationship or tie] from actor A to actor B, and a link from actor A to actor C then there is a tendency for actor B and actor C to form a link with each other” (McCulloh et al., 2013, p. 118). If that tie forms, it is known as “closure” (specifically transitive closure); thus closure, transitivity, and a third term, “clustering,” mean roughly the same thing (Robins, 2015). In social networks, three nodes and the relationship between them is known as a triad, which is the smallest possible group in which a majority (or minority) could form, but it also increases the complexity of potential relationship patterns (i.e., in a directed network, there are 16-possible triad configurations) (Kadushin, 2012; Robins, 2015).

Triads introduce a term known as **balance** (from Balance Theory), which posits that people prefer balanced relationships—e.g., “they want their friendships to be reciprocated, and for their friends to be friends with each other” (Kilduff & Tsai, 2003, p. 42). This preference for balance means that if two nodes share strong *positive* attachments to a third node, that those two nodes will also likely form a relationship (e.g., transitive closure) and the triad will be in balance. If, however, one node has a *negative* relationship and another node has a *positive* relationship with the third node, the triad is unbalanced and will likely not close—it is said to be intransitive. That is, the idea of balance reflects the adage, “the enemy of my enemy is my friend”—so “if two actors that are ‘friends’ have the same affinity to another there is balance” (McCulloh et al., 2013, p. 118). However, “if the two friends have differing affinity to another there is cognitive dissonance” (2013, p. 118), and closure/transitivity is unlikely to occur (Robins, 2015). A key idea derived from transitivity and balance is the nature of the relationship between nodes, i.e., *positive* and

negative ties will affect closure and can impact the structure of social networks (Robins, 2015).

Social influence/diffusion, as noted earlier, articulates that “actors may be influenced by network partners, changing certain attributes (opinions, behaviors) to accord with those of their partners” thus, “certain individual-level qualities may diffuse through the network” (Robins, 2015, p. 29). An example of diffusion or influence is considering how a disease or innovation moves through a network—e.g., the flu may pass from one node to another until, before long, the entire network has the flu (in other words, the individual attribute of one individual—the flu, influenced or diffused through the network and everyone else caught it).

Network self-organization says that “ties may come into being because of the presence of other ties” (Robins, 2015, p. 29). This is an umbrella term because previously mentioned social network ideas such as reciprocity, preferential attachment, and transitivity (or closure) fall under the definition of network self-organization. More specifically, network self-organization processes were noted above for tie formation; thus, it is a process that occurs “irrespective of attributes” (Robins, 2015, p. 34) and is also known as an “endogenous structural process where the presence of some network ties sustains the ongoing presence of other network ties or encourages them into existence” (Robins, 2015, p. 34).

Dynamic network processes or the co-evolution of structure and attributes maintain that “networks are not static entities but are involved in dynamic processes as ties change” (Robins, 2015, p. 29). The idea of co-evolution is discussed more in the conceptual background section.

4. Social Network Research Design

There are multiple social network research designs, however, two of the more popular are “egocentric” network studies (also known as “ego network,” “egonet,” “egocentric,” or “personal” network studies) and “whole” network studies (also known as “full,” “complete,” or “sociocentric” network studies) (Borgatti et al., 2013; Robins, 2015). As my study is social network research, I briefly explain the two most popular social

network research design frameworks, ego network and whole network studies, as well as how networks are bounded.²²

a. Ego Network Studies

An egonet or ego network “is the immediate social network environment of an individual (ego)” (Robins, 2015, p. 51) and ego’s ties to other individuals, known as “alters,” who in turn have ties among themselves, although the alters may not necessarily be among the set of egos. In other words, “ego has a tie to every alter, but not all ‘alters’ need to be tied directly to each other” (Robins, 2015, p. 51). Therefore, “an egocentric study is based on a sample of participants who report their personal egonets” and “the data is entirely derived from these self-reports” (Robins, 2015, p. 51).

The advantage of egonet studies is that participants may be sampled in standard ways from the population, such that “egonets can be treated as a sample of independent observations, assuming that alters are not themselves respondents and are not shared across egonets” (Robins, 2015, p. 52). A goal of egonet studies may be to “understand something about the social environment of each of the egos” (Borgatti et al., 2013, p. 28) without needing to construct the entire network. For example, many personality-focused social network research studies implement an egonet design because it allows for a comparison of how individuals (i.e., egos) of differing personality dispositions construct their network and perceive ties among alters. On the other hand, the weakness of egonet studies is the assumption that respondents are reliably providing information about their alters, and their alters’ attributes and ties (Robins, 2015). Thus, because of this reliability issue, network processes such as selection and influence are usually not studied in egonet design because a researcher would presumably want reliable information about all the nodes (2015) (such as that offered by whole network designs). Finally, egonet designs generally do not provide observations of network ties beyond each egonet, limiting their use in assessing network connectivity (Robins, 2015, p. 52), although it is possible to extract ego networks from “whole networks” (Borgatti et al., 2013; Robins, 2015).

²² I discuss additional design considerations in Appendix A.

b. *Whole Network Studies*

A whole network study design “requires a single set of actors within a well-defined network boundary” and “the data includes the ties that are present among all actors” (Robins, 2015, p. 53). Whole network designs “are the staple of much empirical social network analysis” (2015, p. 52), and their use in personality-focused social network research is about equal to that of egonet designs. As I discuss in the methods chapter, I use a whole network design for my research.

The advantage of whole network studies is that if the network in question can be appropriately bounded (i.e., defining the beginning and end of a given network (Everton, 2012)), a researcher can better assess network connectivity (because each actor’s ties are collected), identify network processes such as selection and influence (because each actor’s attributes would also be collected), assess network structure accurately, and draw more reliable conclusions about the social system (within the boundary) (Robins, 2015). Whole network studies are common in personality-focused social network research, for example, because it allows for a researcher to assess personality attributes in terms of network and node measures, such as centrality measures, brokerage, and subgroups, but also potentially identify selection and influence processes. The weaknesses of whole network studies are issues inherent to the handling of missing data, as the design requires (and assumes) a high response rate among respondents. In turn, this usually requires that networks be manageable enough in size so that they can be properly bounded and collected (Borgatti et al., 2013; Robins, 2015).

c. *Social Network Boundaries*

Of equal importance to both ego network and whole network designs is the consideration of how to “bound” or specify the boundary of a given network, and Everton (2012) notes two such strategies, the “realist” or a “nominalist” approach. The realist approach is more subjective, and “allows actors to define the boundary of the network” (2012, p. 77). It assumes that “natural boundaries actually exist for the network” (p. 77). The nominalist approach “is a more objective strategy in that rather than looking to the perceptions of network members, it imposes an a priori framework based on the analyst’s

theoretical concerns” (p. 77). Either network boundary strategy could be applied to ego network or whole network studies depending on the research problem or question at hand, although the descriptions above suggests that ego networks are more often bounded in a realist strategy, while whole networks are bounded in a nominalist strategy.

C. PERSONALITY AND SOCIAL NETWORKS—BRIDGING THE GAP

Personality psychology is the study of individual differences (Hogan, 2005), and social network research is the study of relationships, interdependencies, and social structure (Borgatti et al., 2013; Everton, 2012; Robins, 2015; Wasserman & Faust, 1994;); they are disparate and distinct disciplines. This section serves as a bridge between my discussion of the Big Five personality traits and self-monitoring constructs and social network theory and research. Here, I introduce the arguments and history that led to individual attributes such as personality becoming an accepted part of social network research and analysis.

Today, the rationale for integrating personality attributes into social network theory and analysis is accepted; however, this was not always the case. Conceptually, there is a recognized dichotomy between the individual, or “micro” focus, of psychologists and the network, or “macro” perspective of sociologists and social network researchers, and the two sides generally operate independently, with examples of integration few and far between (Kilduff & Tsai, 2003; Krackhardt & Brass, 1994; Robins, 2015). However, the introduction of attributes (e.g., personality traits) as antecedents to social relationships is inherent to the idea of social selection, and part of what Lusher and Robins (2013) called actor-relation effects. In that sense, integrating attributes such as personality into social network research is not new, but it was once controversial. The paucity of integration of personality psychology into social network research has deep roots, and the idea of individual differences making any difference to social structure was anathema to many social network researchers who abided by “structuralist” views (Kilduff & Tsai, 2003; Landis 2015).

The basis of structuralism is that individual attributes do not matter. The “idea that individuals help shape the social networks within which they are embedded is regarded by some as contrary to the structural legacy within which many social network researchers

work” (Kilduff & Tsai, 2003, p. 67). From a structuralist perspective, how “actors’ attributes, cognitions or personalities shape social networks” is ignored in research and analysis (2003, p. 68). At least some of the structuralist exuberance at ignoring individual differences is, as argued by Kilduff & Tsai, reflective of their “eagerness to build a distinctive field of study” by not only “neglecting individual agency,” “but of claiming to go beyond the study of individuals altogether” (2003, p. 68). Broadly, the adherence to this structuralist idea has been called, by critics, the “anticategorical imperative” (Emirbayer & Goodwin, 1994, p. 1414), which “rejects all attempts to explain human behavior or social processes solely in terms of the categorical attributes of actors, whether individual or collective” (p. 1414) and instead focuses on the structure of ties between individuals to explain behavior and social processes (Landis, 2015).

Moving beyond structuralism is the idea of post-structuralism, which essentially argues against the anticategorical imperative. In organizational network research, for example, the conceptual dichotomy between “micro” and “macro” research has attempted to be bridged by empirical work joining the two disciplines (e.g, Kilduff & Krackhardt, 1994), by bringing an individual’s attributes and idiosyncrasies into social network analysis. It would take several years, however, for a theoretical argument to form around the growing body of empirical literature demonstrating that individual attributes affect and are affected by social relationships.

An exemplar of this theoretical position in organizational social network research is Kilduff & Tsai (2003). They challenged prevailing structuralist paradigms and sought to emphasize both an individual’s characteristics and their agency in the determination of both individual and network outcomes. Their idea was further articulated by Kilduff, Tsai, and Hanke (2006), who argued that common organizational social network research themes of structural configuration research (which focused on network structure) and actor centrality research (which focused on the centrality of the individual within the structure), failed to account for network dynamism. The paper called for future research to embrace a concept called the dynamic stability approach; with the key idea being that “the activities of the social actor cannot be understood except in terms of the network of relationships within

which the actor is embedded, and the emergence of system-level properties cannot be understood except in terms of the relationships forged by individual actors” (p. 1044).

The dynamic stability term faded from organizational social network literature, however, but several ideas have continued to develop. Specifically, recent organizational social network research has begun to focus on the interplay of the personality characteristics of actors and the structural and network outcomes associated with them. This is known as the micro-foundational approach, described by Tasselli et al. (2015) and notes three theoretical positions—conspicuously similar to those articulated in Kilduff et al. (2006). The three research positions are:

An individual agency perspective suggesting that people, through their individual characteristics and cognitions, shape networks; a network patterning perspective suggesting that networks, through their structure configuration, form people; and a coevolution perspective suggesting that people, in their idiosyncrasies, and networks, in their differentiated structures, coevolve” (2015, p. 1361).

The primary micro-foundational argument is that outcomes and attitudes and behaviors “cannot be fully understood without considering the structuring of organizational contexts in which people are embedded” (2015, p. 1361); likewise, organization change and network structuring “cannot be fully understood without considering the psychology of purposive individuals” (p. 1361).

The micro-foundational argument is strikingly similar to the description of “dynamic network processes” and Robins’ (2015) argument that actors have intentionality in addition to their social relationships.²³ Ostensibly, they refer to the same thing; however, the context of the micro-foundational approach is within organizational social network research specifically, and is an argument to bridge the micro and macro organizational research traditions together. As should be clear, the terms and ideas of organizational social network research often parallel and possibly precede their use in more general social network research, and as one would expect, the broader field of social network research influences and is influenced by its more specialized branches.

²³ I introduced Robins’ (2015) quote earlier in the chapter.

Overall, the integration of personality variables and other actor attributes into social network research is now commonplace. Rather, as I discuss next, gaps in current personality-focused social network research are about what and how these attributes have been integrated and studied, and the consequences stemming from it.

D. PREVIOUS RESEARCH AND GAPS

My study is about how the traits and facets of the Big Five, and self-monitoring constructs affect the development of social relationships. Integrating personality attributes into social network analysis is no longer controversial, and the results of the past 30-years have shown personality's relevance in explaining social network outcomes. However, while these studies have provided a wealth of knowledge, several important questions remain unanswered. First, the facet-level details of the Big Five's relevance to social relationships, or what, if any, relevance the bivariate constructs of self-monitoring have to them, remains unexplored. Second, no studies have considered how actors make sense of and explain their relationships and if personality is a relevant factor in those decisions. Finally, within Big Five and self-monitoring social network research, the effect of situation and situation strength, and other relationships (i.e., multiplexity), and their interaction with personality, and how they affect social network outcomes, are unknown.

Previous Big Five and self-monitoring social network research have shown, unequivocally, that both are an important phenomenon in the development of social ties and social structure.²⁴ Meta-analyses and reviews have shown that “personality underpins many of the major aspects of our social networks at work” (Landis, 2015, p. S119), that it plays an important role in social network development (Selden & Goodie, 2018), and that it impacts our “job performance and career success” (Fang et al., 2015, p. 1253). It is important to note, however, that while these studies highlight the overall importance of personality in social network outcomes, different traits are relevant to different relationships. The relationships most relevant to my study are those that address the Big

²⁴ In addition to meta-analysis by Fang et al., (2015) and reviews by Landis (2015) and Selden and Goodie (2018), I also reviewed the studies they referenced. I placed each applicable study and its associated findings in a table in Appendix A. I also include a table which considers each Big Five trait and its relevant node-and-network-level findings.

Five and self-monitoring's impact on *friendship*, *trust*, and *difficulty* (i.e., *difficult to work with*) relationships.²⁵ Here, I discuss the most relevant findings for each relationship and, then, introduce the research gaps.²⁶

In my review, *friendship* was among the most popular relationships studied for the Big Five, but findings varied. Specifically, some research found no correlation between the traits and centrality measures (e.g., Casciaro, 1998; Miners, 2008), while others provided mixed results (i.e., traits that were significant for some studies, were not in others). In their review of Big Five social network research, Selden and Goodie (2018) found that extraversion was related to sending/receiving (i.e., out-degree/in-degree centrality) *friendship* ties in new or forming networks, but less important in established ones. Agreeableness was related to receiving *friendship* ties (Klein et al., 2004; Selfhout et al., 2010) and sending ties (Schulte et al., 2012), but all three studies were in newly formed networks rather than established ones. Open-mindedness was related to developing new relationships (Selden & Goodie, 2018), although the findings were mixed in terms of in-degree and out-degree centrality. Conscientiousness is most relevant to work-related networks (Fang et al., 2015; Selden & Goodie, 2018), however, one study (Baams et al., 2015) found it positively correlated to out-degree centrality, but two studies provided contradictory results regarding its relationship with in-degree centrality (Klein et al., 2004; Lee et al., 2010), while several others found no relationship to *friendship*. Negative emotionality was found to negatively correlate with in-degree (Klein et al., 2004) and out-degree centrality (Schulte et al., 2012) in developing *friendship* networks; however, other studies found no correlation. Fewer studies examined self-monitoring for *friendship* relationships, as it is primarily studied in work-related networks (Fang et al., 2015; Landis,

²⁵ My study explores five different relationships, two of which are study specific, and I discuss in the methods chapter. Additionally, because social network study design influences the claims that can be made, my focus is on whole network studies vice ego network ones.

²⁶ Arguably, the gaps I identified are applicable widely in Big Five and self-monitoring social network research and not just to the specific relationships I investigated.

2015); however, one study (Bhardwaj et al., 2016), found it related to in-degree centrality, although Casciaro's (1998) did not.²⁷

For the *trust* relationship, I found no studies that examined it with the Big Five, which is surprising given “trust’s” importance to social network relationships (Lewicki et al., 1998). What is more, although the *trust* relationship is more popular in self-monitoring network research, the focus of these studies was on brokerage positions in work networks, and are unrelated to my study.

For the *difficult to work with* relationships (referred to broadly as *negative* relationships), I found three relevant studies (Klein et al., 2004; Schulte et al., 2012; Xia et al., 2009) whose findings were mixed and sometimes contradictory. Specifically, both Klein et al. (2004) and Schulte et al. (2012) found extraversion to be positively correlated to in-degree centrality, while Xia et al. (2009) found it negatively related. Only Klein et al. (2004) found agreeableness to be negatively correlated to in-degree centrality; however, all three studies found negative emotionality was positively correlated to in-degree centrality. Only Klein et al. (2004) found open-mindedness to be positively correlated to in-degree centrality. Finally, only Schulte et al. (2012) found extraversion and negative emotionality to be positively correlated to out-degree centrality, and agreeableness to be negatively correlated to out-degree centrality. I found no studies that examined self-monitoring's effect on *negative* relationships.

In examining these findings, I found four gaps in current research. First, Big Five-social network research has near-universally examined personality-relationship effects at the conceptually broad trait-level,²⁸ meaning that the precise, facet-level personality details necessary to better understand personality's impact on social relationships are unknown.²⁹ Second, all previous self-monitoring network research has used a

²⁷ In the work-situation, most studies examine self-monitoring in relation to betweenness centrality; however, I did not examine this centrality measure in my research, so I do not include those results here.

²⁸ Recall, the Big Five traits “are to personality what the categories ‘plant’ and ‘animal’ are to the world of biological objects” (John et al., 2008, p. 139).

²⁹ In my research, only Asendorpf and Wilpers (1998) used facets, but even their use was limited. See Appendix A.

psychometrically compromised univariate scale (Wilmot, 2015; Wilmot et al., 2017), potentially calling into question previous findings, but also ignoring the important protective self-monitoring construct. Third, researchers have not considered actor agency, and how actors explain or make sense of their relationships, and how these choices affect relationship outcomes and personality's relevance to them. Finally, to date, no research has considered how situation and situation strength or other relationships affect and interact with personality to explain social network outcomes, despite calls to do so (e.g., Selden & Goodie, 2018).

The first gap, which is relevant to Big Five network studies, is an instantiation of the bandwidth-fidelity tradeoff. Specifically, previous Big Five network research has studied trait-relationship associations at the broadest level of detail, rather than at the more precise and detailed facet-level. The consequence is that important details, such as which facets are most important to the formation and development of different types of relationships, are unstudied in current personality-network research.³⁰ For example, Harris and Vazire (2016) note that extraversion has both communion and agency-related facets (i.e., “sociability” and “assertiveness” respectively), but research is unclear on the role each plays in the formation of friendship, and it is a question that cannot be answered by trait-level only studies. Ultimately, the use of trait-level measures limits the conceptual depth and meaning that can be inferred, and the addition of facet-level measures to further conceptually develop personality-network research is called upon by social network researchers (e.g., Fang et al., 2015; Kalish & Robins, 2006).

The second gap is relevant to self-monitoring network studies and is related to issues from using the univariate model of self-monitoring. In my review, all self-monitoring-network studies used the univariate conceptualization, which means that although the studies ostensibly measured the acquisitive self-monitoring construct (Wilmot, 2015; Wilmot et al., 2017), many of the results are confounded by the protective

³⁰ In scales that do not separately report facet scores, significant facet-level correlations may wash out when items are aggregated to compute trait scores, and in doing so, hide important associations.

construct, potentially calling these findings into question.³¹ What is more, no self-monitoring network research has studied what, if any, effect the protective self-monitoring construct has on relationship development and how it interacts with, or compares to, the acquisitive construct.

The third gap in extant Big Five and self-monitoring network research is understanding how actor agency affects relationship outcomes, and how this might affect personality's relevance. Specifically, current research has associated personality traits with certain relationships, but the results of these studies are mixed and sometimes contradictory. A potential reason is that actors make choices for a variety of reasons, only some of which may be captured by their attributes. That is, within the social network framework, actors are purposive and have intentionality (Robins, 2015; Tasselli et al., 2015) and relationships involve "a number of motivations and purposes" (Robins, 2015, p. 36). Understanding how actors make sense of their relationships may provide a better understanding and explanation of what personality traits are most important to a given relationship and why. For example, how an actor makes sense of and/or defines their *friendship* relationships may affect their selection choices and/or criteria, and these choices could defy what their measured personality scores suggest, which in turn affects what personality traits are most relevant to the relationship.³² Overall, integrating actor agency considerations into personality-network research may provide a means to make sense of, and reconcile mixed and/or contradictory findings.

Finally, exploring how multiple factors interact with and on personality and understanding how they affect and explain social network outcomes is a recognized research gap and recommended study topic in personality-network research (Fang et al., 2015; Selden and Goodie, 2018; Tasselli et al., 2015). The specific factors are situation strength, situation, and multiplex social relationships. Situation strength is important

³¹ I provide the full list in Appendix A. Of the studies I found, 4 used the SMS (Snyder, 1974), 12 used the SMS-R (Snyder & Gangestad, 1986), and 5 used Lennox and Wolfe's R-SMS (1984). One study used both the SMS and R-SMS. Recall that Wilmot (2015) and Wilmot et al., (2017) note that only the SMS and SMS-R can be said to measure the acquisitive construct as Lennox and Wolfe's (1984) has not been studied in sufficient detail to claim it as an equivalent measure.

³² For instance, it would be unusual if an actor scoring highly in extraversion sent few friendship ties.

because it is thought to impact personality's relevance and expression (Kenrick & Funder, 1991) and may be particularly important in understanding personality's effect on the formation of relationships (Selden & Goodie, 2018). Situation involves understanding how individuals make sense of the "immediately relevant aspects of the situation... as well as the relevant aspects of the social system in which the person appears" (Miles et al., 2014, p. 167), and understanding it is important in explaining phenomena (Johns, 2001; Miles et al., 2014; Mishler, 1979), such as personality's relevance to a given relationship.³³ Finally, actors form many relationships with each other (e.g., *friendship, trust, difficulty*; this is the idea of multiplexity), and these relationships may interact to influence the development of other relationships (Lusher & Robins, 2013). For example, Selden and Goodie (2018) suggest that *negative* relationships between actors may affect and/or be affected by their *positive* ones, and in turn may affect personality's relevance to them. What is more, my review, and theirs (Selden & Goodie, 2018) find that personality's influence on *negative* relationships is a relatively unexplored topic.³⁴ Overall, previous research has not considered how situation, situation strength, and different social relationships interact with each other, and with personality, to help explain social network outcomes.³⁵

E. CURRENT STUDY

The Big Five traits and self-monitoring construct are relevant to social network outcomes. Despite their relevance, however, important questions remain. Now that I have identified some important gaps in extant Big Five and self-monitoring social network research, I introduce my study's research questions.

I can begin to address the first two gaps, related to Big Five measurement and self-monitoring conceptualization respectively, by answering Research Question 1:

³³ For example, certain personality traits may be more relevant in the work-situation than a social one.

³⁴ Of the 30 studies Selden and Goodie (2018) explored, and the 53 I explored, only three considered *negative* relationships.

³⁵ Arguably, just as actor agency could partly explain inconsistent/contradictory results, any one of these factors by themselves or in combination, could as well.

Research Question 1: *What are the effects of self-monitoring and the Big Five personality traits and facets on the development of social relationships?*

The research question is worded broadly, however, it can be broken into sub-questions to address the specific research gaps of each personality construct:

What are the effects of the Big Five personality traits and facets on the development of social relationships?

What are the effects of acquisitive and protective self-monitoring on the development of social relationships?

By answering this question, I offer additional insight into current research by discovering which facets are most relevant and important to social relationships. In answering the second, I provide the first personality-social network examination of the bivariate self-monitoring model, which can both inform previous work, but also guide future research.

Social network theory recognizes that actors are purposive agents and that social relationships involve different motivations and purposes (Robins, 2015). However, current personality-network research has not considered actor agency in how it defines and makes sense of relationships, and if it influences personality's relevance to results. I address this gap by answering Research Question 2:

Research Question 2: *How do subjects explain or make sense of their perceptions and thoughts on forming social ties with others?*

By answering this question, I provide insight into how participants make sense of and explain their social relationships and what characteristics or attributes they look for in their alters. I can compare the answer to this question with that of research question 1 to better understand personality's relevance to an actor's choices. My findings can guide future research by identifying key factors that influence relationship decisions.

Finally, I can begin to explore and understand how factors such as situation and situation strength, social relationships, and personality interact by answering Research Question 3:

Research Question 3: *How do situation and situation strength, social relationships, and personality interact and help explain social network outcomes?*

By answering this question, I gain insight into the role and interaction of each factor and how it interacts with personality to influence outcomes. What is more, I can compare the answer to this question with my other research questions to develop a more comprehensive understanding of how personality influences social relationship development and outcomes.

F. SUMMARY

This chapter defined personality psychology and introduced the Big Five personality traits and self-monitoring constructs, as well as relevant aspects of social network theory and research. Next, it discussed how the two disparate disciplines are conceptually linked. Finally, it discussed the Big Five and self-monitoring's relevance to social network research, discussed important research gaps, and presented the research questions I answer in this study. The next chapter covers how the study is conducted.

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III. METHODS

The purpose of this study is to answer three research questions:

Research Question 1: What are the effects of self-monitoring and the Big Five personality traits and facets on the development of social relationships?

Research Question 2: How do subjects explain or make sense of their perceptions and thoughts on forming social ties with others?

Research Question 3: How do situation and situation strength, social relationships, and personality interact and help explain social network outcomes?

I used a mixed methods comparative case study with convergent core design to answer these questions. The answers, both individually, and combined, achieve my conceptual and practical goals. This chapter explains the study's design, rationale, and epistemological assumptions, and addresses data collection, analysis, synthesis considerations, and validity.

A. RESEARCH DESIGN

The research questions can best be answered through analysis of both quantitative and qualitative data. I chose mixed methods because it allowed me to address gaps in current knowledge and elaborate on existing research by expanding “preexisting conceptual ideas” (Lee et al., 1999, p. 164) to “accurately account for and explain empirical observations” (Fisher & Aguinis, 2017, p. 441). Mixed methods designs are also ideal for social network research (Crossley & Edwards, 2016).

My epistemological worldview is pragmatism, a common framework in mixed methods research (Creswell & Plano Clark, 2018). Pragmatism emphasizes the primary importance of the research question, which is “more important than either the method or the philosophical worldview that underlies the method” (2018, p. 39). Pragmatism values both objective and subjective data sources and knowledge (2018) and provides flexibility in answering quantitative and qualitative research questions and the integration of both data types.

This study's specific design is a mixed methods comparative case study with convergent core design which, provides an approach for collecting and analyzing "different but complementary data" (Creswell & Plano Clark, 2018, p. 68). In the convergent core design, I collect quantitative and qualitative data simultaneously, analyze each type of data separately, and then merge and interpret the results to examine how the two sets converge, diverge, or combine (2018). Social network scholars often analyze social networks as cases, and this approach has proven valuable in social network research (Crossley & Edwards, 2016; Robins, 2015).³⁶ I used a whole network, social network research design (Borgatti et al., 2013; Robins, 2015), and have established the network as the case at the outset of the study, rather than specifying the cases after analyzing the data as is typical in many mixed-methods comparative case studies (Creswell & Plano Clark, 2018). The participants of each class, from each course/case, constitute a network. Figure 1 illustrates the overall research design.

³⁶ "There is no assumption, as there is in traditional statistical research, that the case or cases under consideration are representative...of any wider population" and "no mathematical basis upon which to infer from the case studied to others" (Crossley & Edwards, 2016, para. 4.2).

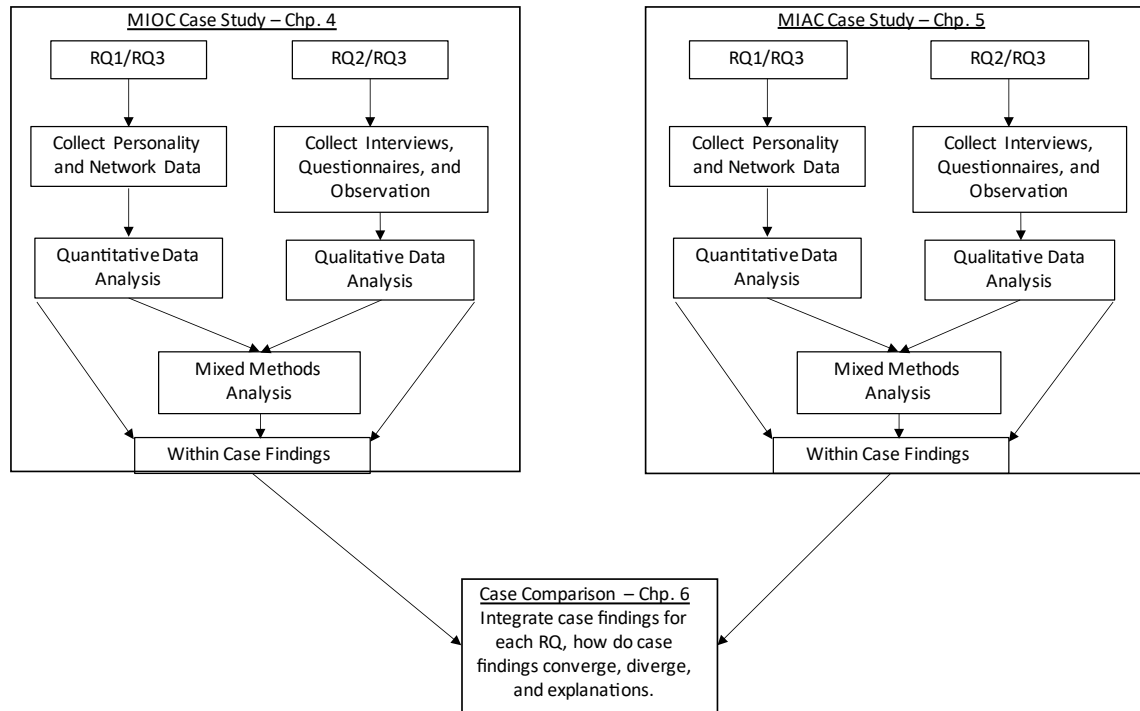


Figure 1. Research Design Overview

B. CASE SELECTION AND DESCRIPTIONS

The two cases are the MAGTF Intelligence Officers Course (MIOC) and the MAGTF Intelligence Analysis Course (MIAC). Due to my study’s practical goal, I wanted to work with military personnel. I chose the research site from which my cases were drawn because of my previous experience at the site as an instructor, and my familiarity with the courses. Further, the research site regularly hosted training courses, providing me ample opportunity to collect data. The cases provided me an opportunity to examine how personality affected the development of social ties and structure in a manner that could achieve my conceptual and practical goals.

1. MIOC

The MAGTF Intelligence Officer Course (MIOC) is a career-level milestone course for Marine Corps intelligence officers that is nine training weeks in length; the course is taught at the Marine Corps Detachment Dam Neck (MARDET Dam Neck) in Virginia Beach, Virginia. The course’s goal is to instruct intelligence officers with entry-level

intelligence military occupational specialties (MOSs) on all disciplines of intelligence to make them capable generalist intelligence officers able to support an O-6 level command (MIOC Memo 1).

The target audience is senior captains, major selects, and junior majors who are at least career-level school (CLS) complete (i.e., professional military education) and have completed at least two tours as intelligence officers (MIOC Memo 1). The typical class, however, usually comprises a mix of MOSs and Marines that are more junior (e.g., senior first lieutenants, junior and mid-level captains who are often not CLS complete) (MIOC Memo 1).

The course's two instructors sought to create a collaborative and open environment (MIOC Memos 1 & 2) and held an off-site guided discussion once per week (typically at a local restaurant) to provide a more social and open atmosphere.

2. MIAC

The MAGTF Intelligence Analysis Course (MIAC) is a career-level milestone course for enlisted Marine Corps intelligence Marines. The course is nine training weeks in length and taught at the Marine Corps Detachment Dam Neck (MARDET Dam Neck) in Virginia Beach, Virginia.

MIAC instructs multi-discipline intelligence analysis to Marines ranging in rank from corporal to gunnery sergeant who have at least one deployment (MIAC Memo 1). The typical class, however, includes Marines with no deployments and an average rank of sergeant, with about one-third coming from supporting establishment billets and the rest from the Fleet Marine Forces (MIAC Memo 1).

The course's two instructors wanted to establish a collaborative and engaging environment, and they emphasized a flattened rank and communication hierarchy and tried to give students as much autonomy to learn as possible (MIAC Memo 2).

3. Participant Recruitment and Case Response Rates

The whole network social network research design required that I introduce the study to the entire class since each class represented a social network. I recruited

participants in each course’s classroom during the first collection event. During initial recruitment, I explained the purpose, goals, and overall study protocols to include the informed consent process. In subsequent collection events, I reaffirmed informed consent before collection. In MIOC, 10 students agreed to participate and remained until the end of collection. In MIAC, 12 students agreed to participate and remained until the end. In both cases, the number of participants was sufficient to conduct a whole network research design. Each case had both male and female participants and, in both cases, multiple MOSs were represented. To protect identities, all participants were identified by a unique code.

I recruited five interview participants from the overall participant pool, for each case, for a total of 10-interview participants. I felt five participants from each case was sufficient to gain a sense of social dynamics in each class. I sought rank diversity in my recruitment of interview subjects to provide a broad set of experiences and potentially enable me to identify rank-related issues or dynamics. Additionally, I ensured my selections represented each case’s workgroups, so that I could keep track of inter-and-intra workgroup dynamics that might impact social network dynamics. Table 1 and 2 summarize participant characteristics for each case.

Table 1. MIOC Participant Characteristics

MIOC Participant Characteristics					
ID	Rank	Workgroup	Previous Relationship	Class Role	Interviewed
M6	Capt	1	M93		No
M10	Capt	1	M47*		Yes
M12	1stLt	1	M33*		Yes
M33	Capt	1	M12*		No
M36	Maj	2		Class Leader	Yes
M45	Capt	2	M93		No
M47	Capt	2	M10*		Yes
M71	Capt	2			No
M86	Capt	1			Yes
M93	Capt	2	M6 & M93	Social Coordinator	No
Average age: 34.7 years (SD: 4.7 years)					
* Assessed to be minor or incidental previous relationship					

Table 2. MIAC Participant Characteristics

MIAC Participant Characteristics					
ID	Rank	Workgroup	Previous Relationship	Class Role	Interviewed
C2	Cpl	1			No
C7	Sgt	2	C30, C76 [^] , C84 ^{**}		Yes
C9	SSgt	1			Yes
C14	Sgt [*]	1	C81, C84 [^]		No
C17	Sgt	2			No
C30	Cpl	1	C7		No
C60	GySgt	1		Class Leader	Yes
C64	Cpl	1			Yes
C76	Sgt	2	C7 [^] , C77, C81		No
C77	Sgt	2	C76		No
C81	Sgt	1	C14, C76, C84		No
C84	SSgt	2	C7 ^{**} , C14 [^] , C81		Yes
Average age: 26.8 years (SD: 4.6 years)					
* C14 promoted from Cpl to Sgt during the course; ** Unreported previous relationship; ^ Non-reciprocated previous relationship					

C. DATA COLLECTION

All collection activities took place at the Marine Corps Detachment Dam Neck, in Virginia Beach, Virginia. Although the nature of my research was unclassified, the research site is a classified facility and required permission to conduct research. I received approval from both the Naval Postgraduate School (NPS) and United States Marine Corps (USMC) Human Research Protection Program Office and IRB.

I am an active duty Marine Corps officer with previous experience at the research site as both an instructor and officer in charge of enlisted training (several years before the commencement of research). I interacted with participants in plainclothes rather than military uniform to avoid undue influence due to rank, as I was higher ranking than nearly all of the research subjects. Despite my attire, participants recognized I was a Marine Corps officer. However, I assured participants that participation was voluntary and that neither I nor the course instructors could compel their participation. I maintained a respectful and non-invasive distance from participants and instructors as they conducted training and I worked with each course's instructors to arrange times to interact with the participants.

My visits corresponded to MIOC’s second, fifth, and eighth training weeks, and MIAC’s third, sixth, and ninth training weeks. Training weeks followed a Monday to Friday schedule (8 AM to 5 PM), and typically, I arrived on Monday, conducted collection Tuesday through Thursday, and departed on Friday. I conducted three trips and collected from each course during the beginning, middle, and end of each course to capture changes in participants’ social networks. Before data collection, I conducted a non-research site visit to discuss protocols with site staff and instructors and test my data collection instruments. Figure 2 depicts the overall collection plan.

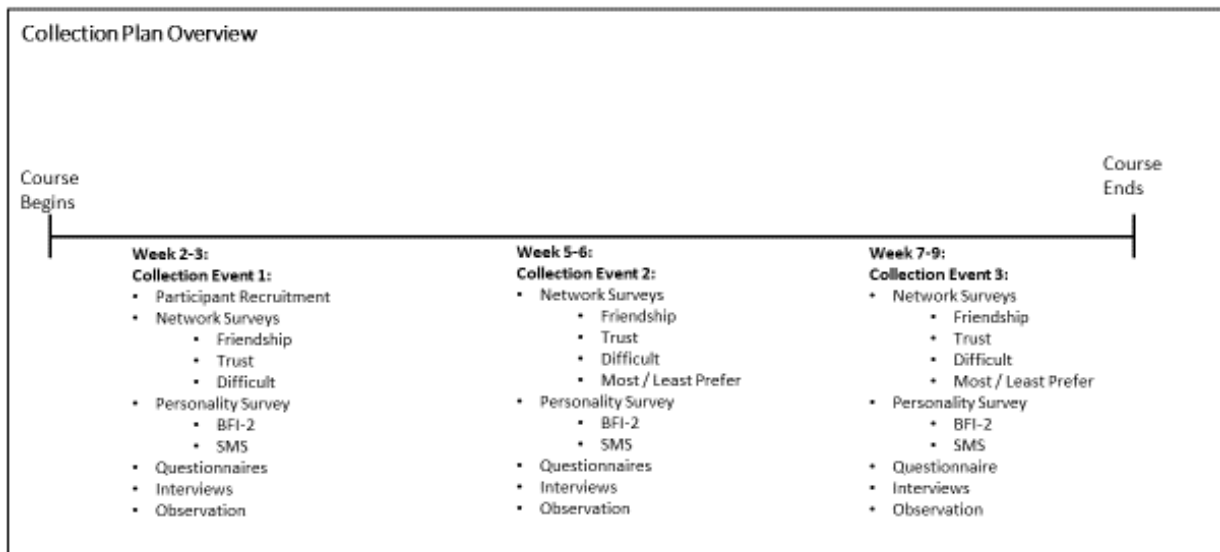


Figure 2. Collection Plan Overview

1. Quantitative Collection

I collected quantitative data via (1) network surveys, to capture social relationships and (2) personality surveys to capture individual personality characteristics.

a. Network Surveys

To collect each participants’ social network data, I administered a social network survey at each collection event. I provided participants a roster of names of their participating classmates and asked if they considered the person to be a friend, someone

they trusted, and/or someone who was difficult or hard to work with. The survey asked participants to either check off (i.e., roster method) or write in the names of classmates who they felt met the criteria for a specific relationship. In the first collection event, on the friendship network roster, the survey asked participants if they had a pre-existing relationship with anyone in the class before the start of the class; this information was used to form the *previous relationships* network.

On the second and third collection events, in addition to the *friendship*, *trust*, and *difficult to work with* networks, the survey asked participants to write in the names of classmates they would most like to work with, in their current or next duty assignment, and why. The survey also asked participants to list the names of classmates they would prefer not to work with again, and why. These data were used to construct the *most prefer to work with* and *least prefer to work with* networks. I constructed each class's *workgroups* network from their assigned workgroups.

The *most prefer to work with* and *least prefer to work with* relationships are unique to this study and addressed my practical goals of correlating specific personality traits to work relationships. I differentiated the *least prefer to work with* relationship from the *difficult to work with* relationship because an actor may find an alter difficult to work with, but want to work with them in the future.³⁷ I collected the *previous relationships* and *workgroups* networks to understand how an actor's previous relationships and/or close work partners confound or influence their selection of alters.

b. Personality Survey

I collected personality data from each participant at each collection event so that it could be compared to their social network data. Participants completed two personality surveys, one corresponding to the Big Five traits and facets and the other to the self-monitoring construct.

³⁷ For example, an actor may find an alter has an annoying habit, but is otherwise an exceptionally hard worker, which the actor may find useful in a future billet. Additionally, an actor may find an alter to be difficult to work with in a particular situation but be willing to work with the person in a different one.

For the Big Five, participants filled out the Big Five Inventory-2 (BFI-2) (Soto & John, 2017), which is a valid and reliable measure of the Big Five, and provides a hierarchical structure (i.e., measures traits and facets, providing both bandwidth and fidelity) and “controls for individual differences in acquiescent responding” (2017, p. 117).

For the self-monitoring constructs, the original 25-item self-monitoring scale (SMS; Snyder, 1974) was used but modified to a 5-point Likert scale (vice a dichotomous, binary scale) per (Wilmot et al., 2017; Wilmot, M. P., personal communication, July 12 & 15, 2019) such that both acquisitive and protective self-monitoring constructs could be derived.

2. Qualitative Collection

I collected qualitative data through open-ended questionnaires, semi-structured interviews (with participants), informal interviews (with instructors), and observation. I wrote analytic memos after each collection day to capture my thoughts, observations, important points from informal interviews, and other pertinent information.

a. Semi-Structured Participant Interviews

I interviewed the same participants during each visit, allowing me to develop rapport and gain a greater depth and breadth of information. All interviews took place outside of the participants’ classroom, in an unclassified space within the facility, and were recorded. I received informed consent before interviews and participants were provided a copy of the interview transcript if desired. I conducted a total of 30 interviews. Interviews typically ranged from 15 to 40 minutes. All participants were asked the same basic questions, although follow-on questions could differ depending on their responses. Broadly, the questions pertained to their social relationships, classmates, and the class/course. I provide a list of interview questions, by collection event, in Appendix B.

b. Informal Instructor Interviews

For instructor interviews, I wanted to elicit an alternate perspective of the class, as well as understand the course’s goals and the overall environment the instructors were trying to create. I did not record these interviews, however, I captured responses in written

memos. In the first interview, I asked about general course information (e.g., the course's purpose, typical student population, and students' thoughts and feelings about the class and students). In the second interview, I asked them to characterize the course, compare it to previous courses, describe each student in the class, and discuss which students they would most and least like to work with in the future and why. I also asked about the course's situation and environment and whether they were trying to provide a weak or strong situation.

c. Researcher Observation

Observations helped me verify participant and instructor statements and gain a sense of how the class interacted and behaved. I noted how participants interacted with each other, where they were seated, how interactive or active they were in each setting (e.g., lesson vs. groupwork), and my observations sometimes drove future interview questions. Observation periods were short and lasted approximately 20 minutes to one hour for a given observation period. All observation events were captured in observation memos.

d. Questionnaires

The purpose of the questionnaires was to elicit qualitative data from all participants that would complement their quantitative data (i.e., network and personality surveys), and my semi-structured interviews. A list of questionnaire questions, by collection event, is in Appendix B.

D. DATA ANALYSIS APPROACH

There are two main outputs from data analysis, case-level analysis, and case comparison.

At the case-level, the organizing principle is the social relationship. The analytic building blocks for each case are quantitative, qualitative, and mixed methods findings that emerge from the analysis of each relationship. During case comparison, I integrated the findings from each case to answer the research questions, specifically noting where the cases converged, diverged, and explaining why, when necessary.

1. Case-Level Analysis

At the case-level, the major analytic steps are the separate analysis of the quantitative and qualitative data, and mixed methods analysis to expand upon or reconcile previous findings. Per Miles et al. (2014), I condensed both sets of data before analysis.

2. Quantitative Analysis

a. Network Data

Data condensation for network data consisted of inputting participant responses from the network surveys into a spreadsheet and then creating adjacency matrices for each network so SNA could be conducted. SNA was conducted using UCINET (Borgatti et al., 2002), a well-known and readily used software program for SNA (Everton, 2012; Robins, 2015). The package was used to create directed and undirected versions of each network, as well as attribute matrices for the personality attributes, and conduct other basic data transformation procedures (e.g., stacking matrices). In-degree, out-degree, and degree centrality, the most common centrality measures in personality-focused social network research, were calculated for each of the directed and undirected networks. Density was calculated for the directed and undirected networks and is displayed in charts in the case study appendices (Appendix C and Appendix D).

To test the significance of correlations, either between networks or between networks and personality attributes, I used the quadratic assignment procedure (QAP) function. Due to the small size of the networks, I adjusted the number of random permutations from the default of 5,000 to 15,000 to better estimate the statistical significance of the findings (Borgatti et al., 2002). For the network centrality-personality correlations, I used each participant's raw personality scores for each trait and facet, for each collection event. I present QAP correlations charts for the networks and network centrality-personality correlations in Appendix C and Appendix D.

To augment QAP correlations, I used a function in UCINET known as ego-alter similarity (EAS) (Borgatti et al., 2002). It provides a measure "of each ego's homophily

with its alters based on a specified attribute” (2002); that is, it is a way to answer whether actors send (out-degree), receive (in-degree), or form relationships (degree centrality) with alters like themselves for a particular attribute. For this study, I calculated EAS metrics to determine the correlations between ego and alter’s personality attributes for the *most prefer to work with* relationships in MIOC only. EAS is not a robust method and requires a dataset with few confounds (e.g., significant correlations between the network of interest and another network) and low density (otherwise selection preferences are difficult to discern), limiting its use to only the MIOC case and *most prefer to work with* network.³⁸

b. Personality Data

I condensed personality data by entering each participant’s response into a spreadsheet and calculating their score. I also calculated Cronbach’s alpha for each personality scale and calculated descriptive statistics for each collection event. I integrated personality data into UCINET for social network analysis by creating an attribute matrix (i.e., actors vs. personality traits) then turning it into a relational quality (i.e., “matrifying” it) using the attribute-to-matrix function so that QAP analysis could be conducted (Borgatti et al., 2013, p. 86).

I calculated the personality scores for the BFI-2 by item aggregation using a 1-to-5 rating scale and reverse scoring when appropriate, per author recommendations (Soto, C. J., personal communication, August 12, 2019). Microsoft Excel was used to calculate the scores for each actor, individually, for each collection event, and then aggregated to produce class level results for each event.

The bivariate and univariate constructs of self-monitoring were calculated from the original 25-item SMS (Snyder, 1974) by following the author’s directions (Wilmot et al., 2017; Wilmot, M. P., personal communication, July 12 & 15, 2019). Microsoft Excel was used to calculate the scores for each actor, individually, for each collection event, and then aggregated to produce class level results for each event.

³⁸ I provide a description and discussion of EAS in Appendix B.

To facilitate mixed methods analysis, the personality scores were standardized (i.e., z-scores) using JMP Pro 15 software. I found standardized scores provided an intuitive way to differentiate participant's scores and were useful in joint displays of quantitative and qualitative data. Standardized scores were calculated for each collection event, and I also calculated an average standardized personality score. The average standardized score is no longer a standard distribution but it provides a convenient summary of how a participant compares to his or her classmates on each personality trait.

c. Descriptive Statistics

The descriptive statistics for the personality measurement instruments for each case are provided in Tables 3 and 4. The BFI-2 and self-monitoring scale had acceptable reliabilities, with a few exceptions, all of which could be attributed to likely respondent error when interpreting an item (e.g., the reliability score increased if an item was removed) rather than coding error, and participant and class averages were consistent across collection events with minor variation.

Table 3. MIOC Personality Descriptive Statistics and Scale Reliabilities

MIOC Personality Traits and Facets Descriptive Statistics									
Personality Traits and Facets:	Time 1			Time 2			Time 3		
	Mean	SD	Cronbach Alpha	Mean	SD	Cronbach Alpha	Mean	SD	Cronbach Alpha
Extraversion	3.42	0.63	0.84	3.52	0.58	0.83	3.47	0.83	0.95
Sociability	3.03	0.89	0.81	3.30	1.05	0.92	3.13	1.13	0.94
Assertiveness	3.55	0.66	0.67	3.55	0.57	0.62	3.53	0.78	0.85
Energy Level	3.68	0.67	0.45	3.70	0.37	-0.78*	3.75	0.79	0.85
Agreeableness	3.51	0.54	0.76	3.59	0.59	0.82	3.55	0.79	0.92
Compassion	3.73	0.78	0.60	3.78	0.69	0.63	3.80	0.81	0.78
Respectfulness	3.95	0.67	0.64	4.05	0.60	0.58	3.85	0.82	0.76
Trust	2.85	0.61	0.53	2.95	0.93	0.85	3.00	1.01	0.91
Conscientiousness	3.92	0.58	0.86	4.03	0.62	0.90	3.93	0.73	0.95
Organization	3.68	0.72	0.76	3.85	0.63	0.77	3.80	0.64	0.74
Productiveness	3.80	0.75	0.72	4.08	0.84	0.85	3.85	0.95	0.94
Responsibility	4.28	0.51	0.56	4.18	0.64	0.72	4.13	0.73	0.85
Negative Emotionality	2.52	0.87	0.93	2.43	0.66	0.85	2.39	0.79	0.93
Anxiety	3.00	0.93	0.82	2.88	0.88	0.72	2.95	1.01	0.84
Depression	2.03	0.80	0.88	2.00	0.78	0.89	2.10	0.75	0.84
Emotional Volatility	2.53	1.08	0.83	2.43	0.72	0.57	2.13	0.83	0.89
Open-Mindedness	3.66	0.68	0.85	3.73	0.51	0.73	3.73	0.54	0.79
Intellectual Curiosity	4.00	0.80	0.81	4.00	0.60	0.73	4.00	0.59	0.75
Aesthetic Sensitivity	3.20	1.13	0.84	3.28	0.98	0.76	3.25	1.07	0.88
Creative Imagination	3.78	0.72	0.81	3.93	0.76	0.86	3.93	0.74	0.93
Acquisitive Self-Monitoring	3.12	0.61	0.53	3.00	0.60	0.32	2.95	0.71	0.69
Protective Self-Monitoring	2.63	0.78	0.79	2.71	0.73	0.80	2.60	0.71	0.89
Traditional Self-Monitoring	2.83	0.35	0.62	2.92	0.25	0.15	2.84	0.26	0.37

* Negative value is not due to coding error but rather respondent error corresponding to item 11 of the BFI-2 "Rarely feels excited or eager" (Soto & John, 2017). Dropping item 11 raises score to 0.66.

Table 4. MIAC Personality Descriptive Statistics and Scale Reliabilities

MIAC Personality Traits and Facets Descriptive Statistics									
Personality Traits and Facets:	Time 1			Time 2			Time 3		
	Mean	SD	Cronbach Alpha	Mean	SD	Cronbach Alpha	Mean	SD	Cronbach Alpha
Extraversion	3.55	0.77	0.88	3.59	0.71	0.86	3.52	0.78	0.90
Sociability	3.31	1.16	0.91	3.48	1.01	0.81	3.44	0.98	0.85
Assertiveness	3.52	0.96	0.85	3.42	0.97	0.91	3.50	0.89	0.86
Energy Level	3.81	0.64	0.47	3.88	0.63	0.48	3.63	0.82	0.72
Agreeableness	3.81	0.64	0.85	3.94	0.61	0.87	3.85	0.64	0.84
Compassion	4.00	0.62	0.44	4.10	0.48	0.26	3.85	0.64	0.35
Respectfulness	4.13	0.69	0.72	4.31	0.69	0.76	4.19	0.78	0.83
Trust	3.31	0.89	0.76	3.42	0.87	0.80	3.50	0.89	0.81
Conscientiousness	3.65	0.47	0.74	3.62	0.63	0.88	3.72	0.66	0.88
Organization	3.23	0.68	0.65	3.29	0.71	0.76	3.33	0.79	0.67
Productiveness	3.73	0.65	0.49	3.79	0.69	0.69	3.85	0.79	0.77
Responsibility	3.98	0.48	0.56	3.77	0.75	0.78	3.96	0.68	0.84
Negative Emotionality	2.13	0.51	0.81	2.08	0.65	0.89	2.03	0.59	0.88
Anxiety	2.44	0.66	0.52	2.31	0.75	0.62	2.33	0.72	0.75
Depression	2.10	0.48	0.24	2.02	0.64	0.69	1.88	0.53	0.58
Emotional Volatility	1.85	0.65	0.80	1.90	0.79	0.92	1.88	0.79	0.90
Open-Mindedness	3.47	0.52	0.50	3.52	0.62	0.75	3.51	0.41	0.48
Intellectual Curiosity	3.98	0.70	0.39	3.96	0.93	0.90	3.90	0.63	0.58
Aesthetic Sensitivity	2.88	1.16	0.83	2.94	1.10	0.81	3.00	1.02	0.73
Creative Imagination	3.54	0.92	0.82	3.67	1.05	0.92	3.65	0.83	0.84
Acquisitive Self-Monitoring	2.90	0.93	0.82	2.89	0.81	0.72	2.81	0.69	0.71
Protective Self-Monitoring	2.76	0.82	0.82	2.80	0.78	0.80	2.75	0.57	0.57
Traditional Self-Monitoring	2.75	0.36	0.58	2.80	0.42	0.72	2.83	0.24	0.25

3. Qualitative Analysis

My analysis of the qualitative data was iterative and followed the steps outlined in Miles et al., (2014): data condensation, data display, and conclusion drawing/verification. It is important to note, however, that because I conducted quantitative analysis first, it influenced qualitative analysis. Specifically, the quantitative findings often drove qualitative analysis in terms of its focus and questions (e.g., “does the data converge, diverge, expand upon what was found?”).

a. Questionnaire and Semi-Structured Interview Data

The complementary nature of the questionnaire and interview questions allowed me to conduct data condensation and first cycle coding (Miles et al., 2014) concurrently, and I deduced first cycle codes directly from those questions. As I read each questionnaire or interview answer, I placed responses into an actor by question/topic matrix, for each

collection event. For questionnaire answers, I copied participant’s response verbatim. Depending on the length of a participant’s interview answer, I either copied their answer verbatim or quoted specific parts. Although I coded the two cases separately, because I asked the same set of questions, I had the same topic codes. Table 5 provides the first cycle topic codes for each collection event,³⁹ and Table 6 provides an example of how I coded responses for two topic codes for the first collection event of the MIAC case.

Table 5. First Cycle Codes

First Cycle Codes per Collection Event	
	Topic Codes
Collection Event 1	<ul style="list-style-type: none"> • What is a friend to you?/What do you look for in a friend? • How do you describe trust/decide who to (not) trust? • Describe the type of people you find difficult to work with • Differentiating concepts - friendship/trust/difficult • How they applied relationship criteria to class • Self-Description
Collection Event 2	<ul style="list-style-type: none"> • Most like to work with again? • Prefer not to work with again? • Changes to relationships (note which one) • Characterization of Class • Description of others
Collection Event 3	<ul style="list-style-type: none"> • Most like to work with again? • Prefer not to work with again? • Changes to relationships (note which one) • Description of class context and effects • Relationships with others

³⁹ Since I did not interview all participants, I did not have a response to all topics, for all participants.

Table 6. Example Actor by Topic Coding Matrix

Example Actor by Topic Coding Matrix			
Actor	What is a friend to you? / What do you look for in a friend?	How do you describe trust / decide who to (not) trust?	...
C7	<p><u>Questionnaire:</u></p> <ul style="list-style-type: none"> Someone you can interact with who is willing to talk to you about a range of topics I look for a person willing to share their time and future experiences with me. <p><u>Interview:</u></p> <ul style="list-style-type: none"> "Friendship is like anybody you can have an engaging conversation with, so anybody you can go up to. You have a general sense of who they are, at least in the sense that you can engage with them or maybe have a relationship with them for however long." 	<p><u>Questionnaire:</u></p> <ul style="list-style-type: none"> When you can put faith in others to complete something Prior displays of the ability to complete tasks or by word of mouth by other close friends <p><u>Interview:</u></p> <ul style="list-style-type: none"> "Trust is people who you've previously worked with and you've seen or they've demonstrated that they can be given a task and follow through, or you can depend on them, say if you need them to tell somebody something and they'll do that, or they'll keep a secret. Or you hear from others as well" "It's a gradual thing" 	...
C9	<p><u>Questionnaire:</u></p> <ul style="list-style-type: none"> Someone easy to communicate with / easily friendly with, trustworthy, truthful <p><u>Interview:</u></p> <ul style="list-style-type: none"> "... if we can have a conversation, whether we agree, disagree on different topics, if we're willing to have a good civil conversation, laugh, joke about things, then absolutely I would consider them a friend." 	<p><u>Questionnaire:</u></p> <ul style="list-style-type: none"> Will keep personal discussion quiet, be upfront with any truth / hard truth, not steal Instinct <p><u>Interview:</u></p> <p>Not discussed.</p>	...
⋮	⋮	⋮	⋮

From the actor/topic matrices, I created specific data displays for each relationship, listed in Table 7, with an example in Table 8.⁴⁰ Depending on the relationship and topic (e.g., situation and class characterization) and findings from the quantitative analysis, I used the displays for different purposes, such as for comparison, to infer second cycle codes, or for quotes. For the *friendship* and *trust* relationships, I compared how participants defined friendship and trust, with how they actually applied it in their nominations. For the *most prefer to work with* relationship, I inferred second cycle codes (Miles et al., 2014) by categorizing how participants described their nominees and why they chose them. For example, a category called “work focused” emerged to describe a set of participants who

⁴⁰ Since I was doing a case comparison, I analyzed the two cases as similarly as possible.

were nominated because of their work ethic and engagement in academic activities.⁴¹ For the *negative* relationships, I developed second cycle codes to categorize how participants defined and described their hypothetical negative alter. I also compared how participants actually described their *negative* nominees to their hypothetical negative alter. I conducted additional analysis for each case based on these findings.

Table 7. Refined Topic Data Displays

Refined Topic Data Displays
<ul style="list-style-type: none"> • Friendship/Trust Definition by Participant • Friendship/Trust Discussion of Nominations (Interview participants only) • Most Prefer to Work With Relationship Nominations and Changes by Participant • Definition of Difficult to Work With by Participant • Negative Relationships Discussion of Nominations (Interview participants only) • Context/Characterization Discussion (Interview participants only)

⁴¹ I discuss all the second cycle codes in each case study.

Table 8. Example Relationship Chart

Example Friendship and Trust Definition Chart		
Actor	Friendship Defined	Trust Defined
C2	<ul style="list-style-type: none"> • A person that is always there in your good or bad times. They will tell you the truth always. Someone that you'll invite to your house and meet your family. • Loyalty, honesty, trustworthy; someone that is able to always be there and able to work through arguments that you have with them 	<ul style="list-style-type: none"> • The ability to believe anything they say without hesitation and knowing that would never purposely or unwillingly harm you physically / mentally / emotionally • Based off their actions that you witness personally, not by whatever everyone else is saying
C7	<ul style="list-style-type: none"> • "Friendship is like anybody you can have an engaging conversation with, so anybody you can go up to. You have a general sense of who they are, at least in the sense that you can engage with them or maybe have a relationship with them for however long." 	<ul style="list-style-type: none"> • "Trust is people who you've previously worked with and you've seen or they've demonstrated that they can be given a task and follow through, or you can depend on them, say if you need them to tell somebody something and they'll do that, or they'll keep a secret. Or you hear from others as well" • "It's a gradual thing"
⋮	⋮	⋮

b. Informal Interview and Observation Data

I used my observation and instructor interview memos, in addition to semi-structured interview quotes, to provide a description of each case's situation and an assessment of its situation strength.

4. Mixed Methods Analysis

I used mixed methods to expand or reconcile divergent findings from my quantitative and qualitative analysis, for each relationship. For the *friendship* and *trust* relationships, I compared participants' actual nominations with how they defined each concept, and with their standardized personality scores, to see if nominations were consistent with their definition, personality score, or both, for each relationship. For the *most prefer to work with* relationships, I created a joint display⁴² to compare the quantitative and qualitative data to reconcile divergent findings in MIOC and expand

⁴² I provide the joint displays in each case.

findings in MIAC. For the *negative* relationships, I created a joint display to compare the quantitative and qualitative data to expand on both case's findings.

Throughout analysis, I also identified other phenomena that are important to understanding personality's impact on social networks. For example, social network processes and mechanisms such as transitivity and social influence, or perceptions, may exert influence independent of an actor's attributes, and understanding how, when, and why they are present is critical to interpreting results (e.g., centrality-personality correlations may be spurious). These findings are methodologically important because failing to account for them undermines the validity of the quantitative findings. When such non-personality-specific processes were located, I identified and discussed them in each case's findings.

5. Case-Level Findings

The output from the case analysis is a detailed written case study for each case, which contains the quantitative, qualitative, and mixed methods findings, and supporting charts, figures, and summaries for each relationship. I use this detailed analysis to develop a summary of findings for each case, which are provided in Chapters 4 and 5.

I organize each summary the same. First, I provide an overview of the case setting, to include a description of the situation and how participants felt it impacted their behavior and ability to develop relationships. I also discuss how instructors and participants characterized how their class approached the course, and I discuss how that affected my analysis of relationships and subsequent findings. Last, I provide a summary of the quantitative, qualitative, and mixed methods findings for each relationship.

6. Case Comparison

In the case comparison, for each research question, I discuss how the findings for each case converge and diverge and provide explanations when the findings diverge.

E. VALIDITY

The discussion of validity in mixed methods research, what it is, and whether it is even the appropriate term for a mixed methods study, is subject to debate but recommended nonetheless (Creswell & Plano Clark, 2018). I have chosen to list validity threats for each data type, with the mixed methods threats guided by principles outlined in (2018) and adapted to this study’s design. Many of these validity considerations are addressed throughout the methodology section, however, they are consolidated and presented in Table 9.

Table 9. Validity Threats and How Addressed

Validity	
Quantitative Validity	
Validity Threat	How Threat Addressed
Data collection instruments for both personality and social network data.	<ul style="list-style-type: none"> • Use of peer reviewed and validated personality measurement instruments (i.e., BFI-2 & SMS). • Social network data collected via roster method and open-ended questionnaire, both commonly used and considered to be reliable and valid methods to collect social network data. • Survey instruments piloted prior to research.
Data analysis procedures for both personality and social network data.	<ul style="list-style-type: none"> • Personality scores calculated according to literature and author recommendations. • Reliability of personality measurement instruments reported and acceptable (i.e., Chart 2 & 3); with issues noted and addressed in analysis. • Valid and well-known social network analysis software used (i.e., UCINET). • Analysis techniques and procedures are well-known and common - QAP permutations increased to 15000 iterations to account for small network size and increase validity of findings determined to be significant. • All QAP correlations are reported, regardless of significance. Actor centrality reported in appendix. • Ego-alter similarity procedures and potential issues discussed in appendix.
Network boundary issues.	<ul style="list-style-type: none"> • Networks are naturally bounded by each course (i.e., MIOC & MIAC).
External Validity / Generalizability of quantitative results - specifically, centrality-personality correlations.	<ul style="list-style-type: none"> • Use of QAP and EAS (as noted) and multiple cases; results compared to literature, but also augmented by qualitative and quantitative analysis.
Qualitative Validity	
Validity Threat	How Threat Addressed
Researcher Bias and Reactivity (i.e., identity as Marine and experience in the research setting and status compared to research subjects) leading to alternative explanations and interpretations (i.e., how will we know that the conclusions are valid?).	<ul style="list-style-type: none"> • Research is intensive, taking place over weeks with multiple collection trips which provides multiple observation and interview opportunities. • Rich data collection as a result of interviews, questionnaires, and observation, to include use of memos. • Triangulation through the use of multiple qualitative collection strategies, but also through the collection of quantitative data. • Audit of analysis by dissertation committee (e.g., data displays and detailed written case study). • Reported disconfirming or limited evidence (e.g., how lack of descriptive details from participants limits extent of analysis for certain findings). • Case comparison to ensure best and most complete explanation is provided.

Mixed Methods Validity	
Validity Threat	How Threat Addressed
Not using parallel concepts in data collection for both databases.	<ul style="list-style-type: none"> • Parallel concepts and questions used in collecting data (e.g., friendship network and friendship interview and questionnaire questions).
Unequal quantitative and qualitative sample sizes.	<ul style="list-style-type: none"> • Whole network social network design ensured that all participants were collected quantitatively and qualitatively. • Interviews had fewer participants in order to develop in-depth understanding from a rank diverse representation of each case.
Keeping results from the quantitative and qualitative databases separate.	<ul style="list-style-type: none"> • Used convergent data analysis strategy of joint displays and comparison of findings.
Failing to resolve disconfirming results.	<ul style="list-style-type: none"> • Disconfirming results sought out, reported, and discussed explicitly in findings.
Not defining cases adequately.	<ul style="list-style-type: none"> • Use of whole network social network design acted to pre-select and bound cases.
Failing to articulate the cases and rationale for them.	<ul style="list-style-type: none"> • Cases selected based on resource and time constraints, instructor familiarity with setting and access, and practical research goals.
Reporting cases based on either quantitative or qualitative results but not on integration of results.	<ul style="list-style-type: none"> • Used three research questions so that the quantitative and qualitative data had to be merged for each case.
Failing to make meaningful cross-case comparison.	<ul style="list-style-type: none"> • Cross-case analysis integrated the quantitative, qualitative, and integrated data of each case and is reported and used to justify contributions to theory.

F. SUMMARY

This chapter provided an overview of the research design used in this study. I discussed the rationale, epistemological background, and justification for the design. I discussed case details, the researcher-participant relationship, and my recruitment of participants. Next, I discussed how I conducted quantitative, qualitative, and mixed methods collection and analysis. Finally, threats to validity and how they were addressed were presented in Table 9.

IV. MIOC CASE STUDY FINDINGS

In this chapter, I provide a summary of the findings from the MIOC case study. I begin by discussing the case's overall situation and situation strength. This discussion is important because it highlights how both participants and instructors characterized the class and their approach to it, which in turn shaped my later interpretation of social relationships. After discussing the situation, I present a summary of my findings for the social relationships—*friendship*, *trust*, *most prefer to work with*, and *negative* relationships.⁴³ For each relationship, I first present the quantitative findings, followed by the qualitative, and then the mixed methods.

I present all quantitative summary charts and additional details, as needed, in Appendix C, and occasionally refer the reader to them.

A. SITUATION AND SITUATION STRENGTH

Both instructor and participant interviews corroborated that the course presented a weak situation in which participants' behavior and ability to express their personality were relatively unconstrained. The course instructors' goal of fostering a weak situation to facilitate collaboration and learning (MIOC Memos, 1 & 2) was substantiated by participant interviews. For example, the junior ranking participant noted, "So, it was actually encouraged to be yourself... there was a joke that I was an honorary staff officer as a lieutenant, so they made it a point to say relax" (M12, Time 3 Interview). Similarly, "I think you could be yourself more here at MIOC than you can in your home unit. We don't have Marines under us, just a peer group around us, so we can kind of joke around and have more of a good time... you're surrounded by a peer group" (M47, Time 3 Interview).

In turn, the weak situation seemed to lead to a more socially cohesive environment among the participants. As noted, instructors desired a collegial and open environment

⁴³ I found friendship and trust to be highly interrelated and discuss the findings together. Similarly, participants approached the *difficult to work with* and *least prefer to work with again* relationships nearly the same, for simplicity I refer to them as the *negative* relationships. However, in Appendix C, I present the quantitative finding's as two separate relationships.

(MIOC Memos, 1 & 2) and rank structure was minimally observed. Several participants noted how the situation made it easier to be friendly and make friends: “I think it’s very easy to be friendly in this environment” (M10, Time 3 Interview); “I think it’s easier to make friends here, actually” (M36, Time 3 Interview); finally, “This class just clicked right off the bat so, it’s cohesive, is a good word” (M12, Time 2 Interview).⁴⁴ Further, the class leader also deemphasized rank to further develop a cohesive environment: “But what I tried to prevent from happening is the instructors are Majors and I’m a Major and I don’t want to get put kind of in that pool. I don’t want to get treated in that type of pool. I’m just as much of a student as everybody else” (M36, Time 3 Interview).

Even with a socially cohesive and weak situation, however, participants, for the most part, remained focused on academics and were professional. For example, instructors described the class as “quality” and “professional” adding that they seemed to “get it” when it came to the material (MIOC Memo, 2). Similarly, I observed participants as attentive and engaging with guest speakers (MIOC Observation Memo, 3) and in guided discussions and class activities (MIOC Observation Memos, 1 & 2).

Overall, the effect of the weak situation and cohesive environment was most noticeable on the *trust* and *friendship* networks. However, as I discuss, participants’ approaches to work-related tasks and assignments differed, and how participants approached work and academics impacted the development of *the most prefer to work with* relationships and subsequently the *negative* relationships as well.

B. TRUST AND FRIENDSHIP RELATIONSHIP NETWORKS SUMMARY OF FINDINGS

1. Quantitative Summary

The most consistent and statistically significant finding to emerge from the quantitative analysis was that the “trust” facet was both highly and significantly correlated to out-degree and degree centrality across all three collection events for the *trust* network.

⁴⁴ Interviews revealed that participants felt the lack of competition compared to their normal working environment (e.g., no observed fitness reports) and a class full of peers were particularly important factors in developing cohesion.

The slight drop in the “trust” facet’s significance makes sense, since as the course progressed, it is expected that more participants would nominate alters to their *trust* network, thus lowering its effect. Of all the relationships I analyzed for MIOC, this was my most robust and consistent finding. Table 10 provides the QAP correlation results for the “trust” facet in the *trust* network for out-degree and degree centrality.

Table 10. MIOC Trust Facet Correlations to the Trust Network

MIOC Trust Network Centrality - Personality Correlations:						
Facet	Out-Degree			Degree		
	T1	T2	T3	T1	T2	T3
Trust	0.792***	0.616**	0.582**	0.811***	0.680**	0.696**
p-value: < .1 *; < .05 **; < .01 ***						

For the *friendship* relationship network, however, my quantitative analyses were obscured by a combination of the network’s small size (n = 10) and its high density, and I needed to employ both qualitative and mixed methods analysis to derive further insight.⁴⁵ However, I found both extraversion and its facets of “sociability” and “assertiveness” were at times weakly statistically significant to out-degree and degree centrality in the *friendship* network. Although the findings are not consistently and statistically robust, they are theoretically supportable. That is, in the early part of the course, it makes sense that an assertive and sociable participant would nominate more alters to their *friendship* network. As the course progressed, however, and more participants become friends, its significance dropped. Since two of extraversion’s three facets are positively correlated, it makes sense that the extraversion trait was weakly significant as well. Finally, the degree centrality correlations suggest that individuals scoring highly in extraversion and the facets “sociability” and “assertiveness” tend to nominate each other to their *friendship* networks. Table 11 provides a summary of the QAP correlation results.

⁴⁵ High network densities make it difficult to discern whether a correlation between personality and centrality is spurious or genuine. Analysis of small networks are also vulnerable to confounds from other relationships and unconditional ties (i.e., when a participant “yay” or “nay” says and sends ties to everyone or no one) and both can have an outsized effect on results.

Table 11. MIOC Extraversion and Facets Correlation to the Friendship Network

MIOC Friendship Network Centrality - Personality Correlations:						
Trait and Facets	Out-Degree			Degree		
	T1	T2	T3	T1	T2	T3
Extraversion	0.492*	0.136	0.377	0.595**	-0.024	0.530*
Sociability	0.410	0.094	0.542*	0.467*	-0.087	0.636**
Assertiveness	0.673**	0.391	0.329	0.755***	0.335	0.612**
p-value: <.1 *; <.05 **; <.01 ***						

2. Qualitative Summary

Participants defined trust and friendship as intertwined concepts. Specifically, trust was often a requirement for friendship, although participants indicated that someone could be trusted without being a friend. I found that participants' nominations of alters to their *trust* and *friendship* networks tended to deviate from their written definitions. That is, most participants defined trust as being earned over time and experience, but the high densities of both the *trust* and *friendship* networks, as well as participants' comments, suggested otherwise. Participants explained that they readily trusted classmates because they were Marine officers. For example, one participant noted "Undifferentiated trust in everyone here as Marine Officers" (M10, Time 1 Interview). Another explained, "I mean, we're all Marine commissioned officers, so we've kind of been vetted as trustworthy individuals anyway" (M36, Time 1 Interview). Participants recognized that there were different levels of trust and friendship and that nominating someone did not imply a deep or meaningful relationship. However, some participants were reticent to nominate alters to their *friendship* and/or *trust* networks and instead seemed to strictly follow their definition, that trust and friendship develop only over time.

3. Mixed Methods Summary

I integrated mixed methods analysis to help better understand the quantitative and qualitative results, focusing on clarifying the influences of situation, personality, and other relationships on the development of the *friendship* and *trust* networks. Specifically, since participants generally agreed that the weak and cohesive situation made it easier to be

friendly and make friends, I wanted to explore some of the specific factors involved. I found that proximity and close interaction, such as that provided by workgroups, was important in being nominated to *friendship* networks. Specifically, the quantitative data suggested *workgroups* were significantly correlated with *friendship* relationships (especially at time 3) and my interview data corroborated this; for example, one participant explained:

I think the amount of time with them [explains their nomination to *trust* and *friendship* networks]. So, because the majority, I think all but one, of those individuals, we're in this same group in class. So, I think one is the amount of time we've spent together for group projects and stuff. (M47, Time 3 Interview)

The *workgroups* network's influence was strongest in workgroup 2, and their *friendship* clique likely impacted personality-centrality correlations. That is, all workgroup 2 participants had, by time 3, nominated each other to their *friendship* networks.

I also examined how participants defined trust and friendship and compared it to their standardized personality scores (the traits and facets of agreeableness for trust and extraversion for friendship), and their out-degree centrality scores over time (i.e., how many *trust* or *friendship* nominations they sent).⁴⁶ I found that for the *friendship* relationship, participants' definitions, out-degree centrality, and association with personality varied more than it did for the *trust* relationships; however, how participants nominated alters to both networks were generally consistent with their measured personality scores. The implication is that friendship was a more diversely defined and applied concept than trust, however, participants' out-degree centrality still corresponded to their extraversion scores (as did trust with agreeableness). This analysis strengthened my confidence in the quantitative analysis's results. Specifically, it suggested that the "trust" facet's statistically significant correlation with the *trust* network's out-degree and degree centrality was likely stronger than measured. That is, some participants nominated

⁴⁶ Because I had each participant's definition of friendship and trust, interview data, who they nominated to each relationship and when, and their personality data, I could compare the data to check consistency between definition, personality, and nominations. I found this helpful in ruling out which correlations were likely spurious and/or coincidental and which were meaningful. I explain my approach in Appendix C.

alters to their *trust* network despite their low trust-facet score (which, for example, I found was due to situation and alters' identity as Marines in one case, and "yay" saying in another). The analysis provided additional support to my earlier quantitative findings that both extraversion and its facets of "assertiveness" and "sociability" were legitimately significantly correlated with out-degree and degree centrality *friendship* relationships.

C. MOST PREFER TO WORK WITH RELATIONSHIP NETWORK SUMMARY OF FINDINGS

1. Quantitative Summary

The *most prefer to work with* network's personality-centrality correlations were inconsistent due to confounding and unconditional nominations.⁴⁷ Both the *trust*⁴⁸ and *friendship* networks were significantly correlated with the *most prefer to work with* network, but the *workgroups* network was not.⁴⁹ I used ego alter similarity (EAS) analysis⁵⁰ to find that participants generally nominated alters to their *most prefer to work with* networks who were similar to themselves in the conscientiousness trait, but dissimilar in the open-mindedness trait. I also found that participants nominated alters who scored below average in extraversion and conscientiousness, but above average in agreeableness, open-mindedness, negative emotionality, and acquisitive and protective self-monitoring. The EAS results corresponded to the personality-centrality correlations, however, because EAS is not a statistically robust method, and because the (QAP) personality-centrality correlations were confounded and non-significant, my quantitative findings are limited.

However, because participants nominated fewer alters to their *most prefer to work with* network at time 3 than time 2, and because the *most prefer to work with* network was sparser than that of *friendship* and *trust* networks, I assessed participants had selection

⁴⁷ Participants sent significantly more ties at time 2 than time 3, which made it difficult to find consistency among the correlations.

⁴⁸ I found that previous nomination to the *trust* network was likely more important than that of the *friendship* network in getting nominated to the *most prefer to work with* network.

⁴⁹ The *workgroups* network is likely under correlated because of unconditional ties. When I considered each participant's ties, about 60% are sent to one's workgroup.

⁵⁰ Reference Appendix B for the procedures. Summary tables are in Appendix C.

criteria in mind for their nominations. I used qualitative analysis, described in the next section, to provide further insight.

2. Qualitative Summary

In qualitative analysis, I focused on trying to understand why participants selected alters to their *most prefer to work with* network and what characteristics influenced their nominations. I found that participants nominated alters based on criteria that fell within three categories, which I named, “work-focused,” “interpersonal,” and “mixed.” Four participants nominated alters based on the “work-focused” criteria category, and I found that they usually nominated each other. Participants selecting based on “work-focused” criteria used terms such as “professional, knowledgeable, team player,” “hard-working, takes initiative, easy-going,” and “action-oriented, intellectually proficient problem solver” to describe their nominated alters. One participant explained their nominations:

But those three... when you're talking to them or when you're like trying to argue out some idea that you both had, they are listening to you and responding to the things that you're saying to them. Right. Whereas other people are kind of just like talking past each other or they'll ask a question cause they think it's, you know, I need to ask three questions a day to like hit the mark for participation or something like that. (M10 nominations to the *most prefer to work with* network, Time 2 Interview)

Participants' descriptions suggested a preference for individuals scoring highly in conscientiousness. This finding is at odds with the quantitative findings and the mixed-methods analysis described in the following section reconciled these findings.

Two participants nominated alters based on the “interpersonal” criteria category, and both nominated each other, as well as other alters. One participant described their nominated alters as providing comfort, for example “I just feel comfortable with [nominee]... generally, if I don't want to hang out with you after work, then I probably am not enjoying my day working with you very much” (M86 nominations to the *most prefer to work with* network, Time 2 Interview). The other participant described nominated alters as socially involved and engaging, explaining:

So, all of them, both, they applied the work and social life aspect of being in class and just being a Marine. So they're just always engaging...They

were more inquisitive about what's going on, asking about weekend plans, whether it's a social during the weekend, they're like more of the driving forces. (M12 describing nominated alters, Time 3 Interview)

The descriptions suggested a preference for alters scoring highly in agreeableness, who provided a sense of social closeness, cohesiveness, and comfort. This finding is consistent with the quantitative findings.

Two participants nominated alters based on the "mixed" criteria category.⁵¹ Their descriptions were a mix of the "work-focused" and "interpersonal" categories. Unfortunately, I did not interview either individual from the "mixed" category.

Although I categorized the participants by their selection criteria, the differences between the criteria categories were likely based on their differing approaches to situations in the course. For example, the four participants in the "work-focused" category took the classwork and academic component of the course seriously and in a work-related situation or relationship, alters displaying these characteristics were their preferred work partners. For the two participants in the "interpersonal" category, however, in the work-related situation, they selected alters whom they believed were sociable and agreeable. However, neither category's nominations are mutually exclusive, participants in the "work-focused" category enjoyed agreeable and sociable alters, just as participants in the "interpersonal" category appreciated hard working alters. Ultimately, what differed between the categories was how these characteristics were prioritized in their nominations of alters to the *most prefer to work with* relationship.

Overall, my qualitative findings for the *most prefer to work with* network highlight the importance of understanding how participants approach a situation and how it affects the choices they make in nominating alters. For example, in the *friendship* and *trust* networks, participants noted it was easy to develop relationships, and the high density of both relationships suggests participants did not have a specific criterion they were looking for in alters. For the *most prefer to work with* network, however, participants approached

⁵¹ The final two participants sent unconditional ties at time 2 and time 3 and I could not classify them into a category.

the work/academic situation and relationship with different priorities, which in turn affected the characteristics they sought in alters.

3. Mixed Methods Summary

The mixed methods analysis reconciled and expanded upon the quantitative and qualitative findings. I listed how participants described their nominated alters, associated those descriptions with the Big Five personality traits and facets, and compared the associations to each alter's standardized personality scores.⁵² Table 12 summarizes my analysis.

⁵² I explain this in more detail in Appendix C. M6 and M33 were not included in analysis because they sent unconditional ties.

Table 12. MIOC Most Prefer to Work with Network Descriptions to Standardized Score Comparison

MIOC Most Prefer Description to Standardized Score Comparison											
Ego	How they describe alter(s)	Associated Traits (facets)	Average Z-Scores for Alter							Discussion / Analysis	
			Alter	E	A	C	N	O	ASM		PSM
M10	<ul style="list-style-type: none"> M6, M47, and M93: articulate, listen to others, friendly, work hard, engaged and not pretentious 	<ul style="list-style-type: none"> Agreeableness (respectfulness) Conscientiousness (productiveness / responsibility) 	M6	0.148	0.099	-0.469	0.900	0.035	0.119	1.046	<ul style="list-style-type: none"> All are agreeable, but only M93 is above average in conscientiousness
M12	<ul style="list-style-type: none"> M36, M45, M86, M93 - Inclusive and drive cohesion – more personable (i.e., engaging socially) 	<ul style="list-style-type: none"> Extraversion (sociability) Agreeableness 	M93	1.273	1.141	1.218	-0.374	-1.756	-1.048	-0.367	<ul style="list-style-type: none"> Generally accurate except for conscientiousness Mix for extraversion - only M93 is high in sociability; all are above average for agreeableness Agreeableness may be better descriptor of what M12 is describing
M36	<ul style="list-style-type: none"> M10: Outside box thinker, professional approach, action oriented, team player M45: Hard working, initiative, easy going M47: Action oriented, focused, team player, pragmatic 	<ul style="list-style-type: none"> M10: Open-minded, conscientiousness, agreeableness M45: Conscientiousness, agreeable M47: Conscientiousness, agreeableness, low open-mindedness 	M10	-0.752	-0.930	-0.677	0.070	0.680	-0.132	1.136	<ul style="list-style-type: none"> M10: above average open-mindedness; below average agreeableness, conscientiousness, above average PSM M45: High conscientiousness, above average agreeable M47: below average conscientiousness; average agreeableness, below average open-mindedness, high PSM PSM may be important to team player aspect Difficult to determine if "action oriented" corresponds with conscientiousness, extraversion (energy level), or both
M45	<ul style="list-style-type: none"> M6, M47, M93: Easy to talk to and work with, task oriented, trust worthy 	<ul style="list-style-type: none"> (Sociability) and (trust) Agreeableness Conscientiousness 	M6	0.148	0.099	-0.469	0.900	0.035	0.119	1.046	<ul style="list-style-type: none"> All are agreeable, but only M93 is above average in conscientiousness M47 below average on trust facet; average agreeableness M45 may be important to "talk to / work with" PSM may be important to "talk to / work with"
M47	<ul style="list-style-type: none"> M36: intelligent, hard-working, and easy going; humble M45: hard-working, open to new ideas 	<ul style="list-style-type: none"> M36: Conscientiousness, Agreeableness, Emotional Stability M45: Conscientiousness, high Open-mindedness 	M45	-0.788	0.516	1.499	1.027	0.608	-1.256	-1.790	<ul style="list-style-type: none"> M36: Below average conscientiousness, but agreeable and highly emotionally stable (low negative emotionality) M45: High conscientiousness, high open-mindedness M36 has higher standardized conscientiousness than M47 M47 is below average open-mindedness All are below average conscientiousness M71 may be discussing their participation in class guided discussions more so than personality descriptions; has the highest open-mindedness score in class
M71	<ul style="list-style-type: none"> M10, M36, M47: consistently demonstrate desire to go deeper than the cursory understanding required of typical Marine Corps tasks. 	<ul style="list-style-type: none"> Suggests Open-mindedness (Intellectual curiosity) Suggests Conscientiousness 	M10	-0.752	-0.930	-0.677	0.070	0.680	-0.132	1.136	<ul style="list-style-type: none"> M47 is below average open-mindedness All are below average conscientiousness M71 may be discussing their participation in class guided discussions more so than personality descriptions; has the highest open-mindedness score in class
M86	<ul style="list-style-type: none"> M12: Understanding, hard-working, caring M36: Makes M86 feel comfortable, level-headed 	<ul style="list-style-type: none"> M12: Agreeableness (compassion), Conscientiousness Agreeableness, low Negative Emotionality 	M12	1.136	0.636	-0.054	-0.914	1.102	1.786	0.353	<ul style="list-style-type: none"> M12: Above average agreeableness; below average conscientiousness (but higher than M86) M36: Above average agreeableness, low negative emotionality
M93	<ul style="list-style-type: none"> M10: Attentive, thinks divergently M36: Humble, team player M71: Brings good ideas M45, M47: Unclear descriptions 	<ul style="list-style-type: none"> M10: Conscientiousness, Open-mindedness M36: Low Negative Emotionality, Agreeableness M71: Open-mindedness 	M10	-0.752	-0.930	-0.677	0.070	0.680	-0.132	1.136	<ul style="list-style-type: none"> M10: Below average conscientiousness, but high open-mindedness, high PSM may contribute to perception M36: Low negative emotionality; above average agreeableness M71: Highest open-mindedness in class

I found that participants' descriptions of their nominated alters were generally accurate and consistent to alters' measured personality scores, except for conscientiousness. Overall, the most common description of alters, as well as the most common associated personality trait, was agreeableness, which aligns with the quantitative findings.

I found that participants' assessments of alters, as indicated by their descriptions, helps explain the quantitative results. The quantitative data indicates participants nominated, to their *most prefer to work with* networks, alters who scored low in conscientiousness. The qualitative analysis suggested the opposite. Specifically, many participants' qualitative descriptions suggested they nominated alters who were hard workers, however, those they described as hard workers tended to score below class average on the conscientiousness trait. There are multiple reasons for the discrepancy,⁵³ but one potentially interesting one is the influence of protective self-monitoring. Specifically, of the five alters that were characterized as "hard workers" but that scored below average in conscientiousness, four scored above average in protective self-monitoring.⁵⁴ The protective self-monitoring construct may reflect those who "get along" to get ahead (Wolfe et al., 1986). This may explain why participants mischaracterized these alters as hard workers in contrast to their Big Five scores. That is, because a high protective self-monitoring score suggests that "in many situations one can solve the problem of getting along merely by acting in such a way as to avoid disapproval" (p. 356), the alters may have conformed to the situation. This finding is speculative, however, because the nomological network for protective self-monitoring is sparse due to the focus on the univariate self-monitoring model (Wilmot, 2015).

⁵³ The measured score is self-reported while the description is ego's perception of alter. The Cronbach alpha for conscientiousness and its facets averaged to 0.8, so if participants misrepresented themselves, they did so consistently. It is possible the class's work environment influenced trait expression or simply that ego liked alter or worked in the same group and felt they were hard working because of what they saw. It could also be combination of factors.

⁵⁴ Two of those four scored more than a standard deviation above class average in protective self-monitoring.

Finally, I found that in the “work-focused” category, participants sought alters they believed to be open-minded, which corroborated my quantitative findings. Specifically, participants selected individuals they believed to be “outside the box” thinkers, “divergent thinkers” and “open to new ideas.” Why individuals sought open-minded individuals is unclear, however, but the finding suggests participants saw value in working with individuals with that characteristic.

Overall, the *most prefer to work with* findings suggested that in situation-specific relationships, participants were highly selective in what attributes they sought in others. At this point, however, I had considered only *positive* relationships, but I had several lingering questions that required me to examine *negative* relationships.⁵⁵

D. NEGATIVE RELATIONSHIP NETWORKS SUMMARY OF FINDINGS

1. Quantitative Summary

The small size and low density of the *negative* networks, and the presence of a few highly central actors skewed the personality-centrality correlations limiting what I could learn. As I later discuss, I used mixed methods analysis to derive further insight.

The *negative* networks, as expected, correlated negatively with the *friendship*, *trust*, *most prefer to work with*, and *workgroups* networks. I found that multiplex relationships were common; that is, participants often had both *positive* and *negative* relationships with each other,⁵⁶ which I interpreted to mean that a *negative* relationship did not signify animus.

The largest increase in the *negative* networks’ density occurred between time 2 and time 3, which did not correspond to any notable change in the class. However, most

⁵⁵ In my analysis, there were a few instances in which individuals, given their attributes, were more/less popular than they should have been, and that I could not explain.

⁵⁶ For example, at time 3, although the overall number of negative ties increased, only three friendship ties were rescinded, and no trust ties were dropped.

negative nominations were across workgroups rather than in them.⁵⁷ Overall, the quantitative data provided only limited insight, so I turned to the qualitative data.

2. Qualitative Summary

I found that participants went into much richer and greater detail about their *negative* relationships than their *positive* ones. Fortuitously, my interviewees also accounted for most of the participants who either nominated or were nominated for *negative* relationships, providing ample data to analyze. My analysis resulted in several findings, the most notable of which I summarize here.

I found that how participants defined and described their “hypothetical” *difficult to work with* alter was inconsistent with how they described the alters they actually nominated to their *negative* networks. Specifically, I categorized participants’ definitions of a hypothetical *difficult to work with* alter as one who was either “anti-team” or “dishonest.”⁵⁸ However, participants’ actual descriptions of nominated alters suggested the reasons for their nomination were related to work annoyances and professional differences rather than “anti-team” or “dishonest” behavior.

As I compared the nominations and descriptions more closely, I observed symmetry between the *most prefer to work with* categories (i.e., “work-focused” and “interpersonal”) and the *negative* relationships. For example, just as participants in the “work-focused” category nominated hardworking and academically engaged alters to their *most prefer to work with* networks, they nominated alters who failed to display those qualities to their *negative* networks.⁵⁹ Overall, the finding suggests that how alters approached the work/academic situation were critical to understanding relationships in the *negative* network.

⁵⁷ Closer inspection of negative ties among workgroups showed that most intra-workgroup negative ties emerged from workgroup 1, while workgroup 2 had only a single negative tie, which was eventually rescinded. This is unsurprising because workgroup 2 was more cohesive and had a friendship clique.

⁵⁸ “Anti-team” individuals were defined as selfish and not team players. “Dishonest” individuals were defined as dishonest and manipulative.

⁵⁹ I found a similar finding for those in the “interpersonal” category as well.

Building on the previous finding, I found that *negative* relationships were situation dependent. Specifically, interview participants were adamant that a *negative* nomination did not suggest personal animosity with their nominated alter, but rather related only to work-specific issues. For example:

In the workplace, though it's just, [nominee is] just a little bit difficult I think to work with in the future... So, outside of work I think we've got some common ground and we could probably build a personal relationship. But professionally, I think that's a slightly different story. (M36 discussing a *negative* relationship, Time 3 Interview)

I think we could be friends in a different setting, but I don't think [nominee is] somebody that I would professionally want to work with. Does that make sense? (M86 discussing a *negative* relationship, Time 3 Interview)

So, socially zero issues, like [nominee is] great to hang out with outside of an assignment. Okay to work with just if I were to work in a subordinate role or like we have to collaborate on something, we're going to bump heads on the direction it goes. So, it's not necessarily a bad thing, it's just I don't want to be in that work environment. (M12 discussing *negative* relationship, Time 3 Interview)

This finding corroborates the quantitative analysis, which suggested that *positive* and *negative* relationship multiplexity indicated low personal animosity between participants.

Finally, I tried to determine how *negative* relationships developed. Ultimately, the qualitative evidence was mixed, *negative* relationships developed for many reasons. I found examples in which direct interaction and proximity between participants led to and exacerbated *negative* relationships, but also ones in which it ameliorated them. Further, I discovered that perception⁶⁰ was a source of both *negative* and *positive* ties. Overall, the qualitative data by itself, while insightful, could not provide some of the details I needed to make stronger conclusions about personality's role in the development of *negative* relationships, so I switched to integrated analysis.

⁶⁰ In this case, perception meant that two individuals did not spend significant time with each other, as they might had they shared a workgroup. As this was a small class, it was not possible to entirely avoid other people, but my interviews revealed that some people knew others only superficially.

3. Mixed Methods Summary

To support my analysis, I created Table 13. It captures what is known about participants' *positive* relationships, their personality, and other situational, perceptual, or individual attributes that could help explain their *negative* relationships. I uncovered several findings.

Table 13. MIOC Negative Relationships Mixed Methods Table

MIOC Negative Relationships: Personality and Contextual Factor Table				
Nominating Egos	Alter	Personality Details of Alter / Ego	Other Factors / Information	
M10, M36, M86*	M71	<ul style="list-style-type: none"> • M71: Highest Extraversion in class; Lowest Agreeableness in class; above average Conscientiousness / Open-mindedness • M86: Highest Negative Emotionality in class 	<ul style="list-style-type: none"> • M71 Received 6 total negative ties • M71 sent only 1 negative tie entire time • M71 in work group 2, aligned with work-focused category from Most Prefer analysis (but only received 1 Most Prefer nomination) • Received negative ties from both in-and-out workgroup members, but only in-group negative tie later retraced 	<ul style="list-style-type: none"> • M71 considered "analytical" and "opinionated" and low on emotional intelligence by peers; comes across as "condescending" to M86 • Peers (other than M86) / instructors noted M71's quirks, but peers appreciated M71's work-focus and appeared to work around it, but not enough to receive a most prefer to work with nomination • M86's high negative emotionality (highest by nearly 2 S.D.) may have contributed to apparent personality clash - i.e., high negative emotionality mixed with low agreeableness
M12, M36, M86	M33	<ul style="list-style-type: none"> • M33: Low Extraversion, above average Agreeableness and Conscientiousness; well below average ASM/PSM (2d lowest in class for both) 	<ul style="list-style-type: none"> • M33 received 8 total negative ties (most in class) • M33 is in work group 1, but received negative ties from both groups, primarily in-group • All enduring negative ties from direct interaction • Regular attendance at class social events did not appear to help status 	<ul style="list-style-type: none"> • Considered "independent" and a "skater" by peers, but also "firmid" prone to "stand back and watch everyone work", does own thing... • Low ASM / PSM may indicate disinterest in social status and conforming to group • M33's network outcomes contrast M45's, who had lower ASM / PSM scores, possibly because of multiple contextual and situational factors (work group, previous relationships, experience, etc)
M10*, M36, M45	M12	<ul style="list-style-type: none"> • M12: High Extraversion, Agreeableness, Open-Mindedness; average Conscientiousness; Highest ASM in class, above average PSM • M10: Low Extraversion, Agreeableness, Conscientiousness; High Open-Mindedness and PSM (highest PSM in class) 	<ul style="list-style-type: none"> • M10 and M12 in same workgroup (group 1); M12 received 5 total negative ties • M12 was lowest ranking member / least experienced of the class • Received negative ties from both work groups, but primarily M10; negative perceptions developed from both direct interaction (M10 & M45) and observation (M47) • M12 believed rank difference and constant interaction was a primary issue with M10 	<ul style="list-style-type: none"> • By personality alone, M12 should have been more successful than M10 - i.e., highly agreeable, sociable, and socially adaptable (ASM), but also a hard worker • Rank, experience, and perception worked against M12 and M12 may have lacked credibility to benefit from high ASM (i.e., referred to as a "bullshitter") • M12's style / approach may not have been good for work-focus like approach of class, which appeared to help M10 succeed / but also clashed with M10's approach - despite average Conscientiousness, M12 was perceived as uncommitted to the class • Both peers / instructors noted work-focus issues with M12
M45*, M47, M71	M86	<ul style="list-style-type: none"> • M86: Low Extraversion and Conscientiousness; average Agreeableness, High Open-Mindedness; Highest Negative Emotionality in class • M45: Low Extraversion, high Agreeableness, Conscientiousness, Open-mindedness; 2d highest Negative Emotionality in class 	<ul style="list-style-type: none"> • M86 received 5 total negative ties • Single incident from a temporary work group (M12, M45 & M86) • M45 spoke to work group (group 2) about incident (as noted by M47) • M86 was perceived negatively by some for lack of work focus, prior to incident • All M86's negative ties come from outside of work group 	<ul style="list-style-type: none"> • Negative relationship between M45 & M86 from single incident may be because of high Negative Emotionality from both - noteworthy that M12 did not mention incident and even nominated M45 to the most prefer to work with network after the incident (M12 high emotional stability) • The incident led to 3 negative ties on M86 from M45's work group (and 5 total new negative ties), • Perception and social influence led to negative ties against M86 stemming from the incident with M45

* Indicates reciprocal negative relationship / both actors discussed

I found that low agreeableness and/or high negative emotionality were the two most common personality traits in the development of *negative* relationships. Because of the noted issues with personality-centrality correlations, I examined the most central actors in the *negative* networks, what was said about them, what they said, their personality scores, and other attribute information to find this result.⁶¹ I also found that low agreeableness could offset other situation-valuable traits such as open-mindedness and conscientiousness, which were important in the *most prefer to work with* network. That is, even if an individual had situation-desirable traits, their low agreeableness could make that person a less desirable work partner. For example, M71 scored highly in both conscientiousness and open-mindedness and was thought of by both instructors and other participants as a hard worker. However, M71 also had by far the lowest agreeableness score in the class (more than two standard deviations below average), and M71's classmates noticed, with one remarking, "nice enough and competent, but just a strange... Low on emotional intelligence" (M10, Time 2 Interview). Another said, "[M71] is, in my opinion, condescending... comes across as believing [M71] is intellectually superior to everybody in the room" (M86, Time 2 Interview). Ultimately, despite having traits that made M71 desirable to the "work-focused" group for the *most prefer to work with* network, M71 was not nominated to it, possibly because of extremely low agreeableness. Overall, of the *negative* relationships I examined, I was most confident that personality, specifically low agreeableness and/or high negative emotionality, was the primary reason for the development of these *negative* relationships.

However, as I examined other *negative* relationships, I uncovered examples in which social influence or other personal attributes, rather than personality, was likely more relevant to the development of *negative* ties.

Regarding social influence, I found one case of *negative* transitivity that stemmed from an incident between two participants.⁶² Both participants also had the two highest

⁶¹ The personality-centrality correlations support the finding as well, but the correlations were weakly significant and inconsistent. Overall, the correlations indicate that actors low in agreeableness tend to receive more negative ties (in-degree) and actors high in negative emotionality tend to send more negative ties (out-degree).

⁶² I provide a longer narration of the incident in Appendix C and stick to the relevant conclusions here.

negative emotionality scores in the class (both more than a standard deviation above average), which relates to my previous finding. The incident resulted in the two participants forming a *negative* relationship (from a previously *positive* one), and two of the primary participants' alters sending *negative* ties to the other participant, despite not being involved in the original incident. Figure 3 shows what the *positive* and *negative* relationships looked like at time 2, and then again at time 3 after the incident occurred. The result was that a two-person incident resulted in five new *negative* relationships. I can confidently attribute personality factors to the incident between M45 and M86, but not to the subsequent *negative* ties. That is, within the social network framework, the interdependence between actors and their relationships are assumed, as such, even if personality is a causal factor in one *negative* relationship, subsequent *negative* relationships may develop absent direct influence from personality because of whom the *negative* relationships are between.

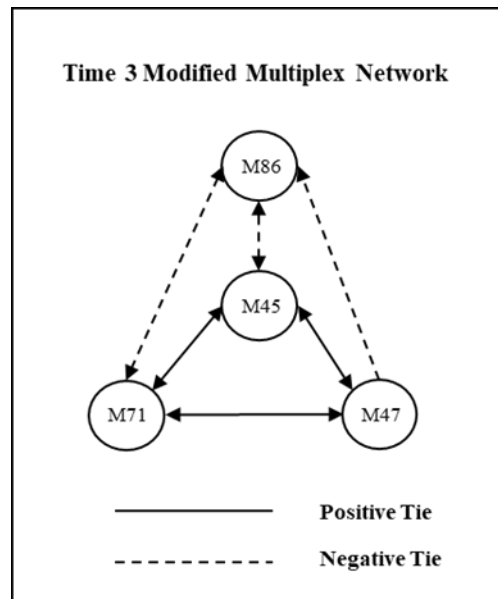
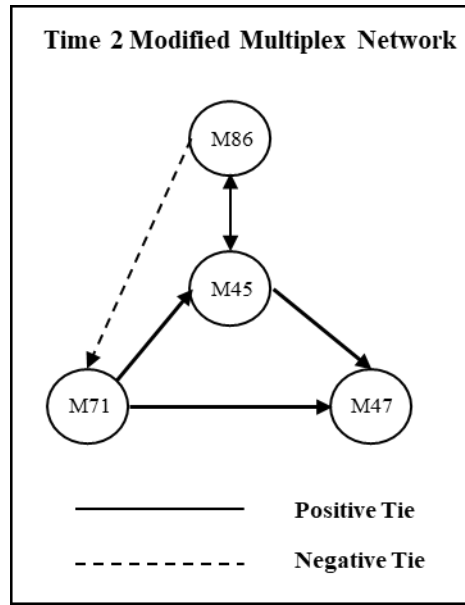


Figure 3. MIOC Time 2 and Time 3 Transitivity Example

I also found two other instances in which a combination of factors likely led to the development of *negative* relationships.

In the first, I found that a participant's *negative* relationships may have developed because of a combination of their rank and approach to work-situations, even though they scored highly on positive traits, such as extraversion, agreeableness, and open-

mindedness—traits assessed as important in this case study. Specifically, M12 was a member of the “interpersonal” *most prefer to work with* category and a common *negative* nominee from those in the “work-focused” category because of M12’s lack of focus on the class. For example, one participant noted, “And then M12 just based on what I know [M12’s] performance to be in class... I get a slight impression that it’s kind of maybe a joke to [M12]” (M47, Time 2 Interview). Additionally, M12 was also the most junior member of the class, and M12’s rank, or more specifically, acting M12’s rank, was brought up by classmates. For example, one participant described M12 as “young, slightly immature... I think related to [M12’s] maturity level actually when I see [M12] in the way he acts... I think that [M12] is immature for [their] age from what I would expect” (M47, Time 2 Interview). Similarly, another participant felt M12 acted M12’s rank, specifically noting, “I feel like [M12] is older but... acts [their] grade [rank]... I feel like you [M12] should be a little bit older and more mature, but I think because [M12’s] a lieutenant, [M12] acts like a lieutenant” (M36, Time 3 Interview). A noteworthy, but speculative additional reason why M12 may have received the third-highest number of *negative* nominations was M12’s class-high acquisitive self-monitoring score.⁶³ Specifically, a high acquisitive self-monitor is a “social chameleon” (Kilduff et al., 2017) who seeks status (Wolfe et al., 1986), and M12’s attempts to fit in may not have been taken well by more senior classmates. For example, one participant suggested of M12, “Seems like [M12] might be a bullshitter. Exaggerates a lot” (M10, Time 2 Questionnaire). Overall, despite M12’s positive personality qualities, M12’s rank and approach to work situations, and potentially M12’s high acquisitive self-monitoring score, were liabilities that resulted in M12 becoming highly central in the *negative* networks.

In the second instance, I discovered two examples of personal and interpersonal attributes either amplifying or nullifying personality’s influence on relationship outcomes. Specifically, the least popular and most central participant in the *negative* networks scored low on extraversion and was considered highly reserved. M33’s classmates also described M33 as “independent” and felt as though M33 was not a “team player.” Additionally, M33

⁶³ M12’s acquisitive self-monitoring score was nearly a standard deviation higher than the next highest score. The average SD for acquisitive self-monitoring was 0.64.

also scored well below class average in acquisitive and protective self-monitoring, and I felt these descriptions were appropriate to M33's low extraversion score, but also M33's self-monitoring scores. That is, although both constructs lack an agreed upon definition, theoretically, someone scoring low in self-monitoring neither seeks social advantage nor conforms to social expectations, "preferring to behave in ways that reflect their inner attitudes and dispositions" (Fuglestad & Snyder, 2010, p. 1031; also refer to literature review). What I found interesting, however, was that M33's personality scores were remarkably similar, especially in extraversion and acquisitive and protective self-monitoring, to one of the most popular participants in the *positive* networks. In considering the disparities between their social relationship outcomes, I believe a combination of factors explains the difference. Most notably, the popular participant was among the oldest and most experienced (professionally) in the class,⁶⁴ had previous relationships with two other participants, shared an occupational community (MOS) with the class leader (which was cited as a reason for being nominated to the *friendship* network), and was also a member of the most cohesive workgroup, workgroup 2. By way of comparison, the least popular participant benefited from none of these circumstances. I am left to wonder if the outcomes would have been the same had their roles been reversed. Ultimately, the finding demonstrates an example of personal and interpersonal factors apparently nullifying one participant's negative personality traits while amplifying the others.

Taken together, the previous two findings suggest that while personality may contribute to the development of relationships, there are other, sometimes more important factors involved, such as personal attributes (e.g., rank/experience), interpersonal relationships, and situational factors. Importantly, all these factors interact and may play an important role in developing social relationships.

For my final finding, I considered all the previous findings and concluded that I could not separate relationships from the situation. Specifically, understanding how participants approach both a situation and the relationships within it is important in

⁶⁴ Something I found in both case studies, and in my personal experience, is that previous experience (e.g., combat deployments, prior enlisted service) can greatly enhance one's reputation.

understanding which attributes, such as personality, are most relevant. That is, in MIOC, participants' relationships seemed to be compartmentalized by situation. For example, in day-to-day class and social activities, it was relatively easy to be friendly and trusting of others. Within a work situation, however, participants were more selective, and a specific set of attributes became important. Overall, how participants approached a situation impacted their criteria in nominating alters to their social relationships, and attributes such as personality, and other personal and/or interpersonal considerations were all contributing factors.

E. SUMMARY

Overall, my findings indicate that the Big Five traits and facets, and possibly even the self-monitoring constructs, are important to the development of some social relationships. Most importantly, my results show that understanding a situation and how participants approach it and the relationships within it, is critical to understanding which personality traits and other factors are most relevant to relationship development. I reference these findings later, in the case comparison, but first, I present my findings for the MIAC case study.

V. MIAC CASE STUDY FINDINGS

In this chapter, I provide a summary of the findings from the MIAC case study. I begin by discussing the case’s overall situation and situation strength. This discussion is important because it highlights how both participants and instructors characterized the class and their approach to it, which in turn shaped my interpretation of social relationships. After discussing the situation, I present a summary of my findings for the social relationships—*friendship*, *trust*, *most prefer to work with*, and *negative* relationships.⁶⁵ For each relationship, I first present the quantitative findings, followed by the qualitative, and then the mixed methods findings.

I present all quantitative summary charts and additional details, as needed, in Appendix D, and occasionally refer the reader to them.

A. SITUATION AND SITUATION STRENGTH

Both instructor and participant interviews agreed that the course presented a weak situation by flattening the rank hierarchy, providing an open and collaborative environment, and placing few constraints on behavior and personality expression. The course instructors sought to establish a weak situation to facilitate collaboration and learning (MIAC Memos, 1 & 25) and participants agreed. For example, one noted, “Instructors have set it up, day one, pretty much one of the first things is rank does not matter in this classroom” (C9, Time 3 Interview).

Participants agreed that the weak situation led to a collaborative environment and facilitated developing relationships with their classmates. For example, when asked if the course situation helped develop relationships with classmates, C9, one of the more senior ranking participants, replied, “It truly did. Because it brought out everybody as an individual versus, you know, your rank and name, and what you do” (C9, Time 3 Interview). Likewise, C64, one of the junior ranking participants also agreed, “I would say

⁶⁵ As with MIOC, friendship and trust were highly interrelated, and I discuss the findings together. Similarly, I discuss the two negative relationships as the *negative* relationships but present the quantitative findings as two separate relationships in Appendix D.

it's easier to make friends now... There are a couple of students in the classrooms whose personality, if I not spending the time in the room with them every day, I wouldn't have understood right away" (C64, Time 3 Interview).

Although the situation allowed participants to be themselves and fostered relationship development, both instructors and participants characterized the class as young, inexperienced, and less focused on academics and more so on social activities. The instructors felt the course lacked the discipline of older and more experienced classes, and were more prone to "sidebar" conversations, not paying attention, and failing to see the relevance of the course material to their jobs and careers (MIAC Memo, 1). Interview participants corroborated the instructors' remarks, noting, for example, "This class is more of a liberty hound than other classes that I've been in... I mean that if you ask a question towards the end of class, you're getting some eyeballs... There just isn't a lot of urgency with this class" (C84, Time 2 Interview). Further, C7's characterization of the class perhaps best represents the approach many participants took toward the course, describing the class as:

Trying to get the time to pass quicker. Because they want everything shortened. They want the tools now, but they don't want to invest the time in it, the course, because it gets boring... So, based off of that aspect, they kind of want this to go quickly and get it over with. It's kind of another hurdle in their career. (C7, Time 2 Interview)

For the class leader, C60, the combination of rank/experience differences and other participants' lack of "urgency" made it difficult to relate to classmates. For example, "Them being junior inexperienced based, you know, compared to me and some of the people I've worked with, which is not necessarily a check them out, but a lot of them just don't have the discipline... they don't, none of them seem to have a very good sense of urgency" (C60, Time 2 Interview). C60 further articulated this sentiment, noting:

A lot of it had to do with my perceived work ethic, and maybe that's a generational thing, a mission thing. In my 15 years, it's been all about the global war on terrorism, so you always have that in your mind, you were always working towards that. They don't have that, so I think they're by no fault of their own, they're lost on like, 'Why does this matter what I'm doing?' In a subconscious level... And I feel like I'm playing to those stereotypes of getting old, and I'm like, 'Oh, it's a generational thing.' And

I really do think it's a generational thing. When I was going through basic training, they were harping on us about...It's not if, it's when you go. And need to pay attention because your life and other people's lives are going to matter. But I don't think they get that anymore, because it's not a reality. (C60, Time 3 Interview)

Finally, despite flattening the rank hierarchy, the course represented a wide spread of ranks, (from corporal (E4) to gunnery sergeant (E7), which may have led to social circles among some participants. As noted by C9, when asked to characterize the class, "In some ways it kind of seems like a little cliquey, where you know, people kind of got their little groups that they like to hang out with afterwards" (C9, Time 2 Interview). As I explain later, the source of these "cliques" may have been because of the numerous previous relationships among participants prior to the start of the course.

Overall, the effect of the weak situation and collaborative environment extended throughout the duration of the course and its impacts were most noticeable on the *trust* and *friendship* networks. Prior to the final week of the course, however, participants were required to conduct a group-level final project, which required significant time investment well after normal class hours and through the weekend. Many of the notable relationship changes for the *most prefer to work with* and *negative* networks occurred after the final project,⁶⁶ as I discuss later.

B. TRUST AND FRIENDSHIP RELATIONSHIP NETWORKS SUMMARY OF FINDINGS

1. Quantitative Summary

The most consistent and statistically significant finding to emerge from the quantitative analysis was that the "trust" facet was significantly correlated to out-degree and degree centrality across all collection events for the *trust* network. Of all the relationships in MIAC, this was the most robust and consistent finding. The trait agreeableness was also significantly correlated to out-degree centrality for all collection events and degree centrality for the first two collection events, for the *trust* network,

⁶⁶ My last collection event occurred immediately following the final project and was my most robust set of questionnaire and interview responses.

although not as strongly. Agreeableness is likely significant because it is buoyed both by its “trust” facet, but also because its other facets are highly correlated as well. Table 1 provides the QAP correlation results for the agreeableness trait and “trust” facet in the *trust* network for out-degree and degree centrality.

Table 14. MIAC Agreeableness Trait and Trust Facet Correlations to the Trust Network

MIAC Trust Network Centrality - Personality Correlations:						
Traits and Facets	Out-Degree			Degree		
	T1	T2	T3	T1	T2	T3
Agreeableness	0.528**	0.652**	0.536**	0.517**	0.648**	0.324
Trust	0.671**	0.784***	0.636***	0.683**	0.782***	0.493**
p-value: < .1 *; < .05 **; < .01 ***						

I did not find significant personality-centrality correlations for the *friendship* network, which was likely due to the presence of unconditional *friendship* relationships, but also the influence of highly central actors on the QAP correlation, and the influence of the *previous relationships* network.

Beyond personality-centrality correlations, I found that the *trust* network was highly dense from the first collection event onward and the *friendship* network became denser over time, and both networks were significantly correlated with each other. The *trust* network’s high initial density and the *friendship* network’s gradual increase in density suggests that *trust* relationships generally preceded *friendship* ones, and that participants more freely nominated alters to the *trust* network than the *friendship* one. The *previous relationships* network was significantly correlated⁶⁷ to the *friendship* network in the first collection event and is noteworthy because it indicates preexisting relationships are likely important in the development of other relationships. Specifically, if two participants have a previous relationship and one of them has a relationship with a third alter, transitivity

⁶⁷ The previous relationships network is likely under-correlated because only reciprocal and reported relationships were considered during QAP analysis. Interviews revealed that some participants had unreported contacts in the class.

suggests the third alter will form a relationship with the other participant, achieving closure, the idea being *the friend of my friend is my friend*. The significance is that the robust *previous relationships* network in MIAC may facilitate the formation of other relationships and may decrease the importance of individual attributes such as personality.

2. Qualitative Summary

Participants defined trust and friendship as intertwined concepts. Many participants saw trust as a prerequisite to friendship⁶⁸ and believed that trust was either earned over time (7 participants) or given unconditionally (3 participants).⁶⁹ However, I found that participants' nominations of alters to their *trust* and *friendship* networks often deviated from their definitions, although more so for the *friendship* relationship. Specifically, participants noted how there were different levels of friendship and trust, such that nomination to either network did not imply a deep or meaningful relationship. For example, one participant noted, "Even though I have people marked down as trust, there's different levels as well... I don't trust these people the most with everything I have...I haven't known them that long... I trust them enough to have the surface level stuff" (C7, Time 1 Interview). Another offered, "Like I said, levels of trust in this environment, there's things that I'm not going to have to share personally, but there's things that are asked of us specifically towards SCI material that requires a level of trust that has already been established or vetted outside of me" (C84, Time 1 Interview). The course's situation was a primary consideration in the nomination of alters to the *trust* and *friendship* network as well. For example, "In this context, since I have only known the majority of my classmates for a very short time, I consider a friend to be someone that I feel very comfortable talking to" (C30, Time 1 Questionnaire); and "I mean these are all people that are similar or more to me. We all have top secret clearances, there's no real reason for me to immediately distrust somebody, and I'm not a generally distrustful person" (C64, Time 1 Interview). Still others, such as C60, were reluctant to nominate alters to either network, noting, "It's not enough time spent with them. And it's only in a work environment, I don't know them

⁶⁸ Of the 12 participants, 7 considered trust as a prerequisite to friendship.

⁶⁹ The other 2 participant's definition was ambiguous.

on a personal level with that much detail that I would call any one of them a friend” (C60, Time 3 Interview).

3. Mixed Methods Summary

I integrated mixed methods analysis to help better understand and corroborate the quantitative and qualitative results. Specifically, I examined how participants defined trust and friendship and compared it to their standardized personality scores (the traits and facets of agreeableness for trust and extraversion for friendship), and their out-degree centrality scores over time (i.e., how many *trust* or *friendship* nominations they sent). I found that for the *friendship* relationship, participants were less consistent in their nominations of alters than their definition suggested (as previously noted), and their nominations were often inconsistent with their measured personality score. Conversely, for the *trust* relationship, I found participants were generally more consistent in their nominations of alters compared to their definition, and their nominations were more consistent with their measured personality score.⁷⁰ My analysis found that the main factors contributing to the inconsistency for the *friendship* network was the number of previous relationships participants came into the class with, the role of situation in facilitating relationship development, and rank/age⁷¹ differences among participants. This finding helps explain why personality-centrality correlations were inconsistent for the *friendship* network but more consistent for the *trust* one.

C. MOST PREFER TO WORK WITH RELATIONSHIP NETWORK SUMMARY OF FINDINGS

1. Quantitative Summary

I did not find consistent and significant results in personality-centrality correlations for the *most prefer to work with* relationships. The primary reason is significant turnover

⁷⁰ See Appendix D for a full explanation.

⁷¹ In a military setting, in my experience, it is not uncommon for trust between junior and senior ranks, but friendship between ranks would be more unusual.

in the network between collection events 2 and 3,⁷² likely because of the final project, and confounds from other relationships, such as the *previous relationship* and *workgroup* networks.⁷³

The *most prefer to work with* relationship was much sparser than both the *friendship* and *trust* networks, but significantly correlated to both as well. I assessed the lower density of the *most prefer to work with* network as an indication that participants had selection criteria in mind for their nominations. Specifically, I found the *most prefer to work with* network was significantly correlated with the *workgroups* network at time 3 and highly, but not significantly correlated with the *previous relationships* network at both times. To me, this suggested that participants *most preferred to work with* alters had previous experience with them, either prior to the course, through shared workgroups, or both.⁷⁴

2. Qualitative Summary

In qualitative analysis, I focused on trying to understand why participants selected alters to their *most prefer to work with* network and what characteristics influenced their nominations. I found that participants nominated alters based on criteria that fell within four categories, which I named, “workgroup/previous relationship,” “agreeableness,” “conscientiousness,” and “agreeableness/conscientiousness.” However, the boundaries between the categories were fuzzy, and some participants fit equally well into another category. Further, many descriptions lacked detail and specificity to suggest better characterization. Four participants nominated alters based on the “workgroup/previous relationship” criteria category, that is, nominating alters with whom they either shared a workgroup, a previous relationship, or both. For example, one participant explained, “I would say that because I have worked with them as a group for so long. I know and understand how they work and will be comfortable with them” (C77, Time 3

⁷² Between time 2 and 3, the entire class either added, dropped, or added and dropped alters from their network. One participant replaced their entire network between time periods.

⁷³ Due to the high number of confounds, EAS analysis was untenable.

⁷⁴ Four of the 12 participants selected their most prefer to work with alters exclusively from their workgroup. The influence of the *previous relationships* network is likely under-correlated due to unreported relationships.

Questionnaire). Another participant offered a similar explanation: “due to previous experience working with them and understanding as well as trusting their abilities as an analyst” (C81, Time 3 Questionnaire). The finding corroborates my quantitative finding regarding the influence of the *previous relationships* and *workgroups* networks on nomination to the *most prefer to work with* network.

Four participants nominated alters based on the “agreeable/conscientiousness” criteria category. Participants selecting based on the “agreeable/conscientiousness” criteria described their nominated alters as both “easy to work with” and “hard workers” (C9, Time 3 Questionnaire), or someone they were “comfortable working” with, in addition to their work ethic (C84, Time 2 Questionnaire and Interview). One participant explained their nominations as, “They both demonstrate great work ethic and personality. It was refreshing to work with individuals that work hard but are not ‘robots’” (C76, Time 3 Questionnaire). I found participants’ descriptions suggested a preference for alters scoring highly in the Big Five traits of agreeableness and conscientiousness.

Three participants nominated alters based on the “agreeableness” criteria category. Participants selecting based on the “agreeableness” criteria described their nominated alters as “easy to talk to, get along with, and do work with” (C17, Time 3 Questionnaire). One participant explained their nominations as, “They are easy to work with, have good dispositions, and bring a lot to the table in terms of working skill sets” (C30, Time 3 Questionnaire).

One participant, C60, nominated alters according to the “conscientiousness” criteria category. Notably, C60 was reluctant to select anyone to the *most prefer to work with* network, but ultimately selected alters because of their willingness to work. In describing nominees, C60 explained, “Out of anybody in the class, they seem the most willing or the most eager to do whatever you need them to do and they will take on whatever task you give them” (C60, Time 3 Interview). I found the description suggested a preference for alters scoring highly in conscientiousness.

I found it noteworthy that in a class of 12 participants, four different selection criteria categories emerged. I believe the number of selection categories and the fuzzy

boundaries between them helps explain the inconsistencies in my quantitative personality-centrality correlations.

Finally, in considering all the relationships in the *most prefer to work with* network, I found that all but one participant, C60, selected alters for their interpersonal attributes. Specifically, in all but the “conscientiousness” category, participants described their selected alters as someone they were familiar and comfortable with, such as in the “workgroup/previous experience” category or alters who were amenable and easy to work with. Even in the “agreeableness/conscientiousness category,” participants still selected alters for their agreeable characteristics, in addition to their work ethic. This finding suggests that participants preferred to work with alters with interpersonal traits such as agreeableness. However, because of the fuzziness of the qualitative category boundaries, I needed mixed methods analyses, discussed in the next section, to verify if participants preferred alters with interpersonal attributes.

3. Mixed Methods Summary

The mixed methods analyses expanded and reconciled the quantitative and qualitative findings. I listed how participants described their nominated alters, associated those descriptions with the Big Five personality traits and facets, and compared the associations to each alter’s standardized personality scores. Table 15 summarizes my analysis.⁷⁵

⁷⁵ I explain this in more detail in Appendix D.

Table 15. MIAC Most Prefer to Work with Descriptions to Standardized Score Comparison

MIAC Most Prefer Perception to Standardized Score Comparison Table											
Ego	How they describe alter(s)	Associated Traits (facets) or Category	Alter	Average Z-Scores for Alter						Discussion / Analysis	
				E	A	C	N	O	ASM		PSM
C2	• "I'd work with C14 and C30 as I've been in their group the whole time and understand that we work good together."	• In workgroup / previous experience category • Traits cannot be derived from description	C14	-1.028	-0.142	-0.661	0.846	-0.237	0.628	0.335	• Same workgroup and same rank may be most salient factors • Both below average in extraversion, but above average in PSM (conform / get along)
			C30	-0.732	0.603	1.085	-0.771	1.181	-1.476	0.101	
C7	• "I enjoy working with them." • "...respectfulness and information sharing...one person isn't the dictator of the group...There's turn-taking or opinions are accepted rather than overran."	• Agreeableness (respectfulness) • Open Mindedness is implied - e.g., accepting of opinions	C17	1.007	1.441	-0.161	-1.057	1.167	1.497	1.229	• Same workgroup (C17, C76, C84) and previous relationships (C30, C76, C84) may be most significant • Most are extraverted, mix of agreeableness and open mindedness; mostly higher in ASM (social climbing) / PSM (conform / get along)
			C30	-0.732	0.603	1.085	-0.771	1.181	-1.476	0.101	
			C76	1.222	-1.553	-0.295	0.570	-0.158	0.969	-0.941	
			C84	1.106	-0.275	-2.029	2.015	-1.471	0.961	0.807	
C9	• "C77, C84, C14, C76, C64, C81 – easy to work with, good / easy going conversations, hard workers."	• Agreeableness • Extraversion (sociability) • Conscientiousness	C14	-1.028	-0.142	-0.661	0.846	-0.237	0.628	0.335	• All except C81 are below average in conscientiousness • Most are above average extraverts, but mix of agreeableness • C9's emphasis on ability to have conversations may be most important factor
			C64	1.106	0.738	-0.174	0.746	0.051	0.746	1.140	
			C76	1.222	-1.553	-0.295	0.570	-0.158	0.969	-0.941	
			C77	-0.581	1.487	-0.341	-0.125	-1.021	-0.645	-0.889	
			C81	0.372	-0.278	1.400	-0.869	0.475	-0.500	-0.920	
			C84	1.106	-0.275	-2.029	2.015	-1.471	0.961	0.807	
C14	• "C2, C17, C84, C30, and C60. These are the individuals I get along with the most and I enjoy working with them. I feel I work well with almost everyone, but I like my working relationship with these individuals the most by the end of this course."	• In workgroup / previous experience category • Traits cannot be derived from description	C2	1.219	-0.843	1.247	-0.895	-1.077	0.371	-0.895	• Mix of same workgroup (C2, C30, C60), previous experience (C84), and outside of class social activities (C17) • No consistent trait or traits across alters • Each individual selected for different reasons, personality may not be significant factor
			C17	1.007	1.441	-0.161	-1.057	1.167	1.497	1.229	
			C30	-0.732	0.603	1.085	-0.771	1.181	-1.476	0.101	
			C60	-0.809	-1.203	0.215	0.021	-0.283	-0.682	-0.243	
			C84	1.106	-0.275	-2.029	2.015	-1.471	0.961	0.807	
C17	• "C84, C77, C7, C76, C14, C30 because all these individuals were easy to talk to, get along with, and do work with." • "All these people have personalities that I think are compatible with mine. They are all good people and fun to work around."	• Agreeableness • Extraversion (sociability)	C7	-0.261	-0.357	-0.595	0.467	0.619	-0.794	1.262	• Mix of same workgroup (C7, C76, C77, C84) and outside of class social activities (C7, C14, C30) may be most significant • Most notable trend was that all but C30 were below average in conscientiousness
			C14	-1.028	-0.142	-0.661	0.846	-0.237	0.628	0.335	
			C30	-0.732	0.603	1.085	-0.771	1.181	-1.476	0.101	
			C76	1.222	-1.553	-0.295	0.570	-0.158	0.969	-0.941	
			C77	-0.581	1.487	-0.341	-0.125	-1.021	-0.645	-0.889	
			C84	1.106	-0.275	-2.029	2.015	-1.471	0.961	0.807	
C30	• I would most like to work with C7, C2, and C76. They are easy to work with, have good dispositions, and bring a lot to the table in terms of working skill sets.	• Agreeableness	C2	1.219	-0.843	1.247	-0.895	-1.077	0.371	-0.895	• Shared workgroup (C7, C2) and previous relationship (C7 - work together) potential transitivity with C76 due to C7 • None are agreeable, all but C7 are highly extraverted
			C7	-0.261	-0.357	-0.595	0.467	0.619	-0.794	1.262	
			C76	1.222	-1.553	-0.295	0.570	-0.158	0.969	-0.941	
C60	• (About C2 and C14) "But out of anybody in the class, they seem the most willing or the most eager to do whatever you need them to do and they will take on whatever task you give them."	• Conscientiousness	C2	1.219	-0.843	1.247	-0.895	-1.077	0.371	-0.895	• C2 is highly conscientious, C14 is not, but both have above average ASM (social climbing) and C14 is above average in PSM (conform / get along) • C60, as most senior, noted their junior rank as a reason for selection because they are moldable
			C14	-1.028	-0.142	-0.661	0.846	-0.237	0.628	0.335	
C64	• C81 – works hard, easy to work with, has potential to go far. • C14 – very dedicated, thinks about what [C14] says and is reliable.	• C81: Conscientiousness / agreeableness • C14: Conscientiousness	C14	-1.028	-0.142	-0.661	0.846	-0.237	0.628	0.335	• C81 high on conscientiousness, but below average agreeableness (but senior to C64, and worked on paper together) • Below average conscientiousness, high ASM / PSM
			C81	0.372	-0.278	1.400	-0.869	0.475	-0.500	-0.920	
C76	• (C17 & C77) "both demonstrate great work ethic and personality." • "C30 also shows great work ethic, maturity, and capability."	• C17 & C77: Conscientiousness and agreeableness • C30: Conscientiousness	C17	1.007	1.441	-0.161	-1.057	1.167	1.497	1.229	• Only C30 above average for conscientiousness, but all are agreeable, especially C17 and C77 • Same workgroup (C17, C77), possible previous relationship with C30 due to C7
			C30	-0.732	0.603	1.085	-0.771	1.181	-1.476	0.101	
			C77	-0.581	1.487	-0.341	-0.125	-1.021	-0.645	-0.889	
C77	• "C84, C76, C17, C7. I would say that because I have worked with them as a group for so long, I know I understand how they work and will be comfortable with them."	• In workgroup / previous experience category • Traits cannot be derived from description	C7	-0.261	-0.357	-0.595	0.467	0.619	-0.794	1.262	• Nominated entire workgroup • All are below average on conscientiousness, all but C7 are above average extraverts and ASM, all but C76 above average on PSM
			C17	1.007	1.441	-0.161	-1.057	1.167	1.497	1.229	
			C76	1.222	-1.553	-0.295	0.570	-0.158	0.969	-0.941	
			C84	1.106	-0.275	-2.029	2.015	-1.471	0.961	0.807	
C81	• "C76 and C14 due to previous experience working with them and understanding as well as trusting their abilities as an analyst."	• In workgroup / previous experience category • Traits cannot be derived from description	C14	-1.028	-0.142	-0.661	0.846	-0.237	0.628	0.335	• Nomination appears to be entirely on previous working relationship rather than a particular feature of alter
			C76	1.222	-1.553	-0.295	0.570	-0.158	0.969	-0.941	
C84	• C30 & C77: Comfort working with them. • C7: Impressed with how handled difficult personalities in workgroup.	• C30 & C77: Agreeableness • C7: Possibly Agreeableness, but could be a mix of skills	C7	-0.261	-0.357	-0.595	0.467	0.619	-0.794	1.262	• Both C30 and C77 above average for agreeableness • All below average extraverts • C7 and C30 high PSM (conform / get along)
			C30	-0.732	0.603	1.085	-0.771	1.181	-1.476	0.101	
			C77	-0.581	1.487	-0.341	-0.125	-1.021	-0.645	-0.889	

My primary finding was that participants did not select alters to their *most to work with* network for a specific characteristic or trait. That is, I found participants' description of their nominated alters to be inconsistent with alters' measured personality scores, and my best explanation is that participants' nominations represented more nuanced criteria than what was reflected in their written and verbal descriptions. The primary issue was that participants provided generalized descriptors for their nominated alters rather than

individualized ones. Specifically, when participants nominated multiple alters they tended to use broad, catch-all terms such as “easy to work with” to capture multiple alters rather than individualized descriptions for each alter. The finding contradicts my qualitative findings, which suggested participants sought alters with specific characteristics.

I made a final attempt to locate relevant personality characteristics for an alter’s selection to the *most prefer to work with* network by examining the personality scores of all the nominated alters in Table 1 and seeing what the most common trait was.⁷⁶ The most common trait finding was below average conscientiousness followed by low agreeableness. I also found that participants generally preferred alters scoring above average in acquisitive and protective self-monitoring. Ultimately, the finding provides very weak quantitative evidence that participants selected alters scoring low in conscientiousness and agreeableness, but higher in acquisitive and protective self-monitoring. The finding contradicts my earlier qualitative findings, which suggested that participants selected alters for their agreeable characteristics. The finding does not completely contradict my finding about participants preferring alters high in the trait of conscientiousness, as fewer participants sought alters with that characteristic than they did for agreeableness.

Ultimately, both attempts to verify if participants sought alters with specific characteristics in their *most prefer to work with* network nominations failed to correspond to my qualitative analysis. There are several non-mutually exclusive reasons for the contradictory findings. Specifically, the fuzziness of the boundaries between the selection criteria categories together with the dearth of details from which I could derive personality associations in Table 1, and the importance of the *previous relationships* and *workgroups* networks to the *most prefer to work with network* obscured my ability to derive more precise findings. Overall, the preponderance of evidence suggests that the key component to being nominated to the *most prefer to work with* network was sharing a workgroup and/or a previous relationship with another participant, rather than a particular

⁷⁶ This is not a robust statistical method; however, I figured I might be able to derive some clues and insight. I provide the full finding in Appendix D.

characteristic or trait. The implication is that participants in MIAC generally preferred to work with alters with whom they had previous experience.

I speculated, however, that one additional reason for the discrepancy between the qualitative and mixed methods findings was because of the influence of acquisitive and protective self-monitoring. Specifically, many of the selected alters scored highly in one or both self-monitoring constructs and, based on the description of both constructs, an individual scoring highly in both is presumably socially adept at managing their behavior as needed. That is, those high in acquisitive self-monitoring are said to be “social chameleons” (Kilduff et al., 2017), while those high in protective self-monitoring may act “in such a way as to avoid disapproval” (Wolfe et al., 1986, p. 356). Although speculative, particularly given the dearth of quantitative evidence and limited knowledge of the bivariate construct, it is possible that alters scoring low in traits such as conscientiousness and agreeableness were adept at overcoming their low scores and winning favor with their classmates.

Overall, I was unable to determine if the Big Five traits or self-monitoring constructs were relevant to being nominated to the *most prefer to work with* network. However, I confirmed the quantitative and qualitative findings suggesting that the *workgroups* and *previous relationships* networks were key factors in getting nominated to the *most prefer to work with* network. At this point, however, I had only considered *positive* relationships and it was time to consider *negative* ones as well.

D. NEGATIVE RELATIONSHIP NETWORKS SUMMARY OF FINDINGS

1. Quantitative Summary

The *negative* network’s small size, low density, and presence of highly central actors skewed the personality-centrality correlations and limited what I could learn. The *negative* networks were the sparsest⁷⁷ of any of MIAC’s networks, but the greatest increase

⁷⁷ Three actors were the most central in the *negative* networks. For out-degree centrality, C60 accounts for nominating 9 of the 12 *negative* relationships at time 3. Overall, participants did not send many negative ties—four participants were never nominated, and one participant nominated no one. If C60 is excluded, the average degree is just over one *negative* relationship per actor.

in *negative* relationship density occurred at time 3, which corresponds with the final project.

The *negative* networks, expectedly, correlated negatively with the *friendship*, *trust*, and *most prefer to work with* networks, but positively, albeit non-significantly, with the *workgroups* network.⁷⁸ I found multiplex relationships were common, and participants had both *positive* and *negative* relationships with each other, which I interpreted to mean that *negative* relationships were not a sign of animosity between participants. Overall, quantitative data provided only limited insight, so I turned to the qualitative data.

2. Qualitative Summary

Participants were far more descriptive in discussing their *negative* relationships than their *positive* ones. What is more, I interviewed the most prolific nominators (C60 and C9) and nominees (C64 and C60) of *negative* relationships, providing me ample data to analyze. I made several findings, the most notable of which I summarize here.

I found that nearly all participants defined and described their “hypothetical” difficult to work with alter as “uncompromising/closed-minded.” This characterization elicited such descriptions as “hard-headed,” “stubborn,” “closed off,” and “think [ing] too highly of themselves.” How participants described their “hypothetical” difficult to work with alter was consistent with how they described the alters they nominated to their *negative* networks.

I found two instances in which a participant working closely or interacting with their *negative* alter changed their perception and led to them retracting their *negative* nomination. For example, C81 nominated C64 to a *negative* network at time 2, but dropped the *negative* nomination at time 3, and instead praised C64 in the time 3 questionnaire, and even added C64 to the *friendship* network. When I asked C64 about their relationship (i.e., with C81), C64 mentioned they worked on a paper together and got to know each other as a result. I found a similar example between C9 and C30. The finding suggests that close

⁷⁸ After closer inspection, I believe the positive correlation to the *workgroups* network is over-correlated due to differing group sizes and the presence of two highly central *negative* network participants in the same workgroup.

and personal interaction may be a way to ameliorate *negative* relationships because it provides an opportunity for actors to interact and gain greater familiarity with each other.⁷⁹

In my interviews, several participants expressed reticence at nominating alters to their *negative* networks and some felt *negative* relationships were situation dependent. This finding helps explain the low density of the *negative* networks and corroborates the quantitative evidence that there was little negative sentiment among participants. Regarding reticence to nominate alters to *negative* networks, I found three instances in which participants would rather drop a preexisting *positive* nomination or not nominate an alter to a *positive* relationship, rather than nominate them to a *negative* network. For example, C7 was reluctant to nominate alters to *negative* networks, saying:

Yeah, for the most part, I don't really like putting people difficult because it's more so I feel like I need to change myself to adapt to how they're thinking. Because people honestly aren't always difficult. It's just what's going on in their life and maybe you just need to understand them better to kind of shift what they're thinking to make them easier to work with. So just getting to know somebody helps a lot in the difficulty. (C7, Time 3 Interview)

Additionally, several participants felt their *negative* relationships were situation dependent and that a *negative* nomination did not signify animosity or contempt with their nominated alter. For example, C60 explained *negative* nominations as, "It's not a personal thing when I picked someone, that is completely different, what I'm thinking work versus them as a person. You have a great person who's a complete idiot, it sucks" (C60, Time 3 Interview). Similarly, C64 felt the *negative* relationship with C30 extended only to the classroom/work-environment, explaining, "but when we're playing sports and things like that, it doesn't seem to carry over. Really, the only disagreements we've had has been disagreements over the research and the product" (C64, Time 3 Interview).

Finally, I tried to determine how *negative* relationships developed, but ultimately, the qualitative evidence was mixed; *negative* relationships developed for many reasons.

⁷⁹ Getting close and personal to negative alters may be difficult, however, because of the negative perceptions or feelings ego holds toward alter and an element of patience and persistence (e.g., C9) or opportunity (e.g., C81) may be necessary.

For example, I found three instances in which misperception or miscommunication from both direct interaction and observation led to *negative* relationships, all of which I fully explain in Appendix D.⁸⁰ Overall, the qualitative data helped corroborate and expand on my quantitative findings, but to make stronger conclusions about personality's role in the development of *negative* relationships, I needed to conduct mixed methods analysis, which I describe next.

3. Mixed Methods Summary

The mixed methods analysis reconciled and expanded upon the quantitative and qualitative findings. To support my analysis, I created Table 16 to analyze the three most central participants in the *negative* networks (C9, C60, and C64). It captures what is known about their *positive* relationships, their personality, and other situational, perceptual, or individual attributes that could help explain their *negative* relationships. I also examined other *negative* relationships to see if I could determine what role, if any, personality had in the development of *negative* relationships. I made several findings.

⁸⁰ For sake of brevity, I do not include the details here, but I encourage the reader to view the full finding in Appendix D.

Table 16. MIAC Negative Relationships Mixed Methods Table

MIAC Negative Relationships: Personality and Contextual Factor Chart			
Ego	Personality Details of Ego	Other Factors / Information	Discussion
C9	<ul style="list-style-type: none"> • Lowest extraversion in class • Above average agreeableness, conscientiousness, open-mindedness • High emotional stability (i.e., below average negative emotionality) • Below average ASM/PSM 	<ul style="list-style-type: none"> • Different MOS than most of the class • Noted how context made it easier to talk and interact with others • One of two staff sergeants in class (i.e., higher rank than most) • Received no most prefer to work with ties at time 3 and 2d fewest total friendship/trust ties • Not a regular participant in outside of class social activities (i.e., not mandated activities) • Instructors described him as "annoying" and "cocky" 	<ul style="list-style-type: none"> • Primary issue was with C7 and C60 (below average extraversion and agreeableness). • C9's low ASM / PSM indicates disinterest in social status and conforming to group - i.e., may act independent of social expectations. • C9's agreeableness and low negative emotionality make it odd to send negative ties, but notably context facilitated increased sociability in class, but did not carry over outside of it. C9's talkative nature was too much for some, but C9 did little else to ingratiate with classmates and instructors who were perhaps overwhelmed by C9's approach. • Plausible that high open-mindedness further facilitated C9's talkativeness.
C60	<ul style="list-style-type: none"> • Below average extraversion, agreeableness, conscientiousness, open-mindedness, ASM/PSM • Average negative emotionality 	<ul style="list-style-type: none"> • Most work-focused and oriented in class • Most senior by rank and experience • Most prolific sender of negative ties; received 2d most negative ties • Likely received some negative ties because instructors told C60 to step back from group work • Instructors did not feel C60 was a good mentor 	<ul style="list-style-type: none"> • Respected by all for experience and rank. C60's prickly personality, characterized by low extraversion and agreeableness combined with disdain at the class's lack of work ethic appeared to amplify C60's tendency to send negative ties. • Interviews with C60 suggested the primary issue with the class was their lack of focus (on work) and rank/experience differences. C60 simply could not relate to them; but seemed more relatable outside of the work context according to C84.
C64	<ul style="list-style-type: none"> • Above average extraversion, agreeableness, negative emotionality, ASM/PSM • Below average conscientiousness • Average open-mindedness 	<ul style="list-style-type: none"> • Different MOS than most of class • Least experienced and possibly most junior rank (amongst other Cpis) • Received most negative ties and fewest total positive ties • Considered hard-headed, stubborn, and a know-it-all by classmates and instructors 	<ul style="list-style-type: none"> • C64 took advantage of the class's flattened communication and rank structure, but lacked the credibility and experience to pull it off - particularly given C64's hard-headed tendencies. • Above average ASM/PSM may have contributed as C64 seemingly attempted to social climb (ASM), although failed to socially conform and respond to social cues (as high PSM would suggest), although high PSM may also reflect C64's continued efforts despite repeated failures.

What stood out from my analysis is that while personality was a contributing factor in developing *negative* relationships, it was not the only one. Specifically, other factors, such as participants' personal attributes, interpersonal relationships, and/or situational factors were important components in explaining *negative* relationships, often more than personality.

For example, I found instances in which participants, despite having positive personality traits (e.g., above-average agreeableness), developed *negative* relationships with others on account of their other personal characteristics or situational factors. For instance, C9 scored above-average in both agreeableness and emotional stability, traits that should have helped C9 develop *positive* relationships, but these positive traits seemed to be nullified by C9's other characteristics—namely loquaciousness, which may have, in turn, been influenced by the course's weak situation. Specifically, C9 noted previously how the course situation, such as the flattened rank hierarchy, made it easier to communicate with classmates. However, several of C9's classmates did not appear to appreciate C9's talkativeness, noting, for example, “[C9] wants to be heard. [C9] has a lot to say. [C9] has a lot to offer. But not everyone gives [C9] the chance, because [C9's] so outgoing” (C7, Time 2 Interview); or “I've told [C9] before like, ‘Hey, you need to get to the point. You spent a lot of time talking’” (C60, Time 3 Interview). Ultimately, C9's talkativeness led to the development of a *negative* relationship with C7,⁸¹ and may have contributed to receiving no nominations from the class to the *most prefer to work with* network.

C64's centrality in the *negative* networks is most likely due to C64's lack of rank and experience, even though C64 scored above average in agreeableness. Specifically, C64 was among the most junior ranking and least experienced participants in the course but took advantage of the flattened rank and communication hierarchy to speak freely, which irked some of C64's classmates. For example, one participant described C64 as “Talking out of turn, like not recognizing normalcies, the social cues kind of thing. Speaking when it shouldn't, it's not time to be spoken... While an instructor's speaking directly, not waiting

⁸¹ I discuss this relationship in Appendix D, and it is one of the relationships I refer to in the previous footnote.

respectfully...speaking as if you were a gunny almost” (C7, Time 2 Interview). Another interview participant felt C64 was trying too hard to fit in, despite C64’s lack of rank and experience, noting, “But I think sometimes [C64’s] too eager to speak out to fit in... [C64’s] trying to contribute to it, but doesn’t have the knowledge to contribute to it. And that’s just lack of experience” (C84, Time 2 Interview). One interesting, but speculative reason for why C64 tried so hard to fit in and interject into conversations was because of C64’s above-average acquisitive and protective self-monitoring scores. Specifically, as I discussed earlier, an individual high in acquisitive and protective self-monitoring should be socially adept at managing themselves in social situations. In C64’s case, however, despite having traits that would presumably make C64 more socially adept, C64’s rank and lack of experience were liabilities, and the course’s weak and collaborative situation provided an opportunity to put both on display. Ultimately, C64’s classmates reacted negatively to C64’s efforts, describing C64 as “hardheaded” and a “know-it-all,” and C64 became the most nominated participant in the *negative* networks.

The clearest case I could find for personality’s influence on *negative* relationships was for C60, but with caveats. C60 was the most prolific in nominating alters to *negative* networks, but also the second most nominated participant to them as well, and both outcomes likely correspond to C60’s well-below average extraversion and class low agreeableness score. However, C60’s centrality in the *negative* networks may also be because of personal characteristics (i.e., age/rank/experience), and situational factors, such as how other participants approached the course. Specifically, differences in rank/experience between C60 and the class, as well as their lack of “urgency” to the course may partially explain C60’s propensity for nominating so many alters to *negative* networks. Further, C60 may have received *negative* nominations both because of C60’s disagreeable disposition, but also C60’s lack of participation in group activities, which was in part because C60 was told to do so. That is, because of C60’s experience and knowledge, instructors asked C60 to limit participation in group work; however, this may have generated animosity among C60’s classmates. For example, C7 discussed how this could have been a source of *negative* nominations, explaining “So [C60’s] doing that kind of thing, which others probably don’t see as respectful at times. Because [C60 will] walk away

from groups to let them do their own thing, because [C60] knows [C60's] already been through this" (C7, Time 2 Interview). Ultimately, C60 may be an example of personality, personal attributes (i.e., rank/experience differences), and situation mutually supporting each other to develop *negative* relationships.

I also considered *negative* relationships beyond the three participants in Table 16. I found that despite high negative emotionality and low agreeableness' association with *negative* relationships, neither (aside from C60) was a significant factor in the development of *negative* relationships. In examining participants with either above average negative emotionality scores or below average agreeableness scores, the most common factor was the presence of *previous relationships* between themselves and other alters. I interpret this finding to suggest that the pre-established familiarity with their classmates, which was shown to be important to the development of the *most prefer to work with* network, may have mitigated their likelihood of being nominated to the *negative* networks despite their personality traits.

Finally, I found an example of transitivity in which differing relationships between actors led to the development of additional *negative* relationships.⁸² At time 2, both C30 and C81 nominated C64 to their *negative* networks, but otherwise were not connected to each other. However, at time 3, C64's newly developed reciprocal *positive* relationship with C81, and C30 and C64's reciprocal *negative* relationship seemed to influence C81's views of C30, and C81 nominated C30 to a *negative* network. Additionally, C30's positive alters nominated C64 to their *negative* networks. In total, between time 2 and 3 three additional *negative* relationships developed, but I cannot attribute personality or other characteristics to one of them. That is, I discussed how multiple factors could be attributed to C64's *negative* nominations, but I cannot explain C81's nomination of C30 to a *negative* network as anything other than transitivity due to their differing relationship with C64—the *enemy of my friend is my enemy*. It is possible that C30's *positively* nominated alters (C2 and C14) nominated C64 to their *negative* networks because of C64's *negative* relationship with C30, however, given the previous discussion of C64, I cannot say this for

⁸² The full finding is in Appendix D.

certain. Ultimately, the key takeaway from the finding is that a participant's relationships with alters can influence the development of other relationships. Figure 4 shows what the relationships looked like at time 2 and time 3.

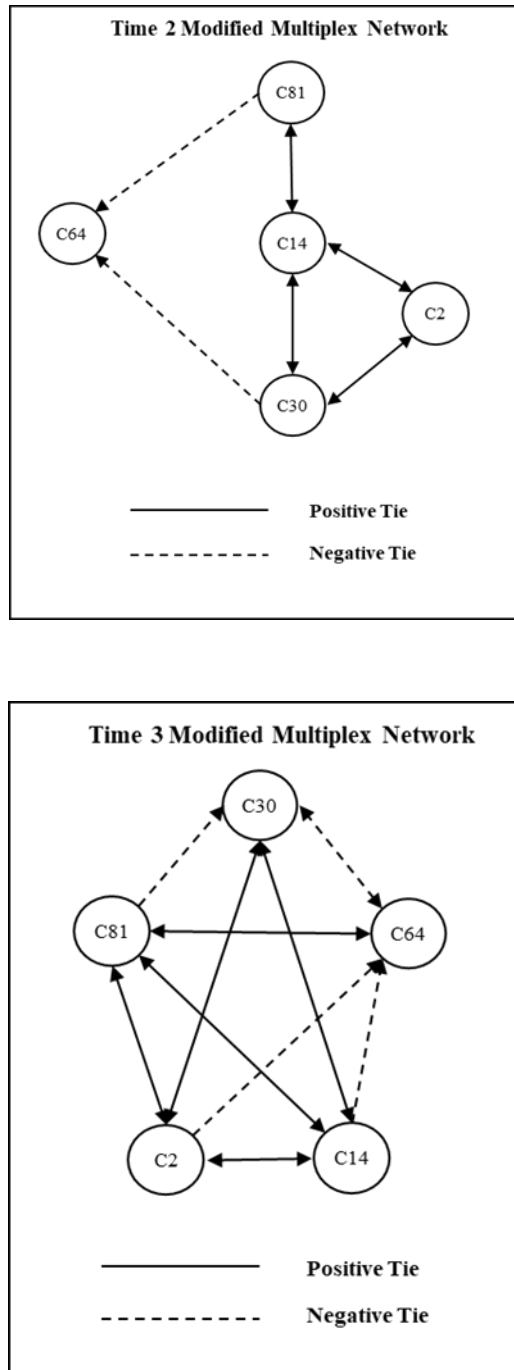


Figure 4. MIAC Time 2 and Time 3 Transitivity Example

Overall, the *negative* relationships were the sparsest networks but the most discussed among participants. The role of personality, as it was in the other networks, was mixed, and often inconsistent. The factors moderating personality's impact involved situational factors, personal characteristics, and network effects, such as previous relationships and transitivity.

E. SUMMARY

Overall, my findings indicate that besides the "trust" facet, and at times the agreeableness trait, both in the *trust* network, the Big Five traits and facets and self-monitoring constructs were not quantitatively significant to the development of social relationships. Although the Big Five and self-monitoring may have contributed to relationship development, my evidence was generally weak and at times speculative. However, my findings suggest that the *previous relationships* network, in addition to other relationships such as the *workgroups* network, were critical factors in developing *friendship* and *most prefer to work with* relationships, and even helped to mitigate nomination to the *negative* networks. I reference these findings, in addition to the MIOC case study's findings in the following case comparison chapter.

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VI. CASE COMPARISON

In this chapter, I compare the MIAC and MIOC case findings. To address situation and situation strength and the three research questions, I highlight how each case study's findings converged and diverged and provide explanations for divergent findings. The results of this analysis lead to a discussion of my study's contributions to extant Big Five and self-monitoring social network research in the final chapter.

A. SITUATION AND SITUATION STRENGTH

The situation and situation strength between the two courses were nearly identical; however, how participants were characterized and approached their respective courses differed significantly. In both courses, instructors and participants agreed that their respective situation strengths were weak, providing few constraints on behavior and personality expression, and allowing participants to be themselves. In turn, participants in both courses credited the weak situation for facilitating relationship development, particularly in the *trust* and *friendship* networks. The participants' approach to their respective courses differed dramatically. MIOC's participants approached the course as a professional obligation and seemed to prioritize academics, whereas MIAC's students seemed to view their course as "another hurdle in their career," eagerly anticipating the end of each workday. The difference in approach and characterization of the two courses may be due to multiple factors, such as age and rank differences between each case's student populations, as well as the influence of the *previous relationships* network in MIAC.

The two cases converged in situation and situation strength. Specifically, in both courses, the rank hierarchy was flattened, meaning rank differences between participants were minimally observed, and interaction and collaboration were encouraged. In both cases, participants and instructors agreed their respective courses provided a weak situation, and participants felt they could be themselves. For example, when asked about the course situation, a MIOC participant noted, "I haven't felt restrained in who I am or forced to change who I am because of this class" (M86, Time 3 Interview) and likewise, a MIAC participant answered, "There's definitely a lot of personal expression in the

classroom and it actually does promote what I would consider a more productive workplace” (C64, Time 3 Interview). Participants from both cases credited their course’s situation with helping to develop relationships with their classmates, and I found the situation was most influential on the development of *trust* and *friendship* relationships.

Despite similarities in the case’s situation and situation strength, the overall characterization of each course’s participants and how they approached the course differed significantly. In the MIOC case, instructors characterized the participants as “quality,” “professional,” and focused on learning the material (MIOC Memos, 1 & 2). Participants in MIOC corroborated this assessment, with one explaining, “The goal and the idea seems to be to cross-level information and experiences... and everyone’s kind of learning off of each other” (M36, Time 3 Interview). Conversely, in MIAC, instructors and participants characterized the class, broadly, as lacking discipline, failing to see the relevance of the course material to their careers, and as “liberty hounds” who were primarily interested in getting out of class at the earliest possible time to go socialize (MIAC Memos, 1 & 2). Although MIAC’s instructors felt no ill-will toward the participants, they lamented many of the participants’ lack of focus (MIAC Memos 1 & 2).

A combination of factors may explain why, despite similar situations and situation strengths, the two courses diverged in terms of their characterization and approach. I cannot definitively argue that one of the following factors is the de facto reason, but rather suggest that each contributed. First, although both courses catered to career-level intelligence Marines, the MIOC class was considerably older (average age 34.7 years) than MIAC (average age 26.8 years) and had a tighter rank distribution. Specifically, MIOC’s participants were primarily peers, as one participant noted “you’re surrounded by a peer group” (M47, Time 3 Interview) and eight of the ten participants were the same rank. Conversely, MIAC’s rank distribution was wider, ranging from corporal (E4) to gunnery sergeant (E7), and primarily composed of corporals and sergeants (E5s). Considered together, the implication is that MIOC’s participants were older, more experienced, and peers, so even in a rank-flattened environment, it was easier to hold each other accountable. Second, MIOC’s participants brought few meaningful previous relationships (with other classmates) with them into their course, whereas more than half of MIAC’s participants

did. As I noted in MIAC's case study, the *previous relationships* network was important in the development of many social relationships, such as the *friendship* and *most prefer to work with* networks, but may have also led to social cliques. As one participant noted, "In some ways it kind of seems like a little cliquey, where you know, people kind of got their little groups that they like to hang out with afterwards" (C9, Time 2 Interview). The implication is that the pre-established familiarity among many participants may have contributed to their desire to socialize with each other rather than focus on academics. I cannot assess a definitive factor to explain why the two cases diverged in participants' approach to their course, but rather suggest it was a combination of factors.

Overall, I found the two cases were the same in situation and situation strength. Instructors and participants alike agreed their cases were weak situations in which participants were able to be themselves, and the open and collaborative situation was acknowledged as facilitating relationship development. However, despite the similarity in situation and situation strengths, each case's participants were characterized and approached the course differently. MIOC's participants were focused on academics, while MIAC's participants seemed more interested in social activities. Multiple factors may explain the dissimilar approaches and characterizations, including age, rank, and experience differences between the two cases and the influence of the *previous relationships* network on MIAC. Ultimately, a combination of factors likely best explains the divergent approaches and characterizations of the two cases.

Next, I turn to a comparison of the cases in terms of each research question, noting where the cases converge and diverge, and providing explanations for the differences when needed.

B. RESEARCH QUESTION 1: WHAT ARE THE EFFECTS OF SELF-MONITORING AND THE BIG FIVE PERSONALITY TRAITS AND FACETS ON THE DEVELOPMENT OF SOCIAL RELATIONSHIPS?

The only consistent and statistically significant finding across both cases and all relationships was the "trust" facet to the *trust* relationship. Overall, my findings for the two cases were more divergent than convergent, and the effect of the Big Five traits and facets and self-monitoring constructs on the development of social relationships was mixed and

inconsistent between cases and relationships. My findings for the self-monitoring constructs converged for the two cases in the *most prefer to work with* and *negative* networks; however, my quantitative evidence was weak, and I considered the findings speculative. The most likely reason for the difference in findings between the two cases was the influence of the *previous relationships* network on MIAC.

The most significant and convergent finding between the cases was the “trust” facet’s relationship to the *trust* network. In particular, I found the facet was consistently and significantly positively correlated with out-degree and degree centrality for both cases across all collection events. In both cases, participants noted how the course situation made it easier to be trusting; however, the “trust” facet remained significant even when considering the situation’s influence. Overall, the finding’s consistency across both cases suggests the “trust” facet may be a reliable indicator of a participant’s propensity to trust and nominate alters to their *trust* networks.

Both cases also converged, albeit with slight differences, for the self-monitoring constructs in the *most prefer to work with* and *negative relationships*, although I consider the findings to be speculative. For the *most prefer to work with* network in both cases, and the *negative* networks in MIAC, I speculated that participants scoring highly in protective self-monitoring in MIOC, and in either, or both constructs for MIAC, were socially adept at winning favor with their classmates. However, I also found an example in each case in which a participant, despite their high acquisitive and/or protective self-monitoring score, was unsuccessful in gaining favor with their classmates and was nominated to the *negative* networks instead. I suggested that their junior rank and experience compared to their classmates may have negated their putative social adeptness. Although the cases converged, I also proposed a set of non-mutually exclusive factors that could also explain the outcomes. Ultimately, given the tentative nature of the findings, I save the discussion and its potential implications for the next chapter.

The two cases diverged for the Big Five’s association to the *friendship*, *most prefer to work with*, and *negative* networks. Specifically, I consistently found more associations between the Big Five traits and facets and social relationships in MIOC than in MIAC. The most likely reason for the difference is that the influence of the *previous relationships*

network was greater in MIAC than MIOC, which impacted personality's relevance to the development of social relationships. For example, in the *friendship* network, for MIOC, the trait extraversion and its facets of "assertiveness" and "sociability" were, at times, significantly correlated with out-degree and degree centrality, but not for MIAC. It is likely that since MIOC's participants were not as familiar with each other before the start of the course, traits such as extraversion and facets such as "assertiveness" and "sociability" were more relevant in developing *friendship* relationships. In MIAC, by contrast, the same traits and facets were unrelated, and at times negatively correlated to out-degree and degree centrality for the *friendship* network. A plausible explanation for the difference is the influence of the *previous relationships* network, which was found to be statistically significantly related to MIAC's *friendship* network. That is, social traits such as extraversion may be less important in developing *friendship* relationships when participants are familiar with each other, as they were in MIAC, but are more relevant when participants do not have pre-established familiarity, as in MIOC. What is more, previous relationships may also facilitate transitivity. For example, *the friend of my friend is my friend*, whereby participants form new relationships because of their relationship with a common alter. Likewise, in MIOC's *most prefer to work with* and *negative* networks, I could associate Big Five traits to the relationships, but I could not do the same for MIAC's networks. In both of MIAC's networks, the *previous relationships* network was a significant factor in developing the *most prefer to work with* relationship and staying off the *negative* networks. I discuss the impact of the *previous relationships* and other networks on the development of social relationships more when discussing research question 3.

Overall, the effect of the Big Five personality traits and facets and self-monitoring constructs on the development of social relationships was mixed and inconsistent. The most significant and consistent finding for both cases was the "trust" facet's relationship to the *trust* network. Although I found other associations between personality and the development of social relationships, these findings were of mixed statistical significance, and not consistent between cases. I assessed the difference in findings was due to the impact of the *previous relationships* network on MIAC's social relationships, which likely

minimized personality's relevance to relationship development. Finally, although both cases had similar findings for self-monitoring, the findings are speculative and will be discussed in the next chapter.

C. RESEARCH QUESTION 2: HOW DO SUBJECTS EXPLAIN OR MAKE SENSE OF THEIR PERCEPTIONS AND THOUGHTS ON FORMING SOCIAL TIES WITH OTHERS?

In both cases, participants explained that their course's situation influenced their nomination of alters to the *trust* and *friendship* networks, and influenced the meaning of their *negative* networks' nominations. However, the cases diverged in nominating alters to the *most prefer to work with* networks, with many of MIOC's participants nominating alters for specific characteristics, such as their work-ethic or interpersonal nature, whereas MIAC's participants tended to nominate alters with whom they had previous relationships, shared a workgroup, or both. The cases converged the most with the *trust* and *friendship* networks, as participants from both cases noted how their course's collaborative environment facilitated developing relationships with their classmates. The cases converged for the *negative* networks, as participants explained that their nominations of alters were specific to a work/academic situation and did not signify animus between participants. The cases diverged, slightly, for the *negative* networks, however, in that MIOC's participants tended to nominate alters who did not display the characteristics they sought in their *most prefer to work with* alters, while I found no such alignment in MIAC's nomination criteria. The divergent findings for the *most prefer to work with* networks, but also in the *negative* networks, may be explainable by differences in how the two cases approached their courses and the influence of the *previous relationships* network. Specifically, MIOC participants' professional and work-like approach to the course, combined with their relative unfamiliarity with each other, likely contributed to their selection of *most prefer to work with* alters based on specific characteristics they wanted in a work partner. Conversely, MIAC participants' lackluster approach to academics and the widespread familiarity with each other likely contributed to them being less selective of their alters' characteristics, instead preferring alters with whom they were familiar and

had previous experience, either through workgroup interaction, previous relationships, or both.

The two cases converged in their explanation of their nominations to the *trust* and *friendship* networks. In both cases, participants deviated from their written definitions of trust and friendship when nominating alters to those networks, with many participants attributing it to their course's situation. For example, when asked if the course situation helped develop relationships, a MIAC participant answered, "It truly did. Because it brought out everybody as an individual versus, you know, your rank and name, and what you do" (C9, Time 3 Interview). Similarly, MIOC participants replied, "I think it's very easy to be friendly in this environment" (M10, Time 3 Interview) and "I think it's easier to make friends here, actually." (M36, Time 3 Interview). In both cases, participants generally viewed trust as a prerequisite to friendship, but their classmates' identity as Marines and their requisite security clearance made it easier to trust them. For example, one MIAC participant noted, "There's things that are asked of us specifically towards SCI material that requires a level of trust that has already been established or vetted outside of me" (C84, Time 1 Interview). One MIOC participant explained about trust, "Well you're a Marine and he's a Marine, so you share common experiences just off the bat in wearing a uniform. So therefore, I'm quicker to trust that Marine than I am another civilian" (M47, Time 1 Interview), and another said, "I mean, we're all Marine commissioned officers, so we've kind of been vetted as trustworthy individuals anyway" (M36, Time 1 Interview). Although participants in both cases found their course's situation made it easy to be friendly and trusting, many pointed out there were levels of trust and friendship, and that nomination to the *trust* and *friendship* networks did not imply a deep or meaningful relationship. For example, a MIOC participant noted, "I trust everybody in there to have professional disagreements and you move on... But I wouldn't like share intimate details of my relationship in life, like family or significant other with them" (M10, Time 1 Interview), and a MIAC participant said, "Friendship for me, from this perspective wasn't identified as that as deep" (C84, Time 1 Interview). Another responded, "Even though I have people marked down as trust, there's different levels as well... I don't trust these people the most with everything I have" (C7, Time 1 Interview). Finally, in both cases, there were

participants who were either slow to develop *friendship* and *trust* relationships with their classmates, but did so over time, or did not want to. For example, one noted, “I have no real desire to seek out new friends. I have my friends and my core friends. I don’t need anyone” (C60, Time 1 Interview), while another felt it was not worth investing in the relationship, mentioning, “I don’t anticipate any of these like blossoming into real enduring friendships” (M10, Time 2 Interview). Overall, each course’s situation facilitated the development of the *trust* and *friendship* networks, however, participants noted that the relationships did not necessarily signify a deeper meaning, and some participants seemed unaffected by the situation when making their nominations.

The two cases also converged in the meaning participants placed in their nomination of alters to their *negative* networks. Specifically, in both cases, an alter’s nomination to the *negative* networks did not signify animosity between the participants and was work/academic/classroom situation dependent. For example, a participant from MIOC noted of their nomination of an alter to the *negative* networks, “I think we could be friends in a different setting, but I don’t think [they are] somebody that I would professionally want to work with” (M86, Time 3 Interview), and another in MIAC explained, “It’s not a personal thing when I picked someone, that is completely different, what I’m thinking work versus them as a person (C60, Time 3 Interview). Additionally, in both cases, participants maintained both *positive* and *negative* relationships with some of their classmates, further indicating the situation-specific nature of the relationships. A likely reason for the convergence is that participants viewed their overall course situation positively, and as noted, it helped them develop *trust* and *friendship* relationships, which lessened the likelihood of developing *negative* relationships.

The cases diverged in how participants nominated alters to their *most prefer to work with* networks. In MIOC, participants nominated alters based on three criteria categories, which I assessed and confirmed as aligning to an alter’s characteristics, such as their personality traits, specifically, agreeableness, conscientiousness, and open-mindedness. In MIAC, however, analyses showed that participants tended to nominate alters based either on previous relationships, shared workgroups, or both, rather than for a particular set of attributes. Further, MIOC’s *negative* network nominations tended to align with their *most*

prefer to work with nomination criteria, in that alters who did not display a participant's *most prefer to work with* criteria were nominated to their *negative* networks. I found no such association in MIAC.

An explanation for the divergence between the cases may be due to differences in how participants approached their respective courses and the influence of previous relationships. That is, many of MIOC's participants approached the academic/work element of the course seriously, and participants had few previous relationships. Conversely, MIAC's approach was characterized as lackadaisical, but participants had many previous relationships. I assessed that the combination of unfamiliarity and the academic/work-focus of many of MIOC's participants contributed to their seeking alters with specific characteristics for their *most prefer to work with* networks. In turn, alters who did not display a participant's preferred work-situation traits or characteristics tended to be nominated to their *negative* networks. Alternatively, many of MIAC's participants were familiar with each other, and participants preferred alters with whom they had previous experience, such as through *previous relationships*, shared workgroups, or both, and were overall less interested in their alters' work/academic specific characteristics.

Overall, the cases converged more than they diverged in how participants explained and made sense of their relationships. In both cases, many participants felt the course situation facilitated the development of *trust* and *friendship* relationships, although nomination to either network did not necessarily signify a deep relationship. Likewise, participants in both cases specified that nominating alters to their *negative* networks did not signify animosity and was work/class situation dependent. The cases diverged, however, in how participants nominated alters to their *most prefer to work with* networks. In MIOC, participants tended to nominate alters based on a set of criteria or attributes, whereas MIAC's participants tended to nominate alters based on previous experience with them. A likely explanation for the divergence is due to differences in how each case approached their respective course and the influence of the *previous relationships* network.

D. RESEARCH QUESTION 3: HOW DO SITUATION AND SITUATION STRENGTH, SOCIAL RELATIONSHIPS, AND PERSONALITY INTERACT AND HELP EXPLAIN SOCIAL NETWORK OUTCOMES?

Situation strength converged for both cases, providing a comparable set of conditions from which to evaluate them. For situation, social relationships, personality, and their interaction on explaining social network outcomes, however, both cases converged and diverged depending on the relationship in question. Participants and instructors from both cases agreed that their respective courses provided a weak situation, and participants agreed that there was little pressure to conform and that they could be themselves. Depending on the relationship, however, the impact of the situation, social relationships, personality, and their interaction both converged and diverged. The most likely reason for the mixed results is the differing approaches participants from each case took toward their respective course and the influence of previous relationships. The implication is that understanding the relationships between participants in a network, and how participants understand and approach situations and relationships, is important in explaining social network outcomes and the relevant factors influencing them.

The cases were most strongly convergent for situation strength. Both cases provided a weak situation by flattening rank hierarchies and emphasizing collaboration. In turn, participants from both cases felt they were relatively unrestricted in their behavior, could be themselves, and were free in personality expression. The implication is that both cases provided comparable conditions from which to evaluate the role of social relationships, personality, and other factors in explaining social network outcomes.

The role of situation, social relationships, personality, and their interaction varied in their impact for both cases, and the cases converged and diverged depending on the relationship in question. The most prevalent and consistent difference between the cases was the influence of the *previous relationships* network, followed by the differing approaches each case's participants took toward their respective course.

In the *trust* network, the two cases converged in the impact of personality (i.e., the "trust" facet), and in the situation, as participants noted how their course's situation and classmates' identity made it easier to trust them.

The two cases both converged and diverged for the *friendship* relationship. In each case, participants noted how their course's situation made it easy to be friendly; however, personality was a more relevant factor for developing *friendship* relationships in MIOC than in MIAC. I assessed the most likely reason was the relevance of the *previous relationships* network in MIAC, as personality factors would likely not be as important when participants were already familiar with each other.

The most significant difference between the cases was in the *most prefer to work with* relationship. MIOC's participants selected their work relationship alters based on a set of characteristics, whereas MIAC's selected theirs' based on familiarity gained through previous relationships, shared workgroup, or both. Many of MIOC's participants approached the course and work situation with a work-first focus, and when combined with their relative unfamiliarity with their classmates, it likely contributed to their seeking specific relationship and situation criteria in their *most prefer to work with* alters. In comparing the two cases, the different results suggest that given the same situation-specific relationship and situation strength, other relationships between participants and their approach or agency toward the situation and relationship are important in explaining social network outcomes. The implication is that attributes such as personality may be more important in situations in which participants do not already have significant experience and/or familiarity with each other. Even then, which personality attributes matter may be determined by how participants approach the situation and relationships within it.

Both cases converged and diverged for the *negative* networks. Both cases converged in that a *negative* relationship between participants did not signify animosity but was specific to the work/classroom/academic situation. Further, I found instances of transitivity in both cases in which the *positive* and *negative* social relationships between participants resulted in additional *positive* and *negative* relationships with other participants. Importantly, while I assessed personality may have contributed to developing some of the *negative* relationships, I suggested that transitive processes explained the remainder. Relatedly, in both cases, participants with the most *positive* relationships (i.e., *trust*, *friendship*, *most prefer to work with*, and *previous relationships*) tended to have the fewest *negative* relationships, which implies that social processes such as transitivity affect

the development of social relationships and must be accounted for when explaining social network outcomes. Finally, both cases converged in that attributes other than personality, such as rank, and/or how a participant approached or behaved in a situation could also explain their nominations to the *negative* networks. The cases diverged, however, in terms of personality's importance to the *negative* networks. In MIOC, participants with personality attributes such as low agreeableness and/or high negative emotionality were more central in the *negative* networks, whereas participants with the same attributes in MIAC, but with multiple *previous relationships*, were not. As suggested previously, it is likely their *previous relationships* facilitated developing other positive relationships (such as *trust*, *friendship*, and *most prefer to work with*) and reduced their likelihood of being nominated to the *negative* networks.

Overall, both cases provided a weak situation and participants agreed that it facilitated their ability to develop relationships with their classmates. However, depending on the relationship, the cases converged and diverged, and the significance of the situation, social relationships, personality, and their interaction varied. The cases were most similar in the *trust* network as factors such as participants' identity were important in developing *trust* relationships, and the Big Five facet "trust" was relevant in *trust* network nominations as well. The cases were most dissimilar for the *most prefer to work with* network, and the *previous relationships* network and differences in how participants approached the situation and relationship were the primary reason. For other relationships, the major difference between the two cases was the impact of the *previous relationships* network. Ultimately, the results suggest that understanding participants' network of relationships and how participants make sense of and approach situations is important when assessing and explaining personality's effect on relationship development and social network outcomes.

E. OVERALL CASE COMPARISON

Overall, I found the cases to be more similar than different. Both provided similar situation and situation strengths, and the most significant differences were in how participants approached their respective courses and the influence of the *previous*

relationships network. The most consistently significant difference between the cases was the influence of the *previous relationships* network on the development of social relationships in MIAC. Across all research questions, to include my comparison of case situation and situation strength, the influence of the *previous relationships* network was an important factor in explaining differences between social network outcomes, to include personality's relevance. Understanding how participants approached situations and the relationships within them was important to understanding results as well. That is, the cases were similar in regard to the *trust*, *friendship*, and *negative* networks, but differed significantly in participants' approach to the work situation and *most prefer to work with* relationship. Understanding participants' approach to the *most prefer to work with* relationship was critical in understanding which attributes, such as personality, or interpersonal familiarity, were important in developing the relationship. Ultimately, these two factors, among others, are discussed in the next chapter regarding how they contribute to extant Big Five and self-monitoring social network research.

F. SUMMARY

In this chapter, I answered the research questions by comparing the findings for each of the cases. I discussed how the cases converged and diverged for situation and situation strength and the three research questions, and provided explanations as to why the findings diverged. In the next chapter, I consider how these answers contribute to, and elaborate on, extant Big Five and self-monitoring social network research.

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VII. CONTRIBUTIONS, DISCUSSION, LIMITATIONS, AND FUTURE WORK

In this chapter, I discuss my study's contributions to extant Big Five and self-monitoring social network research, examine its limitations, and recommend future work. First, I cover my research's contributions to the four gaps I identified in the literature review. Next, I discuss the implications of my findings to extant and future research and discuss additional considerations. Finally, I cover the limitations of my research and recommend areas for future study.

A. RESEARCH CONTRIBUTIONS

In this study, I sought to address four gaps in extant Big Five and self-monitoring social network research. From my case comparison, the most significant finding to emerge is that understanding participants' network of relationships and how participants make sense of and approach situations is important when assessing and explaining personality's effect on relationship development and social network outcomes. Other important findings include the effect of the Big Five's traits and facets, and acquisitive and protective self-monitoring constructs, on the development of *positive* and *negative* relationships. Here, I discuss how these findings address gaps in current research and contribute to extant Big Five and self-monitoring social network literature.

In my literature review, I argued there were four gaps in extant Big Five and self-monitoring social network research that needed to be addressed. First, for the Big Five traits and facets, I argued that previous research had not considered the facet-level details necessary to better understand personality's impact on developing social relationships. Further, I discovered that previous Big Five social network research had not considered how the traits and facets impact the development of *trust* relationships, despite the relationship's importance in developing other social networks (Lewicki et al., 1998). Second, I noted that earlier self-monitoring social network research had only used the univariate conceptualization of the concept, meaning it examined, putatively, the acquisitive construct (Wilmot 2015; Wilmot et al., 2017) and had not considered what, if

any, effect the protective construct had on relationship development. Third, I highlighted how research to date had not considered how actor agency affects relationship development and outcomes and how it might affect personality's relevance to relationships. Finally, I argued that previous research had not considered how situation and situation strength, social relationships, to include *negative* relationships, and personality, interact to explain social network outcomes. To address these four gaps, I developed three research questions and conducted a mixed methods comparative case study to answer them.

The most significant finding to emerge from the analysis is that understanding participants' networks of relationships and how participants make sense of and approach situations is important when assessing and explaining personality's effect on relationship development and social network outcomes. That is, a participant's other relationships and/or their approach to a situation and the relationships within it, can affect which, or even if, personality is a relevant factor in a relationship's development. The finding contributes to extant Big Five and self-monitoring social network research by bringing together two gaps in current research: (1) the effect of actor agency on relationship development and how it affects personality's relevance to it, and (2) the interaction of situation and situation strength, social relationships, and personality on explaining social network outcomes. Specifically, the social network framework recognizes that actors have intentionality (Robins, 2015; Tasselli et al., 2015), but also that actors have many relationships, each involving a "number of motivations and purposes" (Robins, 2015, p. 36), and these relationships interact to influence the development of other relationships (Lusher & Robins, 2013). Further, personality researchers recognize that a situation's strength affects personality expression and its relevance in a setting (Kenrick & Funder, 1991; Stewart & Barrick, 2004). More broadly, however, the situation also involves understanding how actors make sense of their environment (Miles et al., 2014), and understanding it is important in explaining phenomena (Johns, 2001; Miles et al., 2014; Mishler, 1979), such as personality's relevance to a given relationship. However, extant Big Five and self-monitoring social network research has not considered how these factors interact or impact personality's effect on relationships and social network outcomes. My findings reveal three

critical points that develop these ideas and contribute to the understanding of how these factors interact.

First, previous relationships between actors in a network can significantly affect the development of other relationships. Specifically, the familiarity between actors may mitigate the importance of personality in developing additional relationships as network processes such as transitivity may be more impactful (e.g., *the friend of my friend is my friend*, or, *the enemy of my friend is my enemy*). For instance, in MIOC, in which there were few previous relationships between actors, personality was a relevant factor in developing *friendship* relationships; however, it was not found to be relevant in MIAC, in which there were many previous relationships. Further, the *previous relationships* network was assessed to contribute significantly in developing the *most prefer to work with* network in MIAC but was not significant in MIOC. Overall, the effect of the *previous relationships* network was the most consistent difference between the cases, and my analyses found its influence was significant in explaining personality's effect on relationships and social network outcomes.

Second, in expanding upon the first point, other relationships between actors may influence the formation of additional relationships, which, in turn, limit personality's relevance to relationship development. Specifically, my analyses discovered that actors with more *positive* relationships (e.g., *friendship*, *trust*, *most prefer to work with*, and *previous relationships*) are less likely to develop *negative* relationships. Additionally, the *positive* and *negative* relationships between two actors may facilitate negative transitivity from an actor's alters, and occur independently of obvious personality influences. These findings provide empirical support to Selden and Goodie's (2018) suggestion that *negative* relationships between actors affect and/or can be affected by their *positive* relationships, which, in turn, affects personality's relevance to them. For example, in MIOC, the traits of low agreeableness and high negative emotionality were related to *negative* network centrality; however, for MIAC, when accounting for the *previous relationships* network and other *positive* relationships, these traits were unimportant. My findings also provide empirical support to two of Labianca and Brass's (2006) theoretical propositions regarding *negative* relationships. First, both cases support the proposition that "negative relationships

will be less numerous in a high-density network” (2006, p. 605). That is, in both cases, the *trust* and *friendship* networks were the densest, while the *negative* were the sparsest. Second, both cases provide some support to the proposition that “negative relationships will be less numerous when the network has a high level of task interdependence” (p. 605). In my interpretation, task interdependence is most associated with workgroup work. In one case, *negative* relationships were directed across workgroups, lending support to the proposition, while in the other, *negative* relationships were mostly directed within workgroups, contradicting it. However, in the contradictory case, the level of intra-workgroup strife may be over-correlated, and these findings support Labianca and Brass’s (2006) propositions. Overall, while the *previous relationships* network was highly significant to MIAC, my findings and analyses reveal that in both cases, other *positive* networks also influence personality’s relevance to *negative* relationships and help explain social network outcomes.

Third, situation and situation strength, and how actors make sense of a situation and the relationships within it, can impact if factors such as personality or other relationships are important in developing relationships. For example, in a weak situation in which it is easy to collaborate and be friendly with other actors, relationships such as *trust* and *friendship* may develop quickly and even counter to what an actor’s measured personality suggests. For instance, in both cases, actors discussed how the situation and other actors’ identity made it easy to develop *trust* and *friendship* relationships, with some actors doing so despite low scores on interpersonal traits such as extraversion and agreeableness. However, actors may not impart significant meaning to those relationships due to those same situational factors. They may also exhibit agency and interpret and approach situations and relationships differently, influencing which attributes they seek in alters. For instance, in MIOC, many actors approached the work-situation diligently and sought alters with work-situation attributes, such as conscientiousness. In the other case, however, actors’ attitude toward work was more lackadaisical. Additionally, influenced by the *previous relationships* network, actors did not seek alters with specific characteristics, but those with whom they were familiar. Ultimately, recognizing actor agency and seeking to understand how actors make sense of the situation and the relationships within it

contributes to making sense of what, if any, relevance personality has in relationship development.

Overall, the three points highlight that social relationships and actor agency are important considerations when assessing and explaining personality's effect on relationship development and social network outcomes. My findings contribute to extant Big Five and self-monitoring social network research by providing instantiations of how factors like situation and situation strength, actor agency, social relationships, and personality interact to influence and explain relationship outcomes. They also provide empirical support to propositions from Labianca and Brass (2006) regarding conditions influencing *negative* networks, and Selden and Goodie (2018) regarding how *positive* and *negative* relationship interaction can influence personality's relevance to relationship outcomes.

For the Big Five traits and facets, my findings provide facet-level personality details for the development of *trust* and *friendship* relationships, but also add further details to the Big Five's role in developing *negative* relationships.

For the *trust* relationship, my findings' contribution is that it provides facet-level details into how personality influences the development of the relationship. That is, although the *trust* relationship and concept are considered important in understanding social network relationships (Lewicki et al., 1998), previous research has not considered how the Big Five traits and facets influence its development. My findings show that the "trust" facet was consistently and significantly positively correlated with out-degree and degree centrality in the *trust* network. The findings' consistency across both cases, even when considering the situation's influence on the relationship, suggests the "trust" facet may be a reliable indicator of a participant's propensity to trust and nominate alters to their *trust* networks. What is more, in both cases, actors considered trust as an important prerequisite to friendship, adding additional support to Lewicki et al.'s (1998) research.

For the *friendship* relationship, my finding contributes to extant research by providing additional information on which of extraversion's facets affect friendship development. Specifically, Harris and Vazire (2016) note that few studies considered

extraversion's facets in *friendship* relationship development. That is, extraversion has both "communion-related traits (e.g., sociability and warmth)" and "agency-related traits (e.g., dominance and assertiveness)" (2016, p. 654), and they argue additional research was necessary to clarify extraversion's relevant facets in friendship development. In MIOC, both communion- and agency-related traits were significant to *friendship* network out-degree and degree centrality, that is, "sociability" and "assertiveness," respectively. Although the finding only relates to one case, due to the influence of the *previous relationships* network in the other, it is consistent with social network theory, as an actor who is both assertive and sociable is likely to meet more potential friends and benefit from reciprocity, and similarly, more likely to meet actors with similar traits. For example, Feiler and Kleinbaum (2015) found that actors similar in extraversion were more likely to become friends with each other.

For the Big Five traits, two findings are relevant to previous theoretical and empirical personality-focused research of *negative* relationships. However, the findings are from the MIOC case, in which the *previous relationships* network's impact on outcomes was less relevant.

First, actors scoring low in agreeableness and/or high in negative emotionality are more likely to be nominated to or nominate alters to the *negative* networks, respectively.⁸³ This supports Labianca and Brass's (2006) proposition that actors high in negative affectivity (similar to negative emotionality) are more likely to have *negative* relationships than those with lower scores (i.e., lower negative emotionality), and also corroborates empirical work by Klein et al. (2004) for agreeableness only, and Schulte et al. (2012) for negative emotionality only. Additionally, I found evidence that if two actors who both score highly in negative emotionality interact, there is a likelihood of conflict. In this case, two actors who scored well above class average in negative emotionality quickly developed a *negative* relationship after working together. The finding is conceptually supported, as actors high in negative emotionality are more sensitive to negative influences (Harris &

⁸³ In MIAC, this also applied to one actor who did not have previous relationships.

Vazire, 2016) and further contributes to understanding how personality affects *negative* relationship development.

Second, the presence of perceived asymmetry between actors who were work-focused (i.e., *perceived* as high on conscientiousness) led to *negative* ties against those who were *perceived* as less work-focused. This supports Labianca and Brass's (2006) and Labianca's (2014) assertion that in a work environment, actors scoring lower in conscientiousness would receive more *negative* ties. A caveat, however, is that it was *the perception of hard work* that was the difference, as those perceived to work hard often scored average to below class average in conscientiousness.

For the Big Five traits and facets, my findings contribute to extant research in both *positive* and *negative* networks. Specifically, for the *trust* and *friendship* relationships, my findings provide facet-level insight into which personality factors influence relationship development. What is more, my findings for the *trust* network provide both important personality-relationship details, but also insight into how the relationship relates to *friendship* relationship development. Finally, my trait-level findings apply to extant empirical and theoretical research on the Big Five's impact on developing *negative* relationships.

Although my findings for acquisitive and protective self-monitoring are tentative, they do provide new insight into extant self-monitoring research. That is, while my findings are quantitatively weak and anecdotal, they are theoretically supportable given the constructs' nomological network. I found the two constructs most relevant to the *most prefer to work with* and *negative* networks.

In the *most prefer to work with* relationships, for both cases, I suggested that actors scoring highly on protective self-monitoring, acquisitive self-monitoring, or both, but who were otherwise deficient in desirable Big Five traits (i.e., agreeableness or conscientiousness) were socially adept at gaining favor with other participants. The results were clearest in MIOC, in which actors scoring highly in protective self-monitoring, but low in agreeableness and/or conscientiousness, two desirable attributes for the *most prefer to work with* network, were considered team players and hard workers, suggesting they

were able to conform to social expectations in a work environment. The evidence was weaker, but similar in MIAC, as actors scoring highly in one or both constructs, but who were deficient in desirable attributes (i.e., agreeableness), were described positively and nominated to the *most prefer to work with* network. In both cases, I suggested alternative explanations for the results. However, the suggestion that actors high in acquisitive and/or protective self-monitoring, or both, could successfully navigate social situations fits within both constructs' conceptual theory. For extant self-monitoring social network research, the primary contribution is that there is some evidence to indicate that actors scoring highly in protective self-monitoring can “get along” to get ahead (Wolfe et al., 1986) and can conform to social situations as needed. As no self-monitoring network research has considered the protective construct, this provides an avenue for future exploration. Acquisitive self-monitoring's potential impact on the results corroborates previous studies suggesting actors scoring highly in the construct are “social chameleons” (Kilduff et al., 2017), adept at being the person they need to be (Lennox, 1988). Specifically, as many previous self-monitoring network studies' results are confounded to an unknown degree by the protective construct (Wilmot 2015; Wilmot et al., 2017), the finding's consistency with the acquisitive self-monitoring conceptualization may provide some assurance into the veracity of previous self-monitoring network research's results.

Although actors scoring highly in one or both self-monitoring traits may be socially adept at developing *positive* relationships, an actor's rank may be a limiting factor. Specifically, in both cases, I found an example of an actor scoring highly in both constructs⁸⁴ but failing to gain social acceptance with other actors, with both actors becoming highly central in the *negative* networks. The common characteristic in both cases was the junior rank and experience of the unsuccessful actor. The finding suggests that although scoring highly in the constructs may be helpful to fitting in and/or gaining social advantage with peers, in a status-hierarchy situation, these characteristics may not be as advantageous. There are two potential contributions to extant self-monitoring network research. First, as all previous research has considered self-monitoring's influence in

⁸⁴ Both scored above class average in the two constructs, however, in MIOC, the actor scored highest in the acquisitive construct; in MIAC, the actor scored highest in the protective construct.

positive networks, it provides insight into how the constructs may also contribute to actors becoming central in *negative* networks. Second, as Fang et al. (2015) recognize, the hierarchical level of an actor may moderate personality's relevance to relationships, suggesting that rank is potentially a moderator of self-monitoring's influence on relationship development.

Overall, my findings for the acquisitive and protective self-monitoring constructs' effect on social relationships are speculative but provide new insight to extant research. Specifically, they suggest that actors scoring highly in one or both constructs may possess the social adeptness, in certain situations, to overcome low scores in desirable traits such as agreeableness and conscientiousness and develop *positive* relationships. However, an actor's rank can potentially mitigate the effect of scoring highly in the constructs as more senior ranking actors may react negatively to junior ranking actors' attempts to curry social advantage. The findings contribute to extant research by providing insight into the role of the protective construct in developing relationships, as well as providing confidence in previous self-monitoring network research's findings. Further, they also contribute by providing insight into how self-monitoring affects an actor's centrality in *negative* networks, and which factors moderate self-monitoring's influence on developing relationships.

B. DISCUSSION

The implications of these findings are important both in interpreting previous research and in guiding future work because they highlight many of the complexities involved in associating personality with social relationships. Overall, they show that the Big Five traits and facets and self-monitoring constructs are relevant to relationship development; however, my most significant finding and contribution elucidate just how important considerations other than personality are to relationship development and social network outcomes.

The influence of previous relationships between actors cannot be discounted, and as shown, can significantly affect the relevancy of personality in developing relationships. In that regard, MIAC and MIOC were very different cases, that is, MIAC's network was

more developed before the beginning of the course, whereas MIOC's network was less developed. As my findings illustrate, accounting for previous relationships is important in determining what effects personality might have in developing relationships. The implications in interpreting previous research and conducting future research are understanding that personality's relevance to a relationship may vary depending on the state of the network in question. That is, in a new network, in which the actors are unfamiliar with each other, personality may be more relevant to relationship development than in an older and more developed network in which actors are familiar with each other, and processes such as transitivity may exert greater influence. Beyond the influence of the *previous relationships* network, however, other relationships could also influence the development or non-development of additional relationships and the implications are similar. Overall, accounting for an actor's network of relationships is an important component to understanding how relevant or not personality may be to a relationship.

In considering the influence of relationships on one another, I discussed the idea of transitivity and negative transitivity. However, other processes such as homophily and propinquity are likely important too. Specifically, I found the *workgroups* network was influential, at times for the *friendship* network in MIOC and the *most prefer to work with* network in MIAC (and to a lesser extent in MIOC). Likewise, in both cases, the common identity of classmates as Marines helped develop *trust* relationships. In both instances, the physical proximity and other similarities between actors increase the likelihood of relationships forming between them—this is propinquity and homophily, respectively (Kadushin, 2012; McPherson et al., 2001), and they likely influenced relationship development in my cases as well. As Selden and Goodie (2018) suggest, accounting for these “naturally occurring network phenomena” (p. 97) is important in assessing personality's influence on relationships; however, recognizing its occurrence and accounting for its impact is different. That is, how might one tell if a relationship formed because of personality, propinquity, homophily, reciprocity, transitivity, some unknown factor, or a combination? Ultimately, I do not believe there is a simple answer, although having quantitative and qualitative data can help a researcher make these distinctions, particularly when networks are too small to reliably use complex statistical models, such

as exponential random graph models (ERGMs) and stochastic actor-oriented models (SAOMs), which can better account for their influence (Robins, 2015).

Situation and situation strength and actor agency turned out to be important in understanding and explaining personality's relevance to relationships and network outcomes. In a sense, this should not be surprising, as personality researchers recognize situation and situation strength are relevant to personality assessment (Barrick et al., 2003; Kenrick & Funder, 1991; Stewart & Barrick, 2004), and the social network framework recognizes actors are purposive and have intentionality (Robins, 2015; Tasselli et al., 2015). However, the postpositivist and quantitatively focused nature of current Big Five and self-monitoring network research would seem to limit what can be explored and learned. For example, in both cases for the *trust*, *friendship*, and *negative* relationships, participants pointed out that the relationships were not necessarily meaningful and mainly impacted by the situation and situation strength. Further, understanding how participants approached their respective courses was important in interpreting and understanding the *most prefer to work with* network's results. Specifically, in MIAC, the results defied my expectations, in part because of the influence of the *previous relationships* network, but also because many participants did not approach the course and the relationship as seriously as their MIOC counterparts. The implication is that researchers need to be mindful of their interpretations of concepts such as *friendship*, *trust*, and even *negative* relationships. Actors may interpret or impart meaning to a relationship differently, and relationships may be cursory on account of an actor's interpretations and the influences of the situation and situation strength. Ultimately, personality's relevance to a relationship and/or making sense of social network outcomes is influenced by actor agency and situation and situation strength, and its future consideration is warranted.

In turning to the Big Five traits and facets, I had mixed success in using hierarchical measures. Facet-level measures proved important in deriving more precise linkages between the *friendship* and *trust* relationships that would otherwise wash out in item aggregation in trait-only scales. However, given that the facet scales are short, they are more likely to be spuriously correlated to relationships, have reliability issues, and may

require further analysis to validate their associations,⁸⁵ particularly in a small network. Further, in many instances, I discovered that facet scores were not helpful because of confounding variables (e.g., *previous relationships*, highly central actors, conceptual variability of relationships among actors) but the aggregated trait scores were helpful. Soto and John (2019) suggest that broad scales are best for exploring general relationships, whereas narrow scales work best when there is a specific hypothesis regarding specific facets. In that sense, my results should not be surprising, but with hierarchical scales, one can measure both precisely and broadly. Given the dearth of facet-level studies in current Big Five network research, however, future use of hierarchical scales is recommended.

For self-monitoring, the findings with the bivariate model are limited and anecdotal. This is unsurprising; however, since the bivariate model is conceptually and empirically undeveloped, I used it sparingly in explaining social relationship outcomes. In both cases, I considered alternative explanations for unexpected or unusual results before examining whether self-monitoring might be relevant. Typically, I considered it relevant when actors scored either well-above or well-below class average in one or both constructs, the constructs were valid for the situation and relationship, and alternative explanations had also been considered. However, the most significant finding is self-monitoring's role in *negative* relationships, as previous studies have only considered its effect in *positive* ones. The results suggest that high scores in both constructs facilitate social acceptance and fitting in with peers, but such advantages dissipate when participants have lower status (e.g., rank). Rank is meaningful in a military setting, and the results suggest that a participant's credibility and experience are also important and that actors may benefit from high self-monitoring only if they have the situation-relevant bona fides to pull it off. Overall, this finding reiterates the importance of the situation in assessing results and provides an intriguing starting point for future bivariate self-monitoring research.

One of the motivating ideas for this study was its implications on Marine Corps talent management. However, my enthusiasm for its application has waned. Specifically,

⁸⁵ That is, by asking the question, "does the correlation make sense given the facet, relationship, and what is known about the network." Fortunately, this analysis is made easier in mixed methods analysis, but nonetheless requires time and effort to sort out.

the situation and situation strength provided by both courses were not comparable to the participants' normal working environment. Participants from both courses recognized their course's weak situation and situation strength contrasted significantly from their normal working experiences. As I have argued that understanding situation and situation strength is important in understanding personality's relevance to relationship development and social network outcomes, I am reticent to suggest the findings from this study would be similar in stronger situations. What is more, an actor's rank and experience were factors in developing relationships, even in an ostensibly rank-flattened situation. I have reservations about the applicability of my findings in the rigid rank-hierarchy situations participants are most likely to encounter in their normal duties without first understanding how rank hierarchies interact with personality and social relationships. Overall, the results may be applicable in weak situations and/or when actors are peers or near-peers; however, I express caution about the applicability of the findings in stronger situations and/or situations in which there is a rank discrepancy among actors.

C. LIMITATIONS

I consider four main limitations of my study. First, its most significant limitation is that it was undertaken by a single researcher, exploring the intersection of two vast and different fields, social network research and personality psychology. Invariably, some degree of epistemic trespassing (Ballantyne, 2019) is inevitable, although unintentional. Overall, I tempered my findings when necessary, explicitly noting when I was speculating, and mentioning when issues were beyond the scope of the research and my abilities as a researcher, all the while still providing impactful interdisciplinary research.

Second, although the research design and questions are one of the strengths of this research, it also meant sacrificing conceptual and analytical depth for breadth. Specifically, although the mixed methods design was necessary to expand on extant personality-network research, my study is exploratory and correlational rather than confirmatory. However, the research design was driven by real-world constraints, both in terms of participant availability and the time I could remain at the collection site. Despite these issues, I believe

my findings and contributions are valuable and provide fresh perspectives into Big Five and self-monitoring social network research.

Third, I was unable to collect two additional cases that would have examined entry-level officer and enlisted intelligence Marines. These additional cases would have provided a more robust set of results with which to work and on which to base conclusions. However, I believe the results and conclusions presented in this study are nonetheless important to extant and future Big Five and self-monitoring social network research.

Fourth, there are shortcomings to the personality traits and constructs used in this study. Although the Big Five may be the most common and accepted description of personality, it is not the only one. Notably, given the overall situation, some of the traits may not have been relevant, and/or some of the descriptions provided by participants may have related to traits and constructs not captured by the Big Five. For self-monitoring, the bivariate scale I used was derived from the original 25-item self-monitoring scale (Snyder, 1974) by Wilmot et al. (2017), but it has several limitations. Specifically, because the scale was developed from Snyder's (1974), the item pool was limited, meaning it "prevented the development of measures that covered both the full range of the latent traits and did so with high precision" (Wilmot et al., 2017, p. 686). Further, the protective self-monitoring scale was noted to have low internal consistency (2017). Ultimately, I likely did not measure the full extent of either construct. However, despite the potential limitations of the two personality scales, their use was more than justified given current gaps in Big Five and self-monitoring network research.

D. FUTURE WORK

I identify five areas for future research. First, further study is required to understand the role of situation strength on actor agency, social relationships, and personality interaction. Specifically, I assessed both cases as providing weak situations, meaning that participants were generally free to express themselves and were able to shape their approach to their respective courses. I cannot argue, however, that the finding extends to stronger situations, in which there are stricter norms, and conformity may be expected.

Second, future studies could explore how actors define and select alters to relationships in light of their personality disposition. For example, such research may find that actors high in extraversion define and consider friendship differently than introverts.

Third, since *trust* appears to be a critical relationship from which other relationships are built, its inclusion in future multiplex studies is warranted. Additionally, since “trust” is a measurable personality variable, there may be value in measuring participants in it when assessing *trust* relationships and in other research in which “trust” is studied.

Fourth, the impact of perception in personality-network studies requires additional research. Although I refer to “perception” in my case analyses, I did not explore it, in part, because it appears to be a branch in personality psychology⁸⁶ and I did not want to conflate this study with those efforts. However, from a personality-focused social network research perspective, how perception impacts relationship formation is a valid concern. For example, even in my study’s small networks, participants readily made judgments about alters’ personality with varying degrees of accuracy, which, in turn, appeared to affect relationship decisions. The effect of perception mechanisms in relationship formation and the longer-term impact of accurate/inaccurate perceptions on relationship development appear to be a fruitful avenue for further research.

Finally, although my study’s mixed methods design was useful, there are other mixed methods designs to consider. For example, a sequential exploratory design would provide researchers time to fully develop their qualitative findings and help refine and focus their quantitative efforts (Creswell & Plano Clark, 2018). Further, I found the lexical hypothesis to be useful in coding participant descriptions with personality traits; however, future studies may consider giving participants a list of trait and/or facet-relevant terms instead. Specifically, I found that participant descriptions often lacked detail, especially in MIAC, which limited my ability to associate it with personality traits. If a list of adjectives is provided to participants for the task, this may ensure richer and more useful descriptions are given.

⁸⁶ For accuracy in personality judgment see Funder, 1995; for perception as reputation, see Hogan, 2005; and Costello and Srivastava, 2020.

E. CONCLUSION

This study addressed four gaps in Big Five and self-monitoring social network research. Its mixed methods comparative case study provided me an opportunity to explore, explain, and elaborate on these gaps. The most significant contribution is that understanding participants' networks of relationships and how participants make sense of and approach situations is important when assessing and explaining personality's effect on relationship development and social network outcomes. Other important findings include the effect of the Big Five's traits and facets, and acquisitive and protective self-monitoring constructs, on the development of *positive* and *negative* relationships. Overall, the thesis's findings provide new directions for future Big Five and self-monitoring social network research.

APPENDIX A. LITERATURE REVIEW APPENDIX

A. THE BIG FIVE HIERARCHY

A final point on the hierarchical conceptualization of the Big Five is the question of what constitutes the top of the hierarchy. Some personality researchers have offered that the top of the hierarchy are the Big Five traits themselves, notably McCrae & Costa (2008), but also John et al. (2008) and Soto & John (2017). Others have argued for higher order factors or meta-traits of the Big Five, such as Digman (1997), De Young (2006; 2015), Markon (2009) and others (as noted in Markon, 2009 & De Young, 2015). The basic idea of the meta-trait is that it constitutes “the shared variance among the Big Five dimensions” (Wilmot et al., 2015, p. 336)—for example, the meta-trait Stability (also referred to as Alpha or Self-Control), is “the shared variance of Emotional Stability (Neuroticism reversed), Conscientiousness, and Agreeableness” (p. 336), and “appears to reflect the stable maintenance of goal-directed psychological functioning” (2015, p. 336). The meta-trait Plasticity (also referred to as Beta or Engagement) is “the shared variance of Extraversion and Openness/Intellect” (p. 336) and “appears to reflect exploration and engagement with novel information and opportunities” (p. 336). Thus, while the idea of hierarchy in the Big Five has seemingly achieved broad consensus in the field, acceptance of the meta-traits is not as widespread. In terms of this study, the focus is at the trait and facet level, and therefore I did not address the meta-traits.

B. A TALE OF TWO MODELS: THE EVOLUTION OF SELF-MONITORING

As mentioned, the original conceptualization of self-monitoring, Snyder (1974), and its measurement instrument, the 25-item self-monitoring scale (SMS), “sought to assess five hypothetical components of the construct” (Lennox & Wolfe, 1984, p. 1349). However, numerous factor analytic studies (for a summary, see Lennox, 1988) from other researchers showed that the 25-item SMS did not measure the components outlined by Snyder (1974), but instead reliably yielded “three factors: Acting ability, extraversion, and other-directedness” (Lennox & Wolfe, 1984, p. 1349)—with only the other-directedness component (also referred to as “attention to social comparison information”) being related

to the original five components theorized by Snyder (Lennox, 1988; Lennox & Wolfe, 1984), leading researchers to note “a marked lack of congruence between the scale and the construct” (Lennox & Wolfe, 1984, p. 1350). Lennox and Wolfe (1984) further argued that “because the scale measures variables other than those subsumed by the construct” that “the scale’s multidimensionality extends beyond the limits of the construct, creating a situation in which its factors compete with one another” and hence, “the total score on Snyder’s (1974) scale tends to defy interpretation; it is impossible to determine what the scale as a whole might be measuring” (1984, p. 1350).

The issue with Snyder’s (1974) scale was that he considered self-monitoring to be a unitary construct, requiring “an individual [to] possess all self-monitoring attributes in order to be considered a self-monitor” (Lennox, 1988, p. 64), however, the factors present in the scale presented a contradiction. For instance, “the person who scores high on the extraversion factor tends to be outgoing and socially confident, whereas the person who scores high on the other-directedness factor tends to be anxious, shy, and lacking in confidence” (Lennox & Wolfe, 1984, p. 1350), making it “unlikely that the same individual will score high on both factors” (p. 1350). Thus, “the inconsistent fashion in which factors correlate with other variables makes it unlikely that the scale is an effective measure of a single unitary construct” (Lennox, 1988, p. 64). To remedy this, Lennox and Wolfe (1984) released two scales. The first, the Revised Self-Monitoring Scale (R-SMS) (a 13-item scale) was “designed to assess the ability to modify self-presentation and sensitivity to others’ expressive behavior” (Lennox, 1988, p. 71), and is argued to operationalize the acquisitive self-monitoring construct (Lennox, 1988; Wilmot et al., 2015). The second scale, the Concern for Appropriateness Scale (20-items), was “designed to assess protective cross-situational variability of behavior and protective social comparison” (Lennox, 1988, p. 71), and is argued to operationalize protective self-monitoring (Lennox, 1988; Wilmot et al., 2015).

In response to criticism of the original univariate conception of self-monitoring, Gangestad and Snyder (1985) conducted taxometric analysis (i.e., a means of determining whether a construct’s latent structure is class or dimensional (Wilmot, 2015)) to demonstrate that despite the presence of multiple factors in the construct (a point that both

Gangestad and Snyder readily agree with (e.g., Gangestad & Snyder, 2000)), self-monitoring was a dichotomous (high vs. low), discretely distributed class variable (Gangestad & Snyder, 1985; Wilmot, 2015). Their study (Gangestad & Snyder, 1985) demonstrated that the latent structure of self-monitoring was categorial and hence confirmed their theory that self-monitoring, despite the multiple factors present in the 25-item SMS, is discretely distributed, and “the dichotomy between high and low self-monitors is a state of nature” (Wilmot, 2015, p. 354). The “results indicated that this class variable is expressed as the first unrotated factor in the factor space of the SMS, which corroborated the use of full-scale scoring” (Wilmot, 2015, p. 354). As noted by John et al. (1996), Snyder also modified his interpretation of self-monitoring into “a much broader theory of interpersonal orientations” (1996, p. 763) and subsequently modified the description of prototypical high and low self-monitors. That is, “the prototypical high self-monitor [is described] “as ‘someone who treats interactions with others as dramatic performances designed to gain attention, make impressions, and at times entertain’” (John et al., 1996, p. 763, as cited in Snyder, 1987), and “the prototypical low self-monitor is said to show the opposite social tendencies and to attempt to communicate his or her authentic feelings and dispositions” (1996, p. 763).

In conjunction with their taxometric analysis (Gangestad & Snyder, 1985), Snyder and Gangestad (1986) removed seven items from the original 25-item SMS in order to increase its reliability and make it more “factorially pure” (John et al., 1996, p. 763), and published the 18-item Self-Monitoring Scale-Revised (SMS-R) in its place (John et al., 1996; Wilmot, 2015; Wilmot et al., 2017). The SMS-R, in conjunction with their taxometric findings, and broader interpretation of the self-monitoring construct “set off a new round of criticism and debate” (John et al., 1996, p. 764). Specifically, even when restricting “their attention to the unrotated factors in the pool of 25 SMS items,” “researchers continued to report at least two major factors” (John et al., 1996, p. 764). Factor analysis of the SMS-R revealed the two orthogonal factors as public performing and other-directedness (John et al., 1996), respectively. Specifically:

The larger first factor was positively related to social approach measures (e.g., social potency) and contained most of the items represented on the Acting and Extraversion subscales. The smaller, second factor was

comprised of Other-Directedness items; it was positively related to measures of social avoidance (e.g., shyness). (Wilmot, 2015, p. 355)

Thus, “from the perspective of some psychometricians, the presence of two uncorrelated factors would appear to be a major problem, given that the scale was designed to measure a single personality attribute” (John et al., 1996, p. 764).

Despite the presence of at least two-factors in their SMS-R, Snyder and Gangestad stood by their taxometric findings, and suggested that although the “two factors are not related to each other, each could still relate significantly to a measure of the latent variable assumed to define the SM (self-monitoring) construct” (John et al., 1996, p. 764). Many researchers, however, did not accept the results of the latent taxometric analysis and Snyder and Gangestad’s explanation (John et al., 1996). Given the inherent contradictions in the SMS-R, Lennox (1988) suggested the self-monitoring construct be expanded to include two factors termed acquisitive and protective self-monitoring, after Arkin’s (1981) terms for self-presentation styles, and also argued that Lennox and Wolfe’s (1984) two scales were adequate measures of the acquisitive and protective constructs, respectively (Lennox, 1988). Later research by John et al. (1996) also advocated for a bivariate model of self-monitoring, but argued that the original 25-item SMS should be used instead, because the SMS-R (i.e., the shortened version of the original SMS) “weakened the conceptually important aspects of other-directed self-presentation and thus shifted the construct toward extraversion” (John et al., 1996, p. 773; Wilmot, 2015; Wilmot et al., 2017). Further, similar to earlier researchers (e.g., Lennox, 1988; Lennox & Wolfe, 1984; Wolfe et al., 1986), John et al. (1996) noted that the two factors should be computed separately, because in some instance they do converge. That is, “in many combinations of circumstances, there are several situation-appropriate behaviors that may be in service of either motive” (Wolfe et al., 1986, p. 356) because the “behavioral manifestations of the two styles may be identical” (1986, p. 356), but may also be unrelated, and thus argued “researchers should compute Public Performing and Other-Directedness scores separately from the 25-item SMS in order to test for both individual and joint effects” (John et al., 1996, p. 773).

Despite these arguments, Gangestad & Snyder maintained that the SMS-R was functionally univariate (1991). “That is, full-scale SMS-R scores are so much more

strongly related to the larger acquisitive factor than to the smaller protective factor that the latter is practically negligible, mostly washing out on scale aggregation” (Wilmot, 2015, p. 355). Further augmenting the univariate model were quantitative reviews of self-monitoring literature (Gangestad & Snyder, 2000) indicating “that self-monitoring functions as a unitary construct, and that full-scale scores predict relevant behavior and work related criteria” (Wilmot, 2015, p. 354). What is more, meta-analysis by Barrick et al. (2005) suggested that self-monitoring, as conceived by Gangestad and Snyder, was not well represented by the Big Five model (i.e., that it existed outside and was independent of the Big Five), seemingly giving the traditional univariate model additional influence among researchers (Wilmot, 2015; Wilmot et al., 2015). Finally, Fuglestad and Snyder (2010) offered a comprehensive review of the foundations and empirical findings of self-monitoring and continued to maintain its univariate, class nature, and offered the following definitions of high and low self-monitors. Specifically, high self-monitors “are particularly attuned to situational contexts and are willing and able to modify their expressive behavior to fit a given situation or role” (2010, p. 1031), and are often referred to as “chameleons,” or “social pragmatists” (Kudret et al., 2019, p. 194). In contrast, low self-monitors “are less responsive to social context, preferring to behave in ways that reflect inner attitudes and dispositions” (Fuglestad & Snyder, 2010, p. 1031) regardless of social context (Kudret et al., 2019), and may be “portrayed by some as principled” (Kudret et al., 2019, p. 194).

The widespread adoption of the univariate model of self-monitoring means that it has received the most research attention (Wilmot et al., 2017), with a review by Kudret et al. (2019) suggesting that the SMS and the SMS-R account for more than 60% of self-monitoring studies (i.e., Snyder, 1974 and Snyder & Gangestad, 1986 versus Lennox & Wolfe, 1984).

1. Re-examining Self-monitoring

For those interested in the details of Wilmot (2015), consider the following discussion.

The linchpin of the univariate model of self-monitoring is Gangestad & Snyder’s (1985) original taxometric analysis, which indicated that despite the presence of multiple

factors in the SMS (1974) (and also in the SMS-R (1985)), that the underlying latent structure was a discretely distributed, dichotomous (high / low) class variable. This critical argument was examined by Wilmot (2015), who noted that the original study conducted by Gangestad and Snyder (1985) was never replicated; evidence suggested that personality is a dimensional rather than a class variable (Wilmot, 2015). Additionally, research indicated that early taxometric analyses suffered from systemic flaws, leading to spurious findings (Wilmot, 2015). Wilmot's (2015) study used contemporary taxometric analytic procedures to both re-evaluate the original study's data and a replication sample to "retest whether the latent structure of self-monitoring was categorical or continuous" (Wilmot, 2015, p. 361).

The results from Wilmot's (2015) analysis suggested that self-monitoring was a continuous or "dimensional" construct, meaning "that self-monitoring is a quantitative construct ordered along a continuum of increasing (or decreasing) expressive behavioral control" and "not a qualitative construct that manifests in two classes of person (i.e., high and low self-monitors)" (Wilmot, 2015, p. 362). The results are significant because it overturns the primary argument of the univariate model (i.e., categorical latent structure) used to justify its continued use (e.g., Gangestad & Snyder, 1985; Snyder & Gangestad, 1986; Gangestad & Snyder, 1991; Gangestad & Snyder, 2000). The primary takeaway from the (continuous) dimensional nature of the latent structure is that "acquisitive and protective self-monitoring are distinct dimensions with divergent nomological nets" and "that there is no underlying class variable linking the two"; therefore, "there appears to be no logical reason not to use the shorter and psychometrically cleaner subscales" (Wilmot, 2015, p. 362) derived from the original 25-item SMS (as John et al., 1996 recommended). He (2015) further argues that "doing so need not cause any problem for the theoretical advances already made for acquisitive self-monitoring" (p. 362), thus reviews such as those by Fuglestad and Snyder (2010) can be associated with acquisitive self-monitoring. Further, the continued use of high and low self-monitors, while convenient, is wrong—"any continued treatment of these classes as a substantive ontological reality is empirically indefensible" (Wilmot, 2015, p. 362). Finally, he advocates that "researchers may benefit from decoupling acquisitive and protective self-monitoring and utilizing a score scheme

that reflects the bi-dimensional internal structure of the Self-Monitoring Scale” and that it may be “a particularly fruitful avenue for future self-monitoring research” (Wilmot, 2015, p. 362).

C. SOCIAL NETWORK RESEARCH

1. Hypothesis Testing and Other Statistical Models

For network hypothesis testing, the primary means of dealing with the interdependencies of network data are by use of permutation or randomization tests (called QAP—Quadratic Assignment Procedure, and similarly MR-QAP—Multiple Regression QAP, and LR-QAP—Logistic Regression QAP) (Borgatti et al., 2013). The four basic network hypotheses tests are: node-level or monadic hypotheses; dyadic hypotheses; dyadic-monadic hypotheses; and group or network level hypotheses (Borgatti et al., 2013). In node-level or monadic hypotheses, the case involves single nodes and a characteristic of them (such as centrality), another characteristic of them (such as their test scores) and the correlation between them (Borgatti et al., 2013). In other words, “a node-level hypothesis is one in which the variables are characteristics of individual nodes” (Borgatti et al., 2013, p. 137). For example, “are those higher in extraversion more central in a network?” or “do actors higher in acquisitive self-monitoring hold more brokerage positions in a network?” In a multiple regression, for example, examine which trait best predicts whether someone is nominated (e.g., a node’s in-degree centrality score) as difficult to work with. In some instances, basic Ordinary Least Squares (OLS) or Logistic Regression (Logit) are appropriate for these types of questions (for an example, see Everton, 2012), though Borgatti et al., (2013) cautions that in small networks to use the standard regression method, “but then use a permutation technique to construct the p-values” (2013, p. 137).

In dyadic hypotheses (to include both multiple and logistic regressions) the general question is, if given a pair of nodes (or two or more networks) with one kind of relationship, such as *friendship*, is it more likely that the two nodes (or networks) will have another kind of relationship, such as *trust*? (Borgatti et al., 2013). In QAP regression, one would look to “model the values of a dyadic dependent variable... using multiple independent variables” (Borgatti et al., 2013, p. 129)—for example, given *trust* relationships (e.g., a *trust* network)

what dyadic independent variables would seem to account for it—e.g., perhaps *friendship* relationships and physical proximity (Borgatti et al., 2013).

In dyadic-monadic hypotheses, a dyadic variable, perhaps a network, such as *friendship*, and a monadic variable, such as sex, or a personality trait, or another individual attribute, are compared (Borgatti et al., 2013). A question a researcher may ask is if the monadic independent variable affects the dyadic dependent variable, or conversely, if the dyadic independent variable affects the monadic dependent variable, which are known as “selection” and “influence” or “diffusion” respectively (Borgatti et al., 2013). That is, “a **selection** process entails that actor attributes result in network ties; whereas for an **influence** process, the patterning of the network ties results in changes to actor attributes” (Robins, 2015, p. 216). Of note however, in cross-sectional data, one cannot determine the difference between influence and selection processes—and as should be obvious, directionality does not always go both ways, e.g., some attributes may be responsible for certain relationships to form (e.g., being female may lead to more female friends, which is an example of selection), but gender does not change because of who your friends are (e.g., having female friends does not turn one into a female, thus influence / diffusion effects are not present) (Borgatti et al., 2013).

Finally, group or network-level hypotheses involve a dependent variable (such as test scores, time to complete an exam, etc.) and the independent variable will be some aspect of the social structure of the group or network—such as density (Borgatti et al., 2013). A question may ask, for example, “how does some aspect of network structure—say topography, affect how long a team takes to complete a task?”

Moving beyond hypothesis testing are network-based statistical models, which are typically designed to examine some specific aspect or process of a network. Two that are briefly covered here are exponential random graph models (ERGMs) and Stochastic Actor Oriented Models (SAOMs).

“Exponential random graph models (ERGMs) are statistical models for network structure, permitting inferences about how network ties are patterned” (Robins & Lusher, 2013, p. 9); they are “tie-based models for understanding how and why social network ties

arise” (p. 9). The difference between the QAP-based hypotheses testing noted previously and ERGMs (aside from distinct mathematical differences) is that ERGM’s identify “micro-configurations (such as transitive triples, 4-cycles, etc.) that represent theoretical social processes” and count “them in the data to see if there are more of them than one would expect if the process were not happening” (Borgatti et al., 2013, p. 139), whereas QAP “assesses the fit between the actual data and an ideal matrix consistent with a hypothesized social process” (p. 139) (where the researcher would need to construct the hypothetical matrix to compare the actual data, in order for correlation to work). Another way of thinking about ERGMs is that they permit a researcher to consider why social ties in an observed network have formed (such as homophily, reciprocity, attributes, etc.). “By including such parameters together in one model, a researcher can test these effects against the other, and so infer the social processes that have built the network” (Lusher, Koskinen, & Robins, 2013, p. 1). ERMGs, as originally created, were meant to handle cross-sectional data, though more recent varieties allow for inclusion of longitudinal or panel data as well.

“Stochastic actor-oriented models (SAOMs) can be used to model network change across time” but can also model the “co-evolution of network structure and actor attributes” when longitudinal data is available (Robins, 2015, p. 195). As noted in the “selection” and “influence” discussion above, in SAOMs, “the attributes are assumed to affect the structure (selection) at the same time as the network structure affects the attributes (influence), and because these effects are parameterized separately it is possible to parse out whether you have selection or influence, or both, in your data” (p. 195). The primary difference between ERGMs (as discussed above) and SAOMs is that SAOMs are about how ties evolve over time (Borgatti et al., 2013).

In summary, “networks are based on connectivity, not atomization” and “are structured and patterned, not summed and averaged” (Robins, 2015, p. 12); as a result, different assumptions and considerations are required when using statistical methods and models in social network research and analysis. Still, the methods and models described (as well as the many not listed) provide social network researchers a plethora of options to describe and explain social network outcomes and behaviors. Having said that, Robins (2015) offers sage advice: “fancy, novel network methods are great and continue to become

available all the time” but “sophisticated analyses will not rescue poorly conceptualized research and bad data collection” (p. 206).

2. Additional Social Network Research Design Considerations

In considering whether to employ an egonet or whole network study design, a social network researcher must also determine if time is a relevant variable, both in terms of the research question and the study’s overall constraints, with the answer determining whether longitudinal (or panel) or cross-sectional data is collected.

Longitudinal data, sometimes called network panel data, is data that is time dependent, and refers to collecting data at multiple points in time over the course of the study (Robins, 2015). The key value of longitudinal data is that if a researcher wants to “disentangle selection and influence effects from each other, or make compelling inferences about other causal processes,” then longitudinal data is recommended for both attribute and relational data (Robins, 2015, p. 49). The specific data that is collected over a given time period is dependent upon the research question and other constraints, though at the very least it is relational data (e.g., ties of actors at multiple points in time)—particularly if time-based models, such as SAOMs are to be used. Attribute data may also be collected longitudinally, for instance, a node’s test scores over time. In the longitudinal personality-focused social network studies reviewed for this research, most collected personality information (e.g., attribute data) only once, while collecting relational data at multiple intervals.

If time is independent of the research question, or study constraints are particularly limiting, cross-sectional data may be collected instead. Cross-sectional data is simply data that is collected at a single point in time; it is a snapshot of a network. However, “the presence of network patterns does indicate possible network processes; so many network studies are cross-sectional rather than longitudinal” (Robins, 2015, p. 49).

3. Study Design and Generalizability in Social Network Research

The concept of generalization, generalizability, or external validity of social network studies, as it is for traditional social science research, is a product of research

design. In an egonet study, for example, participants are randomly sampled from a particular population, it may be possible, assuming the sampling was large enough, that inferences could be made to the population (Robins, 2015). Conversely, a single whole network study of one classroom at one school would be more effectively called a case study—as many whole network designs are considered case studies (Crossley & Edwards, 2016; Everton, 2012). On the other hand, the collection of multiple networks, randomly sampled from within multiple classrooms and multiple schools, may be more generalizable to a given population (Robins, 2015).

According to Robins (2015), “just as we have different levels of analysis in a whole network study, we can have different levels of generalization, and generalizing about behaviors of nodes or the structuring of ties within the system is entirely appropriate” (p. 215). The peculiarities of one particular network (case) may not generalize to other cases and it is “risky to generalize beyond the data we observe” (Robins, 2015, p. 215). Social systems are inherently complex, and “contextual effects” (Robins, 2015) or “exogenous contextual factors” (Lusher & Robins, 2013) “that affect network ties and structure, and are also relevant to influence-type mechanisms” (Robins, 2015, p. 50) may be present in one network and not another, which presents a risk of attempting to generalize beyond the data at hand. Therefore, Robins (2015) advocates for building research and research programs around “persuasive theoretical arguments that suggest the results could generalize to other similar systems” (p. 216) through persistent and continuous study through multiple researchers and research teams, in order to “give us confidence that we have generalizable conclusions” (p. 216). In other words, generalizability is not the product of a single study, (there is no “one true study” (p. 216)), but rather a research program built around the continued study of theoretical arguments and the inherent ebb and flow of findings and contradictions emerging from it.

D. PREVIOUS RESEARCH TABLE

In addition to reviews and analyses of previous research by Fang et al. (2015), Landis (2015), and Selden and Goodie (2018), I also reviewed the studies they referenced. The inclusion criteria were that an article had to be explicit about using self-monitoring

and/or the Big Five or one of its traits (that is, the researcher did not attempt to group other personality attributes into the Big Five like Fang et al. (2015)). I also had to be able to gain access to the article, which was successful in most, but not all cases. The article had to be about human subjects and use social network methods or calculations. Social media research was not included. I also included research published since the publication of the referenced reviews that met the stated criteria. Overall, when considered with the three references, 53 unique studies were found. Table 17 presents details of each of them.

Table 17. Previous Big Five and Self-monitoring Network Research

Previous Personality Focused Social Network Research							
Short Citation	Social Network Study Design	Relationships	Sample	Traits Evaluated	Personality Instrument	Notable Findings	Other
Asendorpf & Wilpers (1998)	Egocentric	No ties	German College Students	Big Five and two facets of Extraversion (Sociability and Shyness)	NEO-FFI (Costa&McCrae, 1992 German Version); Shyness and sociability by four and five-item scales respectively	<ul style="list-style-type: none"> Personality affected relationships, but not vice versa Extraversion, Agreeableness, and Conscientiousness influenced relationship status - i.e., the number and quality of participants' social relationships 	<ul style="list-style-type: none"> Personality tested four times with 6-month retest interval; relationships tested 7 times with 3-month retest intervals.
Baams et al. (2015)	Whole Network / Longitudinal	Friendship	Adolescent students	Big Five	Quick Big Five (Vermust, 2005) - 6 items per trait	<ul style="list-style-type: none"> Extraversion "unrelated to in-degree, out-degree, and homophily [i.e., personality similarity]" (Selden & Goodie, 2018, p. 88) Neuroticism "unrelated to in-degree, out-degree, and homophily" (2018, p. 91) Agreeableness not related to in-degree or out-degree centrality; but heterophily observed - agreeable friends stayed friends with disagreeable others "Openness predicted out-degree centrality, but not in-degree centrality" (2018, p. 94); no homophily effects "Conscientiousness predicted out-degree centrality" (2018, p. 95); not related to in-degree and homophily 	<ul style="list-style-type: none"> SKOM Model Findings contradict Feller and Kleinbaum (2015) and Selfhout et al. (2010) Noted that students in these studies were "well-acquainted" with each other, unlike in Selfhout et al. (2010) and Feller & Kleinbaum (2015), which were new students These conflicting results to Feller and Kleinbaum (2015) and Selfhout et al. (2010) may suggest that extraversion is more useful in the formation of new friendships ties, but less necessary for the maintenance of ties once friendships have been established" (Selden & Goodie, 2018, p. 88)
Baer (2010)	Egocentric / Cross-Sectional	No ties	Business Firm	Openness	IPIP (Goldberg, 1999) - 14 items	<ul style="list-style-type: none"> Openness had "no effect on network size;" those higher in openness did have "more diverse individuals in their 'ideal' egonetworks" (Selden & Goodie, 2018, p. 94) 	International Personality Item Pool
Battistoni, Fronzetti Colladon (2014)	Whole Network / Cross-Sectional	Advice	College Students (Italian)	Big Five	IPIP (Goldberg, et al., 2006)	<ul style="list-style-type: none"> Extraversion "unrelated to any type of key player positions in classroom advice network" (Selden & Goodie, 2018, p. 88) "Students low in neuroticism were 'central connectors' in informal advice" (2018, p. 91) networks (i.e., high in-and-out-degree centrality) "Those low in neuroticism are more likely to be 'information brokers' in advice networks" (2018, p. 92) "Agreeableness predicted actors' roles as key players," (2018, p. 93) specifically boundary spanners (2018) Openness not related to occupying key player positions Conscientiousness positively related to key player positions (central connectors or periphery specialists) in informal advice networks 	<ul style="list-style-type: none"> 120-Item IPIP-NEO (article has link); this is a shorter version than the 300-Item IPIP-NEO; both say they do facets, but facets not used in this research
Bhardwaj, Qureshi, Konrad, & Lee (2016)	Whole Network / Longitudinal	Close friendship (and level of interaction)	Canadian Business School Students	Self-monitoring	SMS-R (Snyder & Gangestad, 1986)	<ul style="list-style-type: none"> Higher self-monitoring associated with higher in-degree centrality in close friendship network at Time 1, but not Time 2 	<ul style="list-style-type: none"> Administered at time 1 only Scored as continuous variable
Bolger & Eckenrode (1991)	Egocentric / Cross-Sectional	No ties	U.S. College Students	Extraversion; Neuroticism	EPI (Eysenck & Eysenck, 1964) - Form B; 24 items for each trait	<ul style="list-style-type: none"> Extraversion was "related to greater integration with leisure and religious groups, but unrelated to work and school contacts and kin" (Selden & Goodie, 2018, p. 87) Those scoring higher on neuroticism "were more likely to include kin in their personal networks" (2018, p. 90) than those scoring lower 	<ul style="list-style-type: none"> Eysenck Personality Inventory Binary response (yes/no)

Bon, Therezinha Almeida Moraes, & Ferreira Silva (2017)	Egocentric/ Cross-Sectional	Advice-strength of relationship, diversity (for homophily and gender)	Professionals in different industry sectors	Self-monitoring	25-item SMS (Snyder, 1974)	<ul style="list-style-type: none"> • Males tended to maintain ties in gender homophilic way, regardless of self-monitoring score • Females' networks were more balanced and network structures differed depending on self-monitoring score 	<ul style="list-style-type: none"> • Dichotomized high vs. low via median split • Examined individual differences (gender and self-monitoring) and social network patterns
Casciaro (1998)	Whole Network/ Cross-Sectional	Advice & Friendship	Employees at 3 interconnected universities (Italy)	Extraversion; Self-monitoring	Extraversion scale of Straus (1996) - 8 items; 18-item SMS-R (Gangestad & Snyder, 1996)	<ul style="list-style-type: none"> • Extraversion "unrelated to both friendship and advice in-degree centrality" (Selden & Goodie, 2018, p. 88) 	<ul style="list-style-type: none"> • Notes issues with SMS
Daily et al. (2014)	Whole Network/ Cross-Sectional	Advice & Leadership	U.S. School Administrators	Big Five	10-item TIP (Gosling, Rentfrow, Swan, 2003)	<ul style="list-style-type: none"> • Extraverts "had more indirect connections (high in- and out-closeness centrality)" (Selden & Goodie, 2018, p. 89) • Neuroticism "positively related to in-degree and out-degree centrality," and in "in-closeness and out-closeness centrality" (2018, p. 91) • Agreeableness not related to "degree and closeness centrality in the advice networks" (2018, p. 93) • Openness "significantly correlated with in- and out-degree and in- and out-closeness" (2018, p. 94) centrality; but was not significant when model controlled for other traits • Conscientiousness related to in- and out-closeness centrality; unrelated to degree-centrality 	
Doeven-Eggens et al. (2008)	Egocentric/ Cross-Sectional	No ties	College Students (NED)	Extraversion; Neuroticism; Agreeableness; Conscientiousness	FPI (Hendriks et al., 1999)	<ul style="list-style-type: none"> • Extraverts more likely to list friends vice family as their network members • No difference in proportion of friends vs family in students "focal core" for neuroticism or agreeableness • "Conscientiousness predicted more family members... named in actors' core egonetworks" (Selden & Goodie, 2018, p. 95) 	<ul style="list-style-type: none"> • Five Factor Personality Inventory; 100 statements; five point Likert scale
Emery (2012); Emery et al. (2013)	Whole Network/ Longitudinal	Leadership	U.S. College Students	Big Five	BFI (John & Srivastava, 1999)	<ul style="list-style-type: none"> • Extraversion "partially related to actors' position in the networks" (Selden & Goodie, 2018, p. 88) • "...extraversion predicted being nominated as both task and relationship leaders over time (in-degree centrality)" (2018, p. 88) • Found no effect on out-degree leadership centrality or personally homophily effects (2018) • "Neuroticism significantly predicted out-degree centrality in the leadership networks" (2018, p. 91) (in cases of nominating leaders) • Neuroticism had no effect on in-degree or homophily • Agreeableness "marginally (positively) related to leadership emergence (in-degree)"; "negatively related to out-degree centrality for relationship leaders"; "found a heterophily effect" (2018, p. 93) as well (disimilar others) • Openness predicted in-degree centrality for task and relationship leaders; "Open individuals... less likely to follow low relationship leaders (negative out-degree)" (2018, p. 94); homophily effects observed • Conscientiousness predicted in-degree centrality for relational and task leadership; and out-degree for task-oriented leaders; homophily not observed (2018) 	<ul style="list-style-type: none"> • SAOM Models • Selden & Goodie considered this to be workplace network

Fang (2010)	Whole Network / Cross-Sectional	Social undermining; work and personal friendship / communication	Chinese business and U.S. graduate students	Self-monitoring; (and core self-evaluation)	13-item SMS (Lennox and Wolfe, 1984)	<ul style="list-style-type: none"> • Self-monitoring was "not significant when undermining is self-rated" (2010, p. 56), but is when peer-rated (2010) • Significant positive relationship between peer undermining and individual undermining among high self-monitors, but non-significant... among low self-monitors" (2010, p. 59) • Self-monitoring moderates the influence of peer undermining on individual undermining when undermining is peer-rated" and the "influence is stronger [on] high self-monitors" (2010, p. 90) 	<ul style="list-style-type: none"> • Doctoral Dissertation • Used 13-item R-SMS; did not note it as acquisitive self-monitoring; references it as high vs low however, suggesting univariate interpretation. No discussion in Lennox (1988) or Lennox and Wolfe (1984) about high / low cut-off • Hypothesized that self-monitoring and core self-evaluation moderate the relationship between level of network peer undermining and individual undermining" (2010, p. 75)
Fang & Shaw (2009)	Whole Network / Cross-Sectional	Friendship; work-flow	Two Chinese organizations	Self-monitoring	13-item SMS (Lennox and Wolfe, 1984)	<ul style="list-style-type: none"> • Examined if self-monitoring influences the way individuals react to formal and informal status of co-workers in their intentions to seek, accept, and provide justice related information • Self-monitoring did not moderate relationship between co-workers' formal status and three types of behavioral intentions 	Used 13-item R-SMS; did not note it as acquisitive self-monitoring; references it as high vs low however, suggesting univariate interpretation. No discussion in Lennox (1988) or Lennox and Wolfe (1984) about high / low cut-off
Feller & Kleinbaum (2015)	Whole Network / Longitudinal	Friendship	U.S. Graduate Students	Extraversion	BFI (John & Srivastava, 1999)	<ul style="list-style-type: none"> • Extraversion related to larger personal networks • "Being more extraverted significantly increased the likelihood that an individual would cite any given other node as a friend" (2015, p. 597) • "Being more extraverted makes one more likely to be cited by other people as a friend" (p. 597) • "Greater similarity in extraversion between two individuals significantly increased the likelihood that one would cite the other as a friend" (p. 597) • "Although we found significant effects of extraversion homophily, it seemed to play a smaller role in shaping social interactions than extraversion popularity" (p. 597) 	<ul style="list-style-type: none"> • Personality measured at Time 2 • Used fixed effects models • Did not use term "centrality" but did note that "more extraverted individuals were cited as friends by significantly more people...and cited significantly more people as their friends" (p. 600). This is, in effect, in-and-out degree centrality. • Examined idea of network Extraversion bias: our claim is that within any given social environment, if extraversion popularity and extraversion homophily occur, they will give rise to a network extraversion bias in which the extraversion of the people to whom one is connected will be greater than the average extraversion of the population of that social environment" (p. 600-601)
Flynn et al. (2006)	Whole Network / Cross-Sectional	Advice	U.S. Graduate Students	Extraversion; Self-monitoring	25-item SMS (Snyder, 1974); Lennox and Wolfe 13-Item ASM Scale; Ten Item Personality Measure (Gosling, Rentrow, & Swann, 2003)	<ul style="list-style-type: none"> • Extraverts had bigger advice networks than introverts (Selden & Goodie, 2018) • Extraversion consistently correlated "with team and race homophily in three advice networks" (2018, p. 88) • Extraversion "consistently correlated with advice reciprocity" (2018, p. 90) 	<ul style="list-style-type: none"> • Noted controversy of SMS so used multiple measures: 1/5 for SMS, and 1-4 for ASM; averaged results for overall SM score. • But multiple studies within this overall paper, so didn't always combine the scores. Personality was a control item for study 3 • Selden & Goodie (2018) refer to this as a workplace network
Gloor et al. (2011)	Whole Network / Cross-Sectional	Communication (email communication network)	College students (Italy, Germany, Finland)	Big Five	Hough (1992)	<ul style="list-style-type: none"> • Extraversion "unrelated to degree and betweenness centrality" (Selden & Goodie, 2018, p. 88) • Neuroticism "not related to degree or betweenness centrality" (2018, p. 91) • Higher agreeableness correlated to degree and betweenness centrality • "Openness significantly related to degree centrality and betweenness centrality" (2018, p. 94) • Conscientiousness "unrelated to both degree and betweenness centrality" (2018, p. 95) 	<ul style="list-style-type: none"> • Hough references a nine-factor model, but it's a bit dated; reference unavailable from Library's Calhoun search • Selden & Goodie (2018) notes that teams were comprised of students from three different countries.

Hopp & Zenk (2012)	Whole Network / Cross-Sectional	Cooperation	College Students (Australia)	Conscientiousness	PIP (Goldberg, 1992) - 10 items for each factor	<ul style="list-style-type: none"> Conscientiousness positively related to out-degree centrality; unrelated to in-degree; unrelated to network density 	Conscientiousness is a control variable (ref. Klein et al. 2004 as their source - see below); who use PIP (Interpersonal Personality Item Pool) Goldberg, 1992
Kalish & Robins (2006)	Egocentric / Cross-Sectional	Strength of relationship (weak / strong)	College Students (Australia)	Extraversion; Neuroticism; Self-Monitoring	PIP-50 (Goldberg, 1999); 18-Item SMS-R (Gangestad & Snyder)	<ul style="list-style-type: none"> "Some support that extraverts act as social coordinators (see Notes) Extraverts usually have denser networks, but insignificant with other traits, demographic info, and identity aspects controlled for (Selden & Goodie, 2018) Extraversion "positively related to network closure for triads with strong ties and negatively related to network closure for triads with weak ties" (2018, p. 89) Individuals higher in neuroticism reported more structural holes in strong relationships and fewer when ties were weak (2018) "Neuroticism was unrelated to density" (2018, p. 91) 	<ul style="list-style-type: none"> "Tested the effects of extraversion and neuroticism [and] other individual difference measures, on brokerage roles in a network" (Selden & Goodie, 2018, p. 90)
Kalish (2008)	Whole Network / Cross-Sectional	Friendship	College Students (Israel)	Extraversion; Neuroticism	PIP-50 (Goldberg, 1999)	<ul style="list-style-type: none"> "Extraverts did not attempt to bridge structural holes between different groups" (Selden & Goodie, 2018, p. 90) "Low neuroticism predicted friendship brokerage" in "religiously diverse" student groups (2018, p. 91) 	<ul style="list-style-type: none"> "High/low via "median split", T/F test; this is from his dissertation Hypothesized the choices of high self-monitors would correlate with the choices of their friends more so than that of low self-monitors
Kiduff (1988)	Egocentric / Cross-Sectional	Friendship	U.S. Graduate Students	Self-monitoring	18-Item SMS-R (Gangestad & Snyder, 1986)	<ul style="list-style-type: none"> Evidence supported hypothesis that high self-monitors' choices are more similar to their friends than low self-monitors' 	<ul style="list-style-type: none"> Used T/F (binary) version, no mention if they used as continuous variables
Kiduff et al. (2017)	Whole Network / Cross-Sectional	Trust; Advice	U.S. Technology Company	Self-monitoring	18-Item SMS-R (Gangestad & Snyder, 1986)	<ul style="list-style-type: none"> High self-monitors receive more leadership and advice nominations than low self-monitors (2017) Self-monitoring correlated to trusted broker roles by those who did not trust others 	<ul style="list-style-type: none"> Used 25-item because of John et al., (1996) recommendation, but it interpreted it as "more fully representing the self-monitoring construct" (2007, p. 49) but still scored as T/F, and still interpreted as the univariate conceptualization. Also noted that they used both qualitative and quantitative methods, but research questions / hypotheses presented appear to be based on quantitative research only
Kim & Kim (2007)	Egocentric / Cross-Sectional	Mentorship	Korean Military Officers	Self-monitoring	25-Item SMS (Snyder, 1974)	<ul style="list-style-type: none"> Examined "relationship between self-monitoring... and mentoring network characteristics" (2007, p. 42) "Protégé's self-monitoring orientation predicted the tie strength... [of] mentoring network" (2007, p. 42), high self-monitors tie strengths are weaker 	<ul style="list-style-type: none"> Selden & Goodie (2018) refer to it as cross-sectional, although data was collected at 2 points in time; time 1 data was demographic variables and personality; time 2 data (5-months later) was network relationships "Controlled for personal characteristics like age, sex, and education, as well as demographic and similarity in values among members" (2018, p. 89)
Klein et al. (2004)	Whole Network / Cross-Sectional	Advice; Friendship; Adversary	Young adults in natl. team based service learning program (U.S.)	Big Five	PIP (Goldberg, 1992)	<ul style="list-style-type: none"> "Extraversion unrelated to in-degree in advice and friendship networks" (Selden & Goodie, 2018, p. 88) "Extraversion predicted in-degree [centrality] in adversarial" (2018, p. 88) network "Neuroticism negatively predicted in-degree centrality in both the advice and friendship networks [i.e., lower neuroticism were more sought out]" (2018, p. 91) Neuroticism "positively predicted higher in-degree centrality in" (2018, p. 91) adversarial networks "Agreeableness correlated with friendship in-degree, but did not predict friendship in-degree when controlling for the other Big Five traits" (2018, p. 92); "Agreeableness did not predict in-degree centrality in the advice networks" (2018, p. 93) "Agreeableness negatively predicted in-degree centrality" (2018, p. 93) (i.e., high agreeableness means less likely to be rated as difficult) Openness was "negatively related to friendship centrality" (2018, p. 95); "positively related to adversarial centrality" (2018); unrelated to advice in-degree centrality (2018) "Conscientiousness was positively correlated with friendship in-degree" (2018, p. 95), but not when other traits are controlled for (2018). It is not correlated with advice or adversarial network in-degree centrality 	

Kleinbaum et al. (2015)	Egocentric / longitudinal	presence of tie: empathy	U.S. Graduate Students	Self-monitoring	18-Item SMS-R (Gangestad & Snyder, 1986)	<ul style="list-style-type: none"> • After-centric approach in that effect of self-monitoring on brokerage depends on how empathetic ego is perceived • Higher empathetic high self-monitors have more brokerage positions than lower empathetically perceived high self-monitors 	Noted they independently conducted PCA and noted there were two factors in the SMS-R scale and retained "public performing" and "other directedness" (2015, p. 1232)
Kwok et al. (2018)	Whole Network / Cross-Sectional	Leader role identity	Canadian Military Academy cadets	Big Five: Self-monitoring	PIPP (Goldbert, 1999); 18-Item SMS-R (Gangestad & Snyder, 1986)	<ul style="list-style-type: none"> • Examined if leader role identity predicts network centrality and contributes to leader emergence • Positive correlation between extraversion, conscientiousness, and openness to in-degree and betweenness centrality, but in terms of leadership role identity rather than friendship / advice directly 	<ul style="list-style-type: none"> • 50-Item scale, 10 items per trait, 7 point Likert scale per item; used 5 point Likert scoring for SMS-R. • Difficult to tell if this was Egocentric or Whole Network design; technically it was longitudinal, but one set of measures at T1 and another at T2, so for personality/network purposes it is cross-sectional • Friendship and advice networks collected to calculate centrality, but not compare with traits
Lee et al. (2010)	Whole Network / Cross-Sectional	Friendship; Knowledge Sharing	Employees in Taiwan Industries	Conscientiousness	Mowen (2000)	<ul style="list-style-type: none"> • "Conscientiousness... significantly correlated with degree centrality in work friendship network (unrelated to degree centrality)...[and] degree centrality in knowledge sharing network" (Selden & Goodie, 2018, p. 95) 	Note they use one dimension of Big Five using scales from Mowen, (5-point Likert scale). Mowen is a book, no further information available
Lu & Ipe (2010)	Whole Network / Cross-Sectional	Advice / Support	International Bank Employees (Taiwan)	Agreeableness; Conscientiousness	Short Version NEO-PI (Costa & McCrae, 1992)	<ul style="list-style-type: none"> • Agreeableness correlated with in-degree centrality (Selden & Goodie, 2018) • "Conscientiousness was significantly correlated with in-degree centrality in work advice/support networks"; "but... mediated by interpersonal citizenship behaviors" (2018, p. 96) 	Each dimension is assessed by 12 items, uses Likert scale (1- 5)
Marrone (2004)	Egocentric / Cross-Sectional	No ties	U.S. Graduate Students	Self-monitoring	13-Item SMS (Lennox and Wolfe, 1984) (ASMI)	<ul style="list-style-type: none"> • Self-monitoring positively correlated to boundary-spanning behaviors directed towards faculty advisors (2004) 	Dissertation: Initial qualitative research (semi-structured interviews) of previous Grad Students (not those studied). Overall longitudinal study, but social networks appear to be cross-sectional. Specifically notes SM is continuous variable in this scale, but seems to report as univariate concept
Mehra et al. (2001)	Whole Network / Cross-Sectional	Friendship; work-flow	U.S. High tech company	Self-monitoring	18-Item SMS-R (Gangestad & Snyder, 1986)	<ul style="list-style-type: none"> • High self-monitors were likely "to occupy central positions in social networks" (2001, p. 121) [positively correlated to betweenness centrality in friendship network] • High self-monitors likely to hold "strategically advantageous network positions" (p. 121) • "Self-monitoring and centrality in social networks independently predicted individuals' workplace performance" (p. 121) 	Discusses the known scale issues; high/low, univariate conceptualization is used
Miners (2008)	Whole Network / Longitudinal (but only for other measures)	Advice / Friendship	Canadian Undergraduates	Big Five (as control)	PIPP (Goldberg, 1999)	<ul style="list-style-type: none"> • Personality traits did not appear to be significantly correlated with friendship centrality 	Doctoral Dissertation. Personality as a control variable. Research is about emotional intelligence, social network centrality, and performance. Difficult to tell if whole network or egocentric study
Moore (2006)	Egocentric / Longitudinal	Friendship	USAF SNCOs in PME (6.5 weeks)	Self-monitoring (and Locus of Control)	18-Item SMS-R (Gangestad & Snyder, 1986)	<ul style="list-style-type: none"> • "Self-monitoring predicted betweenness centrality in five of six time periods" (2006, p. 47); but findings "suggested that self-monitoring was not related to the rate of increase of centrality over time" (p. 47) 	<ul style="list-style-type: none"> • AFT Thesis; cannot tell if egonets were aggregated • Determine "how self-monitoring and locus of control influence an individual's location in friendship network over time" (2006, p. 47)
Neubert & Tiegler (2004)	Whole Network / Cross-Sectional	Advice / Support	U.S. Manufacturing Company	Big Five	PCI (Barrick & Mount, 1995)	<ul style="list-style-type: none"> • Extraversion related to in-degree centrality; those more extraverted received more nominations (Selden & Goodie, 2018) • "Neuroticism was unrelated to in-degree centrality in advice/support networks" (2018, p. 91) • Agreeableness not related to in-degree centrality • "Openness to experience correlated [positively] with in-degree centrality" (2018, p. 94) • "Conscientiousness... unrelated to advice/support in-degree centrality" (2018, p. 96) 	<ul style="list-style-type: none"> • Personal Characteristics Inventory (PCI): 120 items, 3-point Likert. • The PCI is noted as an unpublished manuscript

On & Kiduff (2008)	Whole Network / Cross-Sectional	Acquaintance	Korean Small Business owners in Canada	Self-monitoring	25-Item SMS (Snyder, 1974)	<ul style="list-style-type: none"> • High self-monitors occupied both direct and indirect brokerage roles (2008) • High self-monitors "tended to establish ties to a wider range of important... position holders outside the community" (2008, p. 1155) 	T/F test; High SMS scored 13 or higher (e.g. median split), univariate conceptualization, but used as continuous variable in regression analysis
Pollet et al. (2011)	Egocentric / Cross-Sectional	No ties	Young and old adults; snowball sampling (NED)	Extraversion	Intraversion-Extraversion Measure (De Raad & Barelids, 2008)	<ul style="list-style-type: none"> • "The personal networks of extraverted young and older adults... were also larger than the networks of introverts" (Selden & Goodie, 2018, pp. 85-87) 	5 point Likert scale, 20 items, scale was still being validated at time of publishing
Rapp et al (2019)	Egocentric / Cross-Sectional	No ties	Swiss population	Big Five	BF1-10 (Rammstedt & John, 2007)	<ul style="list-style-type: none"> • "Neurotic persons have a tendency toward triad structures encompassing structural holes" (2019, p. 148) • Extraverted "persons show preference for networks with stronger ties" (p. 148); but other traits also showed relevance in explaining egonetwork compositions 	Data from 2005 Mosai CH-ISSP Survey (Measurement and Observation of Social Attitudes in Switzerland) (2019)
Roberts et al. (2008)	Egocentric / Cross-Sectional	No ties	Adults (England)	Extraversion; Neuroticism	EPI (Eysenck & Eysenck, 1964)	<ul style="list-style-type: none"> • "Extraversion [is] unrelated to support and sympathy network size when participants' age was controlled for" (Selden & Goodie, 2018, p. 87) • Neuroticism "not correlated with the size of either sympathy or support groups of people's networks" (2018, p. 90) 	25-items for each scale; binary responses (e.g. 0-25); high introvert / low extravert; etc)
Russell et al. 1997	Egocentric / Cross-Sectional	No ties	Male alcoholics in treatment (U.S.)	Extraversion; Neuroticism	EPI (Eysenck & Eysenck, 1975)	<ul style="list-style-type: none"> • "Extraversion positively correlated with and predicted the size of the important people in networks of alcoholic men in a treatment facility" (Selden & Goodie, 2018, p. 85) • "Neuroticism negatively predicted the number of positive relationships... listed, but... unrelated to the number of negative relationships" (2018, p. 90) 	Used Extraversion and Neuroticism subscales from Eysenck & Eysenck (1975); two scales are 24 true/false items each
Sasnovova et al. (2010)	Whole Network / Longitudinal	Friendship	Dutch Hospital	Self-monitoring	18-Item SMS-R (Gaugestad & Snyder, 1996) - Dutch Language version	<ul style="list-style-type: none"> • "High self-monitors were more likely than low self-monitors to attract new friends and to occupy new bridging positions over time" (2010, p. 639) • "The new friends that high self-monitors attracted tended to be relative strangers... [unconnected to previous friends]" (p. 639) 	Used 5-point Likert instead of T/F (binary); used average score to code; still use high vs. low self-monitors in discussion (i.e., univariate conceptualization)
Scott (2007)	Egocentric / Cross-Sectional	Friendship ties collected as part of study 2	U.S. College Students	Extraversion; Agreeableness	BF1 (John, Donahue, & Kentle, 1991)	<ul style="list-style-type: none"> • Focus of study was on popularity and development of a popularity scale • Extraversion and Agreeableness had non-significant correlation to degree centrality (positive Extraversion; negative Agreeableness) 	Doctoral Dissertation: Different collection times, but different students apparently, hard to tell if egocentric or sociocentric; rest of Big Five were measured too; Appendix notes 8-items for Extraversion and 9 for Agreeableness
Selfhout et al. (2010)	Whole Network / Longitudinal	Friendship	College Students (NED)	Big Five	Ten Item Personality Inventory (Denissen & Perke, 2008; Gosling, Rentfrow, & Swann, 2003)	<ul style="list-style-type: none"> • "Extraversion predicted out-degree centrality, but did not predict in-degree centrality" (Selden & Goodie, 2018, p. 88); and similarly (homophily) effects for extraversion found (i.e., actors with similar extraversion scores tended to become friends) (2018) • Neuroticism was unrelated to both in-degree and out-degree measures" (2018, p. 91) and no homophily (personality similarity) effects observed (2018) • Agreeableness positively related to in-degree, but not out-degree centrality in friendship (2018); homophily effects observed (between highly agreeable individuals) • Openness "unrelated to degree and betweenness centrality" (2018, p. 94) for friendship networks; but "did show a significant homophily effect" (2018, p. 94) • Conscientiousness "unrelated to friendship in-degree, out-degree and homophily" (2018, p. 95) 	<ul style="list-style-type: none"> • Both formal (instrumental) and informal (friendship) ties collected • TIPI-r 7 point Likert scale; appears to be Dutch translation of TIPI - assessed 4 times (1 month) • "Assessed the effects of personality and personality similarity on the formation of friendship ties [of 10 separate groups] over four months" (Selden & Goodie, 2018, p. 88) • Used SAONs • These could be considered to be newly forming networks

Schulte et al. (2012)	Whole Network / Cross-Sectional	Friendship; Advice; Difficulty	Young adults in nat. team based service learning program (U.S.)	Big Five	IPFP (Goldberg, 1992)	<ul style="list-style-type: none"> "Extraversion negatively predicted friendship in-degree centrality, and positively predicted advice in-degree centrality" (Selden & Goodie, 2018, p. 88) Neuroticism "negatively correlated with friendship out-degree" (2018, p. 91); "it did not predict friendship or advice centrality" (2018, p. 91) when controls used "Agreeableness correlated positively with friendship and advice out-degree" (2018, p. 93); it "did not predict centrality for either network" (p. 93) Agreeableness "negatively correlated with out-degree centrality in difficulty networks" (2018, p. 93); "did not predict in-degree centrality" (p. 93) in difficulty networks Openness unrelated to friendship, advice, or difficulty in- and out-degree centrality (2018) Conscientiousness "positively correlated with friendship... out-degree, but did not predict centrality in friendship, advice, or difficulty networks" (2018, p. 95) 	<ul style="list-style-type: none"> 10 items for each dimension - 50-item instrument; 5-point Likert scale Uses SAONMS "Controlled for reciprocity and transitivity in each network" (Selden & Goodie, 2018, p. 88) Controlled for personal variables (age, gender, degree centrality) Controlled for whether or not member was formal group leader Controlled for other personality factors (agreeableness and neuroticism in difficult network)
Stokes (1985)	Egocentric / Cross-Sectional	Whether knew each other	U.S. College Students	Extraversion; Neuroticism	EPI (Eysenck & Eysenck, 1975)	<ul style="list-style-type: none"> "Extraverts did not have denser networks than introverts in support/advice networks" (Selden & Goodie, 2018, p. 89) Neuroticism is unrelated to network size (2018) Neuroticism unrelated to perceptions of density 	<ul style="list-style-type: none"> Also called Eysenck Personality Questionnaire (EPQ)
Swickert et al. (2002)	Egocentric / Cross-Sectional	No ties	U.S. College Students	Extraversion	EPQ (Eysenck & Eysenck, 1975)	<ul style="list-style-type: none"> "Positive correlations between extraversion and perceived availability of support, enacted support, and social network characteristics [such as network size and contact with network members]" (2002, p. 877); also "positively correlated with stress" (2002, p. 877) 	<ul style="list-style-type: none"> 90-items with Yes/No format (binary), used to measure extraversion and neuroticism
Rassell & Kliduff (2018)	Whole Network / Cross-Sectional	Friendship (at work); Trust (affect based)	European Graduate Students; European Hospital Staff	Self-monitoring; Birtatiousness; Big Five (as controls)	18-item SMS-R (Gangestad & Snyder, 1986); Ten-item short version (Rammstedt & John, 2007)	<ul style="list-style-type: none"> "Support for... idea that the fit between the requirements of the network role and the personality of individual facilitates trust" (2018, p. 802) Stimelian brokers are trusted when they have high self-monitoring and low birtatiousness dispositions (2018) Maintaining trust in strongly cohesive groups required individuals low in self-monitoring and highly birtatious dispositions (2018) 	<ul style="list-style-type: none"> This study is in the appendix rather than chapter because the study's purpose / goals and findings do not clearly relate to this research, despite friendship / trust relationships.
Toegel et al. (2007)	Whole Network / Cross-Sectional	Friendship and work-flow	Recruiting Agency	Self-monitoring; (and positive affectivity)	18-item SMS-R (Gangestad & Snyder, 1986)	<ul style="list-style-type: none"> "Those active in providing emotional help to others in the workplace tended to possess a combination of managerial responsibility and high self-monitoring or high positive affectivity disposition" (2007, p. 337) Those "low in positive affect or self-monitoring... provided less emotional help to others, irrespective of the level of managerial responsibility" (p. 337) 	<ul style="list-style-type: none"> Graded 1/F (binary), but noted as continuous variable; univariate conceptualization (K-R reliability 0.67) Friendship and work-flow were controls
Totterdell et al. (2008)	Egocentric / Cross-Sectional	No ties	College Students (England)	Big Five	Mini-Marker Set (Sauder, 1994) (Derivative of Goldberg TDA (92; IPFP)	<ul style="list-style-type: none"> "Extraversion did not significantly predict network size when propensity to connect to others was included..." (Selden & Goodie, 2018, p. 87) "Neuroticism did not predict friendship egonetwork size" (2018, p. 90) "Agreeableness was unrelated to friendship egonetwork size" (2018, p. 92) "Openness was unrelated to... friendship egonetworks" (2018, p. 94) size "Conscientiousness did not predict the size" (2018, p. 95) of friendship egonetwork 	<ul style="list-style-type: none"> 9-point Likert scale; 8 items per factor - scores were averaged to produce measures of E, A, C, O, emotional stability; is a short version of Goldberg's Big Five
Venkataramani et al. (2010)	Whole Network / Cross-Sectional	Advice	Bank employees in India	Self-monitoring; (positive and negative affectivity)	13-item R-SMS (Lennox & Wolfe, 1984)	<ul style="list-style-type: none"> "Self-monitoring had a positive, but non-significant correlation with leader centrality in a peer advice network, but study was not focused on self-monitoring" 	<ul style="list-style-type: none"> Only leaders were tested on SMS; not much discussion on it, but appears to use univariate conceptualization

Wagner et al. (2014)	Egocentric / Longitudinal	No ties	High School Graduates (Germany)	Big Five	NEO-FFI (Costa&McCrae, 1992 - German Version);	<ul style="list-style-type: none"> • "Extraversion significantly predicted increases in participants' personal network sizes" (Selden & Goodie, 2018, p. 85) • Neuroticism found "unrelated to network size or composition" (2018, p. 90) • "Agreeableness predicted larger personal egonets size" (2018, p. 92) • "Openness predicted... size of the network and number of nonkin included over time in... 'close other' networks" (2018, p. 94) • "Conscientiousness predicted more family members... named in actors' core egonetworks" (2018, p. 95) 	12 items on 4 point Likert Scale. They report "qualitative" aspects as well, but it does not appear to be in terms of actual qualitative research
Misker (2011)	Egocentric / Cross-Sectional	No ties	Malaysian financial firms	Big Five; emotional intelligence	PIP (Goldberg, 1999)	<ul style="list-style-type: none"> • Conscientiousness, openness, and emotional stability were statistically significant predictors of sales performance • "Conscientiousness and openness to experience have an indirect effect on sales performance through mediating variables" (2011, p. 210) 	<ul style="list-style-type: none"> • Doctoral Dissertation; 50-items and 5 point Likert scale; 50 10-items per trait • Examined if "account manager" (1) personality traits, (2) social network characteristics, and (3) emotional intelligence affected... sales performance... through various mediating variables" (2011, p. 11)
Xia, Yuan, & Gay (2009)	Whole Network / Cross-Sectional	Adversary	College and Graduate Students (U.S.)	Big Five	PIP (Goldberg, 1992)	<ul style="list-style-type: none"> • Extraversion "negatively correlated with in-degree centrality in... adversary network" (Selden & Goodie, 2018, p. 89) • Neuroticism "predicted in-degree in the adversarial networks" (2018, p. 91) (i.e., higher neuroticism led to more nominations as difficult to work with) • Agreeableness "unrelated to in-degree centrality" (2018, p. 93) • "Openness negatively predicted in-degree" (2018, p. 94) • Centrality 	<ul style="list-style-type: none"> • Extraversion "did not predict centrality when controlling for previous work experiences and previous work relationships with other team members" (Selden & Goodie, 2018, p. 89) • Differs from Klein (2004) adversary findings, with Selden & Goodie (2018) noting "extraverts were more likely to be rated as difficult to interact with in larger, nonstudent teams, but not in smaller student teams" (p. 89) • (2018) suggest that differences of results with Klein et al. (2004) and Schulte et al. (2012) could be because of fewer controls used in analysis
Zell et al. (2014)	Egocentric / Cross-Sectional	Whether knew each other	U.S. College Students	Extraversion	Jung's Typology Test	<ul style="list-style-type: none"> • In "support/advice networks, extraverts and introverts" egonetworks did not differ in size" (Selden & Goodie, 2018, p. 87) • "Extraverts perceive their alters as being more embedded (higher in-degree centrality) in their support/advice networks" (2018, p. 89) • "Extraverts reported stronger affective connections to their alters than introverts" (2018, p. 89) 	18 items, dichotomous variable methodology (basically, one is an introvert or an Extrovert)
Zhu et al. (2013)	Egocentric / Cross-Sectional	No ties	U.S. College Students	Big Five	BFI (John & Srivastava, 1999)	<ul style="list-style-type: none"> • "Extraversion correlated with network size and addition of new contacts" (Selden & Goodie, 2018, p. 85) • "Neuroticism did not predict network size in... social support egonetworks or number of new contacts made over the year" (2018, p. 90) • "Agreeableness... correlated to network size", "but [unrelated] to new contacts in the network" (2018, p. 92) • "Openness... unrelated to... social support egonetworks" (2018, p. 94) size • "Conscientiousness did not predict the size or number of new contacts in... social support egonetworks" (2018, p. 95) 	
Zou (2009)	Egocentric / Cross-Sectional	Type of support	U.S. Graduate Students	Extraversion, Emotional Stability (Neuroticism), Openness; Self-monitoring	Ten Item (Gosling, Rentrow, & Swann, 2003) (TIP)	<ul style="list-style-type: none"> • Extraversion did not moderate "the effects of the strengths, network density, or network constraint on life satisfaction and sleep quality" (2009, p. 34) • "Neurotic individuals tend to have better sleep when they have a smaller number of stronger ties, but a larger number of weak ties" (2009, p. 36) • High openness lends itself to higher "life satisfaction when they have a larger number of weak ties... when their network is less dense... and when their network is less [constrained]" (2009, p. 36) • Self-monitoring "did not moderate... effects of the strengths and network density on the three well-being measures" (2009, p. 37) 	Doctoral Dissertation; Personality variables were control variables; Self-monitoring was also tested, but didn't give much info about how / which one

I also produced a summary table of findings for the Big Five traits at the node and network-level. Table 18 summarizes these findings.

Table 18. Big Five Node-Network-Level Findings and Gaps

Big Five Trait to Node-Network-Level Findings and Gaps			
Personality Trait	Node Level	Network Level	Gaps / Limitations / Notes
<p>Extraversion: *Applies an energetic approach toward the social and material world and includes traits such as sociability, activity, assertiveness, and positive emotionality*</p>	<ul style="list-style-type: none"> High extraverts are more likely to hold brokerage positions in work but not friendship networks Higher extraversion relates positively to outdegree centrality in expressive and instrumental networks Higher extraverts form more ties and occupy more central positions in both personal and work networks (degree & closeness) Homophily effects found for extraversion Higher extraversion useful for formation of friendship, but less so for maintenance of friendship 	<ul style="list-style-type: none"> Extraversion is related to network size (e.g., higher extraverts have larger personal networks) Higher extraversion is related to network composition - include more people in their networks (or at least perceive larger networks) - but do not appear more strongly connected to them Higher extraversion positively related to network closure for triads with strong ties; negatively related for triads with weak ties 	<ul style="list-style-type: none"> Most studied trait of the Big Five Extraverts' position in network depends on context - likely to send / receive ties in friendship network, but only receive in leadership network Mixed evidence regarding difficulty to work with In workplace leadership networks, higher extraverts nominate more others, but are not nominated more by others
<p>Agreeableness: *Contrasts a prosocial and communal orientation towards others with antagonism and includes traits such as altruism, tender-mindedness, trust, and modesty*</p>	<ul style="list-style-type: none"> Agreeableness relates to position in personal networks - but there are conflicting results; may be important for initiating personal relationships and help in maintaining relationships Did not predict in-degree centrality in advice networks and unrelated to degree and closeness centrality - appears to be unrelated to workplace network positions, but is related to personal networks 	<ul style="list-style-type: none"> Individuals higher in agreeableness list more family members in their networks and have larger non-kin networks Individuals higher in agreeableness have more stable networks over time Mixed evidence regarding effects on network size and composition - appears to be unrelated 	<ul style="list-style-type: none"> Relationship between agreeableness and network characteristics is mixed Strongest findings occur in personal networks, particularly in networks in flux - but contradictions exist Little to no research on structure (bridging / brokerage, transitivity, density)
<p>Conscientiousness: *Describes socially prescribed impulse control that facilitates task and goal directed behavior, such as thinking before acting, delaying gratification, following norms and rules, and planning, organizing, and prioritizing tasks*</p>	<ul style="list-style-type: none"> Predicts out-degree centrality in adolescent friendship network, but unrelated to in-degree centrality and homophily - but results are conflicting, some found conscientiousness to be significantly related to network position Relevant to assuming advantageous positions in advice and leadership networks in students 	<ul style="list-style-type: none"> In informal advice networks, high conscientious individuals are more likely to hold key player positions Individuals higher in conscientiousness tend to be central connectors (high in out centrality) or periphery specialists (high in-degree / low out-degree centrality) 	<ul style="list-style-type: none"> Appears to be most relevant to workplace networks Little to no research on structure (bridging / brokerage, transitivity, density)
<p>Neuroticism / Negative Emotionality: *Contrasts emotional stability and even-temperateness with negative emotionality, such as feeling anxious, nervous, sad, and tense*</p>	<ul style="list-style-type: none"> Unrelated to in-degree and out-degree centrality - but some conflicting studies suggest negative relationship with in-degree centrality No homophily effects observed Higher neuroticism predicted higher in-degree centrality in adversarial networks (i.e., higher negative emotionality individuals are more difficult to work with) 	<ul style="list-style-type: none"> Unrelated to network size, composition, or density In egonet studies, individuals higher in neuroticism perceive differences in structure of how alters are connected Individuals higher in neuroticism report more structural holes among triads with strong ties; fewer structural holes with weak ties 	<ul style="list-style-type: none"> Second most studied Big Five trait Limited number of whole network (sociocentric) studies
<p>Openness / Open-mindedness: *Describes the breadth, depth, originality, and complexity of an individual's mental and experiential life* focus is on "individuals' mental rather than social life"</p>	<ul style="list-style-type: none"> Individuals higher in openness are sought for advice / support in workplace networks Homophily effects found for openness 	<ul style="list-style-type: none"> Higher openness has smaller friendship networks, but more likely to act as go-betweens to disconnected friends Openness appears to influence network size and composition when personal networks are in flux and new contacts with non-kin are available (e.g., create new connections to diverse others) 	<ul style="list-style-type: none"> Least studied trait of the Big Five Most controversial trait in terms of definition Mixed results in assessing openness in adversarial networks (either more difficult to work with or easier to work with) No research into openness and higher order structuring of networks (such as transitivity, density, or bridging / brokerage)

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APPENDIX B. METHODS APPENDIX

A. QUALITATIVE DATA QUESTIONNAIRE AND INTERVIEW QUESTIONS

1. Collection Event 1 Questionnaire Questions

Administered to all participants.

1. In your own words, what is a “friend” to you?
2. What do you look for in a friend?
3. In your own words, how do you describe trust in a relationship?
4. How do you decide whom to trust (or not to trust)?
5. Describe the type of people you find it difficult or hard to work with?
6. What do you do when you have to work with someone you don’t like or you find difficult to work with?

2. Collection Event 1 Semi-Structured Interview Questions

Administered to interview participants only.

1. How did you interpret friendship when filling out the survey?
 - Follow up questions about their definition
 - What makes a good or close friend?—example of how it developed
 - Why did they nominate the people they nominated?
 - Friendship as they defined it or something else?
2. How did you define/interpret trust when filling out the survey?
 - Why did you nominate (or not) individuals from class to trust
 - Follow up questions about trust experience previously or with classmates
 - This leads to probing—good/bad experiences

- Describe how it is built or lost—with examples
- Differentiating friendship and trust
 - For example:
 - Trust people you are not friends with (all trust, no friends)
 - “Friends” or “friendly” but not trusted (all friends, no trust)
 - Friendly with all and trust all (both)
 - Mix—trust/friends about even in nominations
- 3. Describe difficult people to work with
 - Why people in the class were nominated—examples
 - Examples from previous work experiences of difficult people to work with
- 4. Self-Description
 - How would you describe yourself—what words come to mind

3. Collection Event 2 and 3 Questionnaire Questions

Administered to all participants.

1. Based on your experiences in class so far, who are the people you would most like to work with in your current unit or next duty assignment? Why?
2. If you feel comfortable providing this information, who in this class would you prefer not to work with again? Why?

In the third collection event, I also asked, “What Marines in this class do you believe will have the most future career success? Why?” I did not include this question in my analysis, except for one instance in MIAC, as noted in the case analysis.

4. Collection Event 2 and 3 Semi-Structured Interview Questions

Administered to interview participants only.

1. Describe/explain changes to friendship network from first wave
 - Give examples as to why people were added/removed
2. Describe/explain changes to trust network from first wave
 - Give examples as to why people were added/removed
3. Describe/explain changes to difficult to work with network from first wave
 - Give examples as to why people were added/removed
4. Provide amplifying information to questionnaire questions
 - Why did you nominate for “would most like to work with”?
 - Offer examples/stories if possible
 - Why did you nominate for “would prefer not to work with again?”
 - Offer examples/stories if possible
 - Why no nominations / explain rationale for answers (as required)
5. Describe/give a description of each person in the class—what words come to mind when you think of them?
6. How would you characterize/describe the class as a whole?

For collection event 3, the following questions were asked, in addition to questions 1 through 4.

1. Context question: Think about previous work experience and this class—how would you compare and contrast the environment in terms of making friends, trusting people, figuring out who is difficult to work with?
 - This question usually involved some explaining / talking through

- Overall, the goal was to highlight similarities and differences between the course and their regular work environment and explain it
2. Strong vs. weak situation? Did respondents believe the classroom allowed them the freedom to behave as they felt they needed/wanted to, or did it pressure them to conform?
 3. Describe their relationship with each of their classmates?
 - Personal / professional—both / neither and if positive / negative / neutral

B. EGO-ALTER SIMILARITY METHODS AND EXPLANATION

Ego-alter similarity (EAS) is a functionality available in UCINET (Borgatti et al., 2002), that provides “various measures of each ego’s homophily with its alters based on a specified attribute” (2002). That is, it is a way to answer whether individuals send (out-degree), receive (in-degree), or form relationships (degree centrality) with those like themselves. In the case of this study, personality is the attribute of interest. The explanation that follows discusses how EAS may be used in small networks to complement QAP correlations (e.g., centrality-personality correlations) such as when QAP findings are inconsistent⁸⁷ and other robust statistical methods (e.g., ERGMs or SAOMs) are inappropriate given the network size. To be clear, this is not a robust statistical method and the results derived from the EAS approach must be augmented with additional analysis.

Table 19, Example EAS Table, provides the actors and their EAS scores for three traits. An EAS score is a simple correlation between an ego and its (mean-centered) measure for a trait and that of an ego’s alters. Values are between -1 and 1, in which -1 implies complete dissimilarity (perfect heterophily), 0 implies neither similarity or dissimilarity, but may also mean that a node either sends / receives ties from all others—in which case clearly there is not a preference, or, the actor has a trait score that matches

⁸⁷ Sources of inconsistency may be minor confounding from other relationships and the presence of highly central actors. If confounding is significant, EAS’s value is limited. Likewise, network density cannot be too high or low.

the class mean for that trait. A score of 1 implies perfect similarity (perfect homophily). The ego-alter scores are unique to each actor, however, and there is not an overall score for the trait (unlike the centrality correlations), nor does it use QAP, meaning there are no significance values. Rather, it is a simple way of evaluating whether an actor sends or receives ties or forms reciprocal relationships with alters that are similar or dissimilar, or neither.

Table 19. Example EAS Table

Example EAS Table									
Actors	Trait 1			Trait 2			Trait 3		
	In	Out	Recip	In	Out	Recip	In	Out	Recip
Actor 1	0.4091		0.4091	0.0093		0.0093	-0.3709		-0.3709
Actor 2	0.3471	0.10634	0.2277	-0.587	-0.1682	-0.577	0.25149	-0.2323	-0.1799
Actor 3	-0.504	-0.0525	-0.484	0.4067	0.52615	0.2958	0.04491	0.26749	0.5884
Actor 4	0.6526		0.6526	0.1651		0.1651	0.1068		0.1068
Actor 5	-0.147	0.08625	0.0973	0.1662	-0.1662	0.1151	0.07279	0.47445	0.45716

Empty cells mean the actor sent ties to everyone or received ties from everyone

For a relationship (e.g., friendship, trust, most prefer,) and centrality (e.g., out-degree, in-degree, reciprocal) you will get one of three values, positive (similarity), negative (dissimilarity), or 0 (because you either received / sent all ties or are the class average). For a given trait / facet, one can count the number of similar and dissimilar ties for each type of centrality and gain a sense of if there is a preference in the network (for the given relationship and centrality) for either similar or dissimilar others. Table 20, the EAS Trait & Facet Preferences Table, provides an example.

Table 20. EAS Trait and Facet Preferences

EAS Trait & Facet Preferences					
Traits and Facets:	Outgoing Ties		Mean of correlations	Correlations	Correlations
	Similar	Dissimilar		>=0.2	<=-0.2
Trait 1	6	2	0.242	5	2
Facet 1A	6	2	0.189	4	1
Facet 1B	3	5	-0.148	2	4
Facet 1C	6	2	0.195	4	1
Trait 2	4	4	-0.184	3	4
Facet 2A	3	5	-0.124	3	4
Facet 2B	3	5	-0.100	0	3
Facet 3C	3	5	-0.108	2	4

The number of similar or dissimilar ties is a basic count; that is, if an actor scores above 0 there is a similarity preference, if they score below 0 there is a dissimilarity preference. A basic count does not consider the magnitude of the correlation, only if it is greater than or less than 0, and the implication is that by following the counts, it is possible to suggest a spurious preference for a trait. One way to address this potential issue is to consider the mean of the correlations, and the number of actors above or below a specific threshold, in this case, 0.2 or -0.2. The mean of the correlations provides an approximation of the magnitude of the preference for the whole network. The 0.2 / -0.2 threshold for actors is arbitrary, but, since EAS does not provide significance, it is a stand-in which provides a sense of how many actors' similarity / dissimilarity is at least 20% greater / less than 0. Overall, the greater the total, the more egos selected alters more or less similar to themselves, rather than showing no preference (i.e., less / greater than 0.2/-0.2, which is approximated to 0).

For example, in the EAS Trait & Facet Preferences table, Trait 1 has a count of 6 ties similar to 2 ties dissimilar, suggesting a preference for actors similar in Trait 1. The mean of the correlations is 0.242 and the number of actors with a correlation above 0.2 is five. Conversely, Facet 2B has a count of 3 ties similar to 5 ties dissimilar, but a mean correlation of -0.1 and only 3 ties less than -0.2. The conclusion may be that there is a

stronger preference in the network for actors similar in Trait 1, but there is either no clear preference or a weak preference for dissimilar actors in Facet 2B.

Further insight from the EAS Trait & Facet Preferences table can be gleaned because each actor’s standardized score (i.e., if they were average, above or below average) for each trait and facet is available. That is, it is possible to infer if there is a preference for those scoring higher or lower in a particular attribute. Consider Figure 5, the Correlation to Z-Score Chart.

Correlation to Z-Score			
	Z-Score		
	Above Average	Below Average	Average
Positive Correlation	(1) Hi	(2) Lo	No Pref
Negative Correlation	(3) Lo	(4) Hi	No Pref

Figure 5. Correlation to Z-Score Example

If an actor is positively correlated with alters they send ties to and they are above average on a trait (i.e., [1]) then they have a preference for those scoring higher on a trait. (2) implies that if an actor scores low on a trait and prefers alters who are similarly lower in that trait. (3) implies that an actor prefers dissimilar alters but scores high on a trait, meaning they prefer those who score lower. (4) implies that if an actor scores low on a trait but prefers dissimilar alters, they prefer alters scoring higher on the trait.

The Correlation to Z-Score Chart is used to construct Table 21, the Trait/Facet Preference Table.

Table 21. Trait/Facet Preference Example

Trait / Facet Preference				
Traits and Facets:	Hi	Lo	Mix	NP
Trait 1	0	6	2	0
Facet 1A	2	5	1	0
Facet 1B	5	3	0	0
Facet 1C	3	2	2	1
Trait 2	5	2	1	0
Facet 2A	3	5	0	0
Facet 2B	4	1	3	0
Facet 3C	2	5	1	0

The Trait/Facet Preference Table can be interpreted as a rough approximation of in-degree centrality since says it something about who ego sends ties to, i.e., the characteristics of the receiving alter. For example, Table 21 suggests there is a preference for actors scoring low in trait 1, but higher in trait 2. This method lacks refinement, however, as it is essentially a categorial workaround to gain interpretation of continuous measures (i.e., in-degree centrality-personality correlation) and so magnitude factors of the correlation are not considered. The results from Table 21 need to be compared with other results, such as QAP derived centrality-personality correlations, but also other available data (e.g., qualitative) to ensure it makes sense.

1. UCINET Specific Notes

Ego-alter similarity is found in the network tab of UCINET, followed by Ego Networks, and the continuous attributes option was chosen. The help function provides an explanation of the functionality.

Specific to this study, mean-centered values of the raw trait and facet scores (i.e., the attribute) were used and the $\text{MinOverMax} = \frac{\text{Min}(X,Y)}{\text{Max}(X,Y)}$ method to derive similarity / dissimilarity was used (i.e., measures). In testing the function, this combination was found to provide the most interpretable EAS results given what was known about the network.

There are a few notes. If an actor nominates and/or receives all possible ties, there is no correlation to calculate because there is no preference. If an actor nominates close to the entire network, this will skew correlation, that is, nominating 9 out of 10 actors will lead to a correlation value close to 1 or -1. If the actor is the class average for a trait or facet, and mean centering is used, their score is 0.

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APPENDIX C. MIOC APPENDIX

A. FRIENDSHIP AND TRUST RELATIONSHIP SUPPLEMENTARY MATERIAL

1. Quantitative Summary Tables

Table 22. MIOC Directed Friendship and Trust Network Densities

MIOC Directed Friendship and Trust Densities					
Network	Density	No. of Ties	Std Dev	Avg Degree	Alpha
Friendship T1	0.478	43	0.500	4.300	0.901
Friendship T2	0.600	54	0.490	5.400	0.938
Friendship T3	0.644	58	0.479	5.800	0.948
Trust T1	0.633	57	0.482	5.700	0.945
Trust T2	0.644	58	0.479	5.800	0.948
Trust T3	0.733	66	0.442	6.600	0.965

Table 23. MIOC Undirected Friendship and Trust Network Densities

MIOC Undirected Friendship and Trust Densities					
Network	Density	No. of Ties	Std Dev	Avg Degree	Alpha
Friendship T1	0.267	24	0.442	2.400	0.784
Friendship T2	0.356	32	0.479	3.200	0.847
Friendship T3	0.444	40	0.497	4.000	0.889
Trust T1	0.356	32	0.479	3.200	0.847
Trust T2	0.400	36	0.490	3.600	0.870
Trust T3	0.533	48	0.499	4.800	0.920

Table 24. MIOC QAP Correlation for Friendship/Trust Directed Networks

MIOC QAP Correlation for Friendship / Trust Directed Networks							
	Friendship T1	Friendship T2	Friendship T3	Trust T1	Trust T2	Trust T3	Workgroups
Friendship T1	1.000						
Friendship T2	0.781**	1.000					
Friendship T3	0.664**	0.768**	1.000				
Trust T1	0.174	0.132	0.109	1.000			
Trust T2	0.153	0.104	0.079	0.928**	1.000		
Trust T3	0.074	0.021	0.234	0.793**	0.812**	1.000	
Workgroups	0.085	0.137	0.337**	0.077*	0.057	0.185*	1.000
Previous Relationship	0.170	0.096	0.069	0.157	0.150	0.100	0.035
p-value <.05 *; <.01 **							

Table 25. MIOC QAP Correlation for Friendship/Trust Undirected Networks

MIOC QAP Correlation for Friendship / Trust Undirected Networks							
	Friendship T1	Friendship T2	Friendship T3	Trust T1	Trust T2	Trust T3	Workgroups
Friendship T1	1.000						
Friendship T2	0.812**	1.000					
Friendship T3	0.573**	0.550**	1.000				
Trust T1	0.077	0.030	-0.104	1.000			
Trust T2	0.123	0.057	-0.091	0.910**	1.000		
Trust T3	-0.040	-0.050	0.209	0.695**	0.764**	1.000	
Workgroups	0.169	0.083	0.460**	0.083	0.091	0.209	1.000
Previous Relationship	0.341*	0.257	0.192	0.257	0.223	0.136	0.035
p-value <.05 *; <.01 **							

Table 26. MIOC Friendship Network Centrality-Personality Correlations

MIOC Friendship Network Centrality - Personality Correlations:									
Friendship: Correlations:	Out-Degree			In-Degree			Degree		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
Extraversion	0.492*	0.136	0.377	0.374	-0.071	0.272	0.595**	-0.024	0.530*
Sociability	0.410	0.094	0.542*	0.220	-0.216	0.200	0.467*	-0.087	0.636**
Assertiveness	0.673**	0.391	0.329	0.238	0.099	0.514*	0.755***	0.335	0.612**
Energy Level	0.165	-0.231	0.093	0.522*	0.126	0.071	0.299	-0.388	0.163
Agreeableness	-0.240	-0.021	-0.051	0.479*	0.596**	-0.173	0.006	0.181	-0.136
Compassion	-0.167	-0.115	-0.057	0.426	0.620**	-0.201	0.183	0.175	-0.144
Respectfulness	-0.117	0.049	-0.042	0.373	0.656**	-0.005	-0.027	0.219	-0.063
Trust	-0.296	0.013	-0.041	0.324	0.243	-0.243	-0.187	0.071	-0.153
Conscientiousness	0.466*	0.446*	0.512*	0.588**	0.117	0.328	0.676**	0.541*	0.574**
Organization	0.347	0.428	0.476*	0.486	0.306	0.334	0.531*	0.596**	0.560**
Productiveness	0.502*	0.513*	0.437	0.560**	-0.252	0.214	0.667**	0.548*	0.432
Responsibility	0.366	0.200	0.550*	0.503	0.374	0.413	0.585**	0.264	0.670**
Negative Emotionality	-0.321	-0.137	-0.373	-0.130	0.146	0.106	-0.144	0.097	-0.265
Anxiety	-0.419	-0.040	-0.467*	0.095	0.442	0.273	-0.147	0.296	-0.230
Depression	-0.167	-0.045	-0.309	-0.266	-0.297	0.020	-0.083	0.000	-0.293
Emotional Volatility	-0.290	-0.280	-0.228	-0.197	0.187	-0.046	-0.159	-0.093	-0.218
Open-Mindedness	0.087	0.090	0.043	0.351	-0.289	0.028	0.264	0.027	0.008
Intellectual Curiosity	0.269	0.093	-0.069	0.330	-0.430	0.000	0.321	-0.123	-0.109
Aesthetic Sensitivity	-0.322	-0.526*	-0.244	0.119	-0.011	0.000	-0.217	-0.547*	-0.216
Creative Imagination	0.450*	0.779***	0.505*	0.434	-0.230	0.061	0.725***	0.849***	0.419
Acquisitive Self-Monitoring	0.052	-0.077	-0.035	0.029	-0.314	-0.224	0.118	-0.204	-0.133
Protective Self-Monitoring	-0.285	-0.627**	-0.223	-0.282	-0.041	-0.009	-0.338	-0.681**	-0.115
Traditional Self-Monitoring	-0.463	-0.404	-0.362	0.021	0.023	-0.183	-0.311	-0.318	-0.413

p-value: <.1 *; <.05 **; <.01 ***

Conscientiousness and its facets were the most consistent and statistically significant correlations of all the measured personality variables for the *friendship* network. However, when I explored the relationships, I found the correlation between conscientiousness and the *friendship* relationship may be overrepresented by the effect of the *workgroups* network. Specifically, workgroup 2, which was also a friendship clique, had higher than average conscientiousness scores, therefore increasing the association.

Table 27. MIOC Trust Network Centrality-Personality Correlations

MIOC Trust Network Centrality - Personality Correlations:									
Trust: Correlations:	Out-Degree			In-Degree			Degree		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
Extraversion	0.082	0.058	0.178	0.198	0.336	0.407	0.138	0.105	0.257
Sociability	-0.212	-0.073	0.022	0.465	0.350	0.434	-0.147	-0.012	0.107
Assertiveness	0.063	0.085	0.234	0.081	0.260	0.546*	0.091	0.110	0.361
Energy Level	0.451*	0.353	0.301	-0.147	0.190	0.131	0.495*	0.361	0.306
Agreeableness	0.483	0.374	0.499*	-0.428	0.229	-0.170	0.475*	0.436	0.587**
Compassion	0.146	-0.113	0.124	-0.274	0.330	-0.263	0.128	-0.057	0.156
Respectfulness	0.278	0.271	0.608**	-0.130	0.249	-0.076	0.262	0.288	0.691**
Trust	0.792***	0.616**	0.582**	-0.648**	0.028	-0.128	0.811***	0.680**	0.696**
Conscientiousness	0.055	0.060	0.063	0.135	-0.076	0.370	0.050	0.039	0.084
Organization	-0.035	0.008	-0.069	0.099	0.056	0.394	-0.066	0.010	0.008
Productiveness	0.311	0.233	0.103	-0.108	-0.438	0.288	0.295	0.197	0.099
Responsibility	-0.223	-0.142	0.116	0.487*	0.304	0.390	-0.175	-0.158	0.116
Negative Emotionality	-0.388	-0.247	-0.418	0.098	-0.124	-0.111	-0.415	-0.238	-0.363
Anxiety	-0.434	-0.364	-0.598	0.218	0.050	-0.021	-0.454	-0.361	-0.545*
Depression	-0.260	-0.127	-0.254	-0.071	-0.449	-0.187	-0.312	-0.167	-0.262
Emotional Volatility	-0.370	-0.098	-0.246	0.103	0.086	-0.125	-0.381	-0.033	-0.146
Open-Mindedness	0.018	-0.352	-0.445	-0.305	0.074	0.174	-0.095	-0.339	-0.433
Intellectual Curiosity	0.120	-0.088	-0.360	-0.169	-0.146	0.044	0.041	-0.145	-0.451
Aesthetic Sensitivity	-0.105	-0.319	-0.285	-0.227	0.234	0.096	-0.197	-0.286	-0.236
Creative Imagination	0.082	-0.231	-0.267	-0.313	-0.034	0.204	-0.003	-0.203	-0.239
Acquisitive Self-Monitoring	-0.214	0.088	-0.058	0.114	0.146	-0.005	-0.192	0.181	-0.007
Protective Self-Monitoring	-0.008	0.303	0.260	-0.044	-0.035	-0.004	0.025	0.335	0.278
Traditional Self-Monitoring	-0.491*	0.268	0.221	0.329	-0.006	-0.235	-0.475*	0.342	0.220

p-value: <.1 *; <.05 **; <.01 ***

2. Mixed Methods Summary

There are incongruencies between how actors define a concept and how they apply it; the challenge to understanding if and how personality contributes requires examining the available quantitative and qualitative data to infer if there is a plausible effect. A method to do this involves a series of steps, the first is identifying who sent (out-degree) unconditional ties from time 1 onward and determining if there is an explanation from either the available qualitative data or from an actor’s personality measures that could explain the data. In other words, the first collection period occurred during the second week of the course; therefore, the expectation is that relationships are in their initial phases and it would be unusual for individuals to consider everyone a friend or trusted—barring an explanation. Such an explanation may include personality traits that suggest a high likelihood of sending ties, such as high extraversion for the *friendship* network, or high agreeableness scores—specifically trust facet scores, for the *trust* network. Likewise, in

their interview or questionnaire, actors may appeal to situation to justify their choices in acting outside of their measured personality expectations. Without an available explanation, the tie itself may be meaningless, for instance an individual may have “yay” said a response, or simply not wanted to appear negative or exclusionary and nominated everyone. After sorting out actors who sent unconditional ties, the qualitative and quantitative data for everyone else can be examined to look for patterns, exceptions, and potential explanations. Finally, the two sets are compiled, and the data analyzed, to gain a clearer picture of how personality and other factors influence the formation of *friendship* and *trust* relationships.

The following four tables sort the *friendship* and *trust* relationships into two categories, those actors who sent unconditional *friendship* or *trust* relationships at time 1 onward, and those who did not. For the unconditional relationships, the tables note the actor, whether the available qualitative (e.g., how the concept is defined) and quantitative scores (e.g., extraversion / agreeableness trait and facet average z-scores) are consistent with sending unconditional relationships, and the final column summarizes the consistency (e.g., actor is consistent for sending unconditional ties for definition, but inconsistent for personality). Following the unconditional ties charts, the next two charts consider the remaining actors and are similar to the unconditional charts except an additional column lists ego’s out-degree centrality at each time period.

Table 28. MIOC Unconditional Friendship Ties

MIOC Unconditional Friendship Ties			
Node:	Qualitative Information	Personality Information	Consistency
M6	<ul style="list-style-type: none"> • Out-degree inconsistent with definition 	<ul style="list-style-type: none"> • Above average extraversion; especially assertiveness • Described by classmates as "outgoing" 	<ul style="list-style-type: none"> • Consistent with personality; inconsistent with definition
M12	<ul style="list-style-type: none"> • Recognizes levels of friendship • Finding 5 suggests he may have sent ties regardless • (Time 1) "They're still in the kind of friendly acquaintance phase...so I consider that friendly" 	<ul style="list-style-type: none"> • Well above average extraversion (3rd highest in class) • Highest facets are sociability and energy level 	<ul style="list-style-type: none"> • Consistent with personality and definition
M33	<ul style="list-style-type: none"> • Out-degree is mixed with definition - could be implied as rigorous or relaxed 	<ul style="list-style-type: none"> • Well below average in extraversion and associated facets • Noted as quiet and reserved by classmates and instructors 	<ul style="list-style-type: none"> • Possibly consistent with definition, inconsistent with personality
M71	<ul style="list-style-type: none"> • Out-degree is mixed with definition - but implies some rigor is involved • Instructors noted as asking the most questions in class 	<ul style="list-style-type: none"> • Highest extravert in class; sociability is the highest facet 	<ul style="list-style-type: none"> • Generally inconsistent with definition; highly consistent with personality

Table 29. MIOC Unconditional Trust Ties

MIOC Unconditional Trust Ties			
Node:	Qualitative Information	Personality Information	Consistency
M6	<ul style="list-style-type: none"> • Out-degree inconsistent with definition 	<ul style="list-style-type: none"> • Slightly above average agreeableness; highest facet is trust 	<ul style="list-style-type: none"> • Inconsistent with definition; consistent with personality
M10	<ul style="list-style-type: none"> • Out-degree inconsistent with definition; but noted context / situation as primary reason • Articulated levels of trust in interview 	<ul style="list-style-type: none"> • Well below average agreeableness; below average trust facet 	<ul style="list-style-type: none"> • Inconsistent with definition and personality, but explainable
M12	<ul style="list-style-type: none"> • Out-degree consistent with definition and as explained in Finding 5 	<ul style="list-style-type: none"> • Above average agreeableness; especially trust and compassion facets 	<ul style="list-style-type: none"> • Consistent with definition and personality
M33	<ul style="list-style-type: none"> • Out-degree inconsistent with definition 	<ul style="list-style-type: none"> • Above average agreeableness; especially trust and respectfulness 	<ul style="list-style-type: none"> • Inconsistent with definition; consistent with personality
M36	<ul style="list-style-type: none"> • Out-degree inconsistent with definition; but noted context / situation as primary reason • Articulated levels of trust in interview 	<ul style="list-style-type: none"> • Above average agreeableness; highest facet is trust 	<ul style="list-style-type: none"> • Inconsistent with definition, but explainable; consistent with personality
M93	<ul style="list-style-type: none"> • Out-degree inconsistent with definition 	<ul style="list-style-type: none"> • Highest agreeableness and trust score in class 	<ul style="list-style-type: none"> • Inconsistent with definition; consistent with personality

Table 30. MIOC Conditional Friendship Ties

MIOC Conditional Friendship Ties				
Node:	Out-Degree	Qualitative Information	Personality information	Consistency
M10	Time 1: 0 Time 2: 0 Time 3: 0	<ul style="list-style-type: none"> Noted levels of friendship in definition Noted that while M10 socialized with others "I don't anticipate any of these blossoming into real enduring friendship" 	<ul style="list-style-type: none"> Well below average extraversion Noted by self and others as introverted 	<ul style="list-style-type: none"> Consistent with definition and personality
M36	Time 1: 1 Time 2: 3 Time 3: 4	<ul style="list-style-type: none"> Generally consistent with definition Added M45/M71 due to common interests / similarities Added M47/M93 because personalities meshed with his 	<ul style="list-style-type: none"> About average extraversion; below average sociability, but higher on other facets 	<ul style="list-style-type: none"> Consistent with definition and personality
M45	Time 1: 4 Time 2: 9 Time 3: 7	<ul style="list-style-type: none"> Mixed consistency given definition, because of trust requirement and how trust is defined 	<ul style="list-style-type: none"> Below average extraversion; well below average sociability 	<ul style="list-style-type: none"> Inconsistent with definition and personality
M47	Time 1: 0 Time 2: 0 Time 3: 5	<ul style="list-style-type: none"> Consistent with definition - took time to earn Finding 6 noted group effects involved 	<ul style="list-style-type: none"> Below average extraversion; average sociability 	<ul style="list-style-type: none"> Consistent with definition and personality
M86	Time 1: 1 Time 2: 2 Time 3: 1	<ul style="list-style-type: none"> Consistent with definition - explanation for choices matches definition Added M12 because felt comfortable and "safe" to be self around 	<ul style="list-style-type: none"> Lowest extraversion score in class 	<ul style="list-style-type: none"> Consistent with definition and personality
M93	Time 1: 2 Time 2: 4 Time 3: 5	<ul style="list-style-type: none"> Consistent with definition - friendship requires trust and mutual respect, takes time 	<ul style="list-style-type: none"> 2d highest extraversion score in the class 	<ul style="list-style-type: none"> Consistent with definition; inconsistent with personality

Table 31. MIOC Conditional Trust Ties

MIOC Conditional Trust Ties				
Node:	Out-Degree	Qualitative Information	Personality Information	Consistency
M45	Time 1: 3 Time 2: 2 Time 3: 4	<ul style="list-style-type: none"> Consistent with definition - "trust is not just given" 	<ul style="list-style-type: none"> Above average agreeableness; below average trust facet 	<ul style="list-style-type: none"> Consistent with definition and personality
M47	Time 1: 0 Time 2: 0 Time 3: 5	<ul style="list-style-type: none"> Consistent with definition - based on experience Finding 6 noted group effects involved 	<ul style="list-style-type: none"> Average agreeableness; below average trust facet 	<ul style="list-style-type: none"> Consistent with definition and personality
M71	Time 1: 0 Time 2: 0 Time 3: 1	<ul style="list-style-type: none"> Consistent with definition Noted in time 1 questionnaire "Haven't known anyone long enough" 	<ul style="list-style-type: none"> Lowest in class agreeableness score (to include facets) 	<ul style="list-style-type: none"> Consistent with definition and personality
M86	Time 1: 0 Time 2: 2 Time 3: 2	<ul style="list-style-type: none"> Consistent with definition Notes "experience with them" as important 	<ul style="list-style-type: none"> Average agreeableness; below average trust facet 	<ul style="list-style-type: none"> Consistent with definition and personality

The data from the four previous tables is consolidated into two-by-two matrices and for each relationship. The matrices display how consistent an actor was given their definition and personality scores.

Table 32. MIOC Friendship Definition-Personality Consistency

MIOC Friendship Definition - Personality Consistency Quad Chart		
Friendship:	Consistent with personality	Inconsistent with personality
Consistent with definition	M10, M12, M36, M47, M86	M93, (M33)
Inconsistent with definition	M71, (M6)	M45

Table 33. MIOC Trust Definition-Personality Consistency

MIOC Trust Definition - Personality Consistency Quad Chart		
Trust:	Consistent with personality	Inconsistent with personality
Consistent with definition	M12, M45, M47, M71, M86	
Inconsistent with definition	M36, M93, (M6), (M33)	M10

Five primary insights emerge from the charts. First, M6 and M33 may be unreliable actors for this set of relationships, as both actors continuously “yay” said for all the positive networks, nominating everyone, and “nay” said for all the *negative* networks, nominating no one. Further, neither actor was interviewed, making it difficult to gain insight into their rationale. For the *friendship* and *trust* networks, M6 was inconsistent with M6’s definition of the concepts, but M6’s unconditional nominations support M6’s above average extraversion scores. M33’s definition of friendship is difficult to categorize, and M33’s below average extraversion score does not support unconditional *friendship* ties, although M33’s above average agreeableness score supports M33’s unconditional *trust* ties. Overall, M6 and M33’s consistent “yay” and “nay” saying and absence of additional qualitative data confounds further analysis.

Second, Tables 32 and 33 greater variability in actors’ interpretation of friendship than trust, which may explain inconsistencies in the *friendship* network’s centrality-personality correlations. Specifically, friendship varied in both personality and definition whereas trust varied primarily in definition.

Tables 32 and 33 illustrate, however, that actors’ nominations were mostly consistent with their measured personality, with few exceptions. For friendship, participants were more consistent in maintaining their conceptual definition than so for trust, but both concepts had strong adherents to their definition. For example, M93, despite

having the second highest extraversion scores in the class, applied *friendship* nominations in accordance with M93's definitional criteria rather than what M93's personality measurements would suggest. On the other hand, M45 scored well below class average for extraversion, particularly for sociability, and defined friendship as a rigorous process to earn, but added the entire class to the *friendship* network at time 2 before removing two at time 3; perhaps because the situation justified loosening M45's definitional criteria and acting against M45's personality. Finally, M10 acted out of personality expectations in nominating the entire class to the *trust* network, but as discussed, M10 recognized levels of trust and noted contextual factors as influential to M10's decision.

Third, for the *friendship* network, there is support for participants scoring higher in extraversion to send more ties and eliminating M33 from consideration would strengthen the correlation. What is more, both M71 and M12 were above average for extraversion on all facets, but especially sociability (which may have been suppressed in the correlation chart). The integrated analysis suggests that sociability and assertiveness (rather than energy level) are the primary facet components of extraversion for *friendship* relationships.

Fourth, the "trust" facet is strongly related to nominating alters to the *trust* network, participants scoring low send fewer ties, while participants scoring high send more ties. Further, that the trust facet's centrality correlation weakens over time makes sense, as those scoring lower on the facet generally did not nominate alters early in the course but added others as the class went on. If M10, who scored well below average on the trust facet is removed, the relationship between the "trust" facet and out-degree trust ties becomes stronger. M10 was the only participant acting outside of personality and definitional expectations; otherwise, the widespread trust in the network is consistent with participants acting within their personality or adopting the concept to the situation.

Fifth, the *workgroups* network effects may be under-represented. For the unconditional *friendship* ties, three of the four participants are from workgroup 1; for the *trust* network, four of the six participants are from workgroup 1; further, for the *friendship* network, M10 sent no nominations at any time period. That is, because ties are sent to everyone, regardless of group membership, it suppresses the effect of the *workgroups* network.

B. MOST PREFER RELATIONSHIP SUPPLEMENTARY MATERIAL

1. Quantitative Summary Tables

Table 34. MIOC Directed Most Prefer to Work with Network Densities

MIOC Directed Most Prefer Network Densities					
Network	Density	No. of Ties	Std Dev	Avg Degree	Alpha
Most Prefer T2	0.622	56	0.485	5.600	0.943
Most Prefer T3	0.467	42	0.499	4.200	0.897

Table 35. MIOC Undirected Most Prefer to Work with Network Densities

MIOC Undirected Most Prefer Network Densities					
Network	Density	No. of Ties	Std Dev	Avg Degree	Alpha
Most Prefer T2	0.378	34	0.485	3.400	0.859
Most Prefer T3	0.178	16	0.382	1.600	0.684

Table 36. MIOC Most Prefer to Work with QAP Correlation-Directed Networks

MIOC Most Prefer QAP Correlation Directed Networks		
	Most Prefer T2	Most Prefer T3
Friendship T1	0.241	0.309*
Friendship T2	0.159	0.355*
Friendship T3	0.331	0.416**
Trust T1	0.406	0.342*
Trust T2	0.475*	0.416**
Trust T3	0.515*	0.463**
Work Groups	0.051	0.149
Previous Relationship	0.243**	0.099
Most Prefer T2	1.000	0.591**
p-value <.05 *; <.01 **		

Table 37. MIOC Most Prefer to Work with QAP Correlation-Undirected Networks

MIOC Most Prefer QAP Correlation Undirected Networks		
	Most Prefer T2	Most Prefer T3
Friendship T1	0.152	0.114
Friendship T2	-0.004	0.140
Friendship T3	0.225	0.286
Trust T1	0.283	0.140
Trust T2	0.299	0.214
Trust T3	0.453*	0.435**
Work Groups	0.133**	0.286
Previous Relationship	0.401	0.059
Most Prefer T2	1.000	0.477**
p-value <.05 *; <.01 **		

Table 38. MIOC Most Prefer to Work with Centrality-Personality Correlations

MIOC Most Prefer to Work With Centrality - Personality Correlations						
Most Prefer:	Out-Degree		In-Degree		Degree	
Correlations:	T2	T3	T2	T3	T2	T3
Extraversion	0.283	0.012	0.079	0.028	0.249	-0.225
Sociability	0.231	0.064	-0.005	-0.127	0.203	-0.330
Assertiveness	0.224	0.077	0.040	0.200	0.188	0.052
Energy Level	0.336	-0.130	0.327	0.073	0.312	-0.291
Agreeableness	0.532*	0.203	0.072	0.065	0.510*	0.296
Compassion	0.215	0.123	0.183	-0.150	0.350	0.278
Respectfulness	0.317	0.191	0.231	0.302	0.337	0.443
Trust	0.641**	0.225	-0.148	0.029	0.488*	0.114
Conscientiousness	-0.233	0.215	0.009	-0.060	-0.219	0.097
Organization	-0.115	0.249	-0.064	-0.143	-0.124	0.125
Productiveness	-0.371	0.175	-0.164	-0.133	-0.421	-0.012
Responsibility	-0.075	0.198	0.308	0.118	0.041	0.197
Negative Emotionality	-0.249	-0.058	-0.003	-0.027	-0.129	0.505*
Anxiety	-0.455	-0.272	0.197	0.063	-0.255	0.406
Depression	-0.216	0.085	-0.294	-0.054	-0.240	0.562*
Emotional Volatility	0.105	0.087	0.072	-0.104	0.216	0.452
Open-Mindedness	-0.548*	-0.419	-0.015	-0.129	-0.521*	-0.272
Intellectual Curiosity	-0.204	-0.349	0.096	-0.146	-0.176	-0.342
Aesthetic Sensitivity	-0.476*	-0.546*	0.366	0.187	-0.342	-0.241
Creative Imagination	-0.333	0.162	-0.572**	-0.437	-0.473*	0.031
Acquisitive Self-Monitoring	0.008	-0.256	-0.191	-0.033	-0.130	-0.276
Protective Self-Monitoring	0.163	-0.003	0.430	0.182	0.277	-0.075
Traditional Self-Monitoring	0.022	-0.274	0.229	0.279	0.107	0.192

p-value: <.1 *; <.05 **; <.01 ***

Table 39. MIOC EAS Trait/Facet Preferences Out-degree/Reciprocal Ties

Traits and Facets:	Outgoing Ties		Mean of correlations >= 0.2	Correlations >= 0.2	Correlations <= -0.2	Ego-Alter Similarity Trait/Facet Preferences for Outgoing and Reciprocal Ties		Mean of correlations >= 0.2	Correlations >= 0.2	Correlations <= -0.2	Notes:
	Similar	Dissimilar				Similar	Dissimilar				
Extraversion	6	2	0.118	2	0	4	3	-0.018	2	3	3 Out-degree: Preference for similar others at trait level and for energy level; dissimilar others for
Sociability	3	5	-0.075	3	3	2	5	-0.239	1	4	4 Sociability and assertiveness: correlations are generally weak
Assertiveness	3	5	-0.009	2	3	2	5	-0.166	1	4	4 Reciprocal: Preference for similar others at trait level; no apparent preference for energy level;
Energy Level	6	1	0.181	3	0	3	3	0.076	2	1	1 preference for dissimilar others for sociability (stronger negative correlation and assertiveness)
Agreeableness	3	5	-0.040	3	3	3	4	-0.106	2	4	4 Out-degree: Preference for dissimilar others at trait level, but facets indicate preference for similar
Compassion	7	1	0.152	4	1	6	1	0.282	4	0	0 others: all correlations are generally weak
Respectfulness	4	4	0.029	3	2	5	2	0.121	3	3	3 Reciprocal: Similar finding to out-degree; stronger preference for similar respectfulness facet;
Trust	6	2	0.093	3	2	4	3	-0.036	2	2	2 compassion correlation is stronger (i.e., preference for similar others), but remaining or weaker
Conscientiousness	6	2	0.242	5	2	5	2	0.268	4	0	0 Out-degree: General preference for similar others across trait and facets except for productiveness;
Organization	6	2	0.189	4	1	6	1	0.218	3	3	3 stronger correlational values implies stronger preference for this trait
Productiveness	3	5	-0.148	2	4	2	5	-0.250	1	4	4 Reciprocal: Similar finding to out-degree; close to split for responsibility facet; strong correlational
Responsibility	6	2	0.195	4	1	4	3	0.233	4	1	1 values implies stronger preference for this trait
Negative Emotionality	4	4	-0.184	3	4	4	3	-0.114	1	3	3 Out-degree: Slight preference to dissimilar others for facets, equal for traits, but correlations suggest
Anxiety	3	5	-0.124	3	4	3	4	-0.135	2	3	3 preference for dissimilar others
Depression	3	5	-0.100	0	3	2	5	-0.146	1	4	4 Reciprocal: Similar finding to out-degree
Emotional Volatility	3	5	-0.108	2	4	3	4	-0.050	2	2	2
Open-Mindedness	2	6	-0.241	1	4	2	5	-0.200	2	4	4 Out-degree: General preference for dissimilar others except for aesthetic sensitivity facet; correlations
Intellectual Curiosity	2	4	-0.328	1	4	1	4	-0.404	1	4	4 suggest stronger preference for dissimilar others in open-mindedness
Aesthetic Sensitivity	5	3	0.156	5	1	6	1	0.189	5	1	1 Reciprocal: Similar to out-degree except switch to similarity preference for creative imagination facet
Creative Imagination	3	5	-0.079	3	3	4	3	0.044	3	3	3 (but weak correlation)
Acquisitive Self-Monitoring	4	4	0.089	4	2	4	3	0.110	4	2	2 Out-degree: No apparent preference - even split for both constructs; weak correlations
Protective Self-Monitoring	4	4	0.013	4	3	5	2	0.088	4	2	2 Reciprocal: Slight preference for similar others for both; more so for PSM construct; weak correlations

Table 40. MIOC Most Prefer to Work with Trait/Facet Preferences

Most Prefer Network: Trait / Facet Preference					
Traits and Facets:	Outcomes:				Notes:
	Hi	Lo	Mix	NP	
Extraversion	0	6	2	0	Trend is toward those scoring lower than themselves in extraversion, primarily in social / sociability aspect; but also for those higher in assertiveness and energy level. Implies a wider preference for lower extraverts.
Sociability	2	5	1	0	
Assertiveness	5	3	0	0	
Energy Level	3	2	2	1	
Agreeableness	5	2	1	0	Trend is toward those scoring higher than themselves in agreeableness and those higher in the respectfulness facet; but also for those lower in the compassion and trust facets. Implies a preference for individuals higher in agreeableness.
Compassion	3	5	0	0	
Respectfulness	4	1	3	0	
Trust	2	5	1	0	
Conscientiousness	3	4	1	0	No clear trend, but slight favor to those scoring lower in conscientiousness and facets. Implies no particular preference for conscientiousness.
Organization	2	4	1	1	
Productiveness	3	4	1	0	
Responsibility	3	4	1	0	
Negative Emotionality	6	2	0	0	Trend is toward those scoring higher than themselves in negative emotionality and facets. Implies a wider preference for those scoring higher in negative emotionality.
Anxiety	5	3	0	0	
Depression	4	2	2	0	
Emotional Volatility	6	2	0	0	
Open-Mindedness	4	4	0	0	Trend is toward those scoring higher than themselves in open-mindedness, except for creative imagination. Implies a slight preference for those scoring higher in open-mindedness.
Intellectual Curiosity	4	2	0	2	
Aesthetic Sensitivity	4	2	2	0	
Creative Imagination	2	5	1	0	
Acquisitive Self-Monitoring	4	3	1	0	Slight trend toward those scoring higher than themselves in ASM / PSM. Implies weak trend towards higher ASM / PSM.
Protective Self-Monitoring	4	2	2	0	

Hi - preference for those scoring higher; Lo - preference for those scoring lower; Mix - divergent out-degree and reciprocal preferences; NP - node was average value for a given trait / facet

2. Mixed Methods Summary

To make sense of the qualitative questionnaire and interview data and relate it to personality, the descriptive words that participants use to describe alters is analyzed and compared to measured personality scores (i.e., how a participant describes their nominated alters). That is, the lexical foundations of personality (as noted in the literature review) provide a means by which to make sense of the descriptive terms used to describe alters by associating them to the Big Five traits and facets and then comparing the results to each alter's average standardized personality score. The focus of analysis is on participants who did not send unconditional ties (i.e., all but M6 and M33). To interpret the terms a participant used to describe alters into a specific Big Five trait (or facet) or set of traits requires terms that can be reasonably argued to be associated with them. For example, words such as “articulate” or “intelligent” do not fit neatly into the Big Five lexicon and are ignored. On the other hand, a term such as “hard working” implies conscientiousness

(and facets such as productiveness), but “easy to talk to” and “easy to work with” could suggest a combination of agreeableness and lower extraversion as it implies someone who is both not overly assertive and high energy (two of extraversion’s facets), but also someone who is easy to get along with and respectful. The term “pragmatic” suggests lower open-mindedness, when compared to a term such as “outside the box,” which suggests higher open-mindedness.

C. NEGATIVE RELATIONSHIP SUPPLEMENTARY MATERIAL

1. Quantitative Summary Tables

Table 41. MIOC Directed Negative Networks Densities

MIOC Directed Negative Network Densities					
Network	Density	No. of Ties	Std Dev	Avg Degree	Alpha
Difficult T1	0.033	3	0.180	0.300	0.256
Difficult T2	0.056	5	0.229	0.500	0.370
Difficult T3	0.100	9	0.300	0.900	0.526
Least Prefer T2	0.044	4	0.206	0.400	0.317
Least Prefer T3	0.111	10	0.314	1.000	0.556

Table 42. MIOC Undirected Negative Networks Densities

MIOC Undirected Negative Network Densities					
Network	Density	No. of Ties	Std Dev	Avg Degree	Alpha
Difficult T1	0.000	0	0.000	0.000	0.000
Difficult T2	0.000	0	0.000	0.000	0.000
Difficult T3	0.044	4	0.206	0.400	0.317
Least Prefer T2	0.000	0	0.000	0.000	0.000
Least Prefer T3	0.044	4	0.206	0.400	0.317

Table 43. MIOC QAP Correlation Directed Negative Networks

MIOC QAP Correlation Directed Negative Networks					
	Difficult T1	Difficult T2	Difficult T3	Least Prefer T2	Least Prefer T3
Friendship T1	-0.178	-0.135	-0.096	-0.206	-0.197
Friendship T2	-0.227	-0.198	-0.030	-0.264	-0.144
Friendship T3	-0.121	-0.225	-0.217	-0.290*	-0.328**
Trust T1	0.141	-0.218	-0.284**	-0.060	-0.171
Trust T2	0.138	-0.225	-0.294*	-0.065	-0.181
Trust T3	0.112	-0.293	-0.385**	-0.114	-0.267*
Work Groups	-0.042	0.174	-0.149	0.024	-0.103
Previous Relationship	-0.058	0.095	-0.104	-0.067	-0.110
Most Prefer T2	-0.238	-0.211	-0.275*	-0.277	-0.308**
Most Prefer T3	-0.174	-0.227	-0.312**	-0.202	-0.331**
Difficult T1	1.000				
Difficult T2	-0.045	1.000			
Difficult T3	0.144	0.243	1.000		
Least Prefer T2	-0.040	0.418*	0.288*	1.000	
Least Prefer T3	0.131	0.223	0.825**	0.438**	1.000
p-value <.05 *; <.01 **					

Table 44. MIOC QAP Correlation Undirected Negative Networks

MIOC QAP Correlation Undirected Negative Networks					
	Difficult T1	Difficult T2	Difficult T3	Least Prefer T2	Least Prefer T3
Friendship T1			-0.130		-0.130
Friendship T2			0.065		0.065
Friendship T3			-0.193		-0.193
Trust T1			-0.160		0.065
Trust T2			-0.176		0.044
Trust T3			-0.231		-0.014
Work Groups			-0.193		0.024
Previous Relationship			-0.067		-0.067
Most Prefer T2			-0.168		-0.168
Most Prefer T3			-0.100		-0.100
Difficult T1	1.000				
Difficult T2		1.000			
Difficult T3			1.000		0.477
Least Prefer T2				1.000	
Least Prefer T3			0.477		1.000
p-value <.05 *; <.01 **					

Table 45. MIOC Difficult to Work with Centrality-Personality Correlations

MIOC Difficult to Work With Network Centrality - Personality Correlations:									
Difficult: Correlations:	Out-Degree			In-Degree			Degree		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
Extraversion	0.000	-0.425	-0.373	0.367	-0.157	-0.496*			-0.324
Sociability	-0.010	-0.166	-0.259	0.303	-0.149	-0.383			-0.211
Assertiveness	-0.026	-0.571*	-0.464*	0.467	-0.205	-0.680**			-0.378
Energy Level	0.039	-0.653*	-0.353	0.164	0.000	-0.353			-0.352
Agreeableness	0.210	0.019	0.007	-0.398	-0.502	-0.064			-0.208
Compassion	-0.102	0.427*	0.249	-0.348	-0.653**	0.215			0.158
Respectfulness	0.286	-0.475*	-0.157	-0.204	-0.328	-0.294			-0.418
Trust	0.372	0.023	-0.055	-0.393	-0.252	-0.083			-0.276
Conscientiousness	-0.050	-0.520**	-0.279	0.363	0.000	-0.330			-0.152
Organization	0.159	-0.385	-0.078	0.232	-0.126	-0.165			0.074
Productiveness	-0.140	-0.351	-0.252	0.413	0.210	-0.223			-0.109
Responsibility	-0.191	-0.672**	-0.441	0.307	-0.155	-0.556*			-0.382
Negative Emotionality	-0.410	0.619*	0.560*	-0.564*	-0.199	0.395			0.637**
Anxiety	-0.379	0.387	0.606**	-0.620**	-0.381	0.383			0.743**
Depression	-0.448*	0.560	0.351	-0.451	0.302	0.314			0.447
Emotional Volatility	-0.333	0.625*	0.557*	-0.494*	-0.411	0.388			0.528*
Open-Mindedness	0.091	0.285	0.481*	-0.048	-0.077	0.255			0.475*
Intellectual Curiosity	0.110	-0.219	0.190	0.144	0.261	0.237			0.337
Aesthetic Sensitivity	0.171	0.393	0.442*	-0.326	-0.222	0.130			0.259
Creative Imagination	-0.134	0.243	0.254	0.215	-0.077	0.178			0.388
Acquisitive Self-Monitoring	0.029	0.435	0.282	0.244	-0.217	0.097			0.082
Protective Self-Monitoring	-0.026	0.207	-0.380	-0.428	-0.186	-0.335			-0.380
Traditional Self-Monitoring	0.048	0.532*	0.135	-0.456	-0.409	-0.068			-0.144

p-value: <.1 *; <.05 **; <.01 ***

Table 46. MIOC Least Prefer to Work with Centrality-Personality Correlations

MIOC Least Prefer to Work With Centrality - Personality Correlations						
Least Prefer:	Out-Degree		In-Degree		Degree	
Correlations:	T2	T3	T2	T3	T2	T3
Extraversion	-0.542*	-0.527*	0.458*	-0.272		-0.245
Sociability	-0.338	-0.535*	0.536*	-0.120		-0.285
Assertiveness	-0.733**	-0.543*	0.359	-0.526*		-0.374
Energy Level	-0.464	-0.367	0.086	-0.172		0.000
Agreeableness	-0.344	0.156	-0.595*	-0.029		0.036
Compassion	0.076	0.196	-0.655**	0.211		0.280
Respectfulness	-0.594*	0.097	-0.385	-0.291		-0.105
Trust	-0.324	0.131	-0.391	0.000		-0.053
Conscientiousness	-0.420	-0.432	0.223	-0.233		-0.231
Organization	-0.505*	-0.287	0.025	-0.159		-0.234
Productiveness	-0.125	-0.360	0.321	-0.107		-0.090
Responsibility	-0.560*	-0.578*	0.200	-0.420		-0.369
Negative Emotionality	0.553*	0.542*	-0.518**	0.171		0.366
Anxiety	0.376	0.524*	-0.499**	0.068		0.417
Depression	0.590*	0.423	-0.254	0.182		0.317
Emotional Volatility	0.422	0.542*	-0.543**	0.247		0.260
Open-Mindedness	0.317	0.361	0.435	0.381		0.576*
Intellectual Curiosity	0.110	0.134	0.529*	0.289		0.456
Aesthetic Sensitivity	0.595**	0.515*	-0.016	0.190		0.451
Creative Imagination	-0.207	-0.072	0.478*	0.323		0.234
Acquisitive Self-Monitoring	0.146	0.298	0.219	0.321		0.314
Protective Self-Monitoring	0.519*	-0.213	-0.313	-0.193		-0.209
Traditional Self-Monitoring	0.591*	0.399	-0.341	0.103		0.456*

p-value: <.1 *; <.05 **; <.01 ***

2. Mixed Methods Summary

The incident between M45 and M86 had a ripple effect in that it created five new *negative* relationships and is an example of social influence (transitivity) and perception. Specifically, from the incident, M12 received a *negative* nomination from M45, presumably as a result of working together, M86 and M45 had reciprocal *negative* relationships, and two additional *negative* nominations were sent to M86 by M47 and M71,

both of whom were in M45's primary workgroup (M45 was also one of M47's *most prefer to work with* network nominations).

The *negative* nominations from M47 and M71 to M86 are of interest. Specifically, I found that perception could be an antecedent to *negative* ties, notably, M47 had a negative perception of M86 (and M12) (discussed during the time 2 interview). Although it cannot be conclusively proven that the incident between M45 and M86 was what caused M86 to receive additional *negative* nominations, the evidence from M47 suggests this is the case. M47's time 3 questionnaire noted:

M86—a nice person, but early impressions are that [M86] is a bit argumentative. Tends to make excuses on low performance and [M86's] inputs to discussions are often irrelevant or confusing. (M47 discussing M86, Time 3 Questionnaire)

M47 was also asked why M86 was added to the *negative* networks; M47's response alludes to elements of M86's high negative emotionality, but also reinforces M47's work-centric view of the class:

Yeah, I think there were a few things that led to me doing that. So I think that [M86 is] obviously a nice person and you said it, very friendly and I like [M86] as a person, but in terms of me thinking in the box of just working with this individual, I think [M86] would be difficult for a couple of reasons. One is I feel that [M86] gives excuses for poor performance sometimes, which I've noticed. And then also is fairly negative in the way that [M86] views some things and I guess is pretty pessimistic and is very open about explaining why [M86 is] upset about things. (M47 discussing M86, Time 3 Interview)

Since M47 shared a workgroup with M45, M47 was asked about the incident between M45 and M86:

So I think they switched up the groups and it was M45, M12 and M86 in one group together. And I think when they were doing the group work for something, M86, in M45's opinion, M86 and M45 were kind of off on what the task was or how the end state of that task. And M45 spoke about that, was fairly frustrating trying to get them on to what [M45] believed was the right end state for that thing... Yeah, it stuck with [M45] and I think [M45 is] not the first individual who's mentioned that. I think M10, we had spoken about previously about a similar incidents between where perhaps M86 was way off in terms of how to accomplish a certain task or what the result of

that task should be and there was some conflict there... So I think that's kind of one of the big takeaways that I had from that is... Although I don't see [M86 as] necessarily argumentative in my... [M86] hasn't argued with me. There's been a couple of instances where, my understanding is that, [M86 is] not very easy to work with based on being set in [M86's] ways. (M47 discussing M86, Time 3 Interview)

The interview revealed that M45 discussed the incident with others, but also that M10 also discussed working with M86. The consequence, it seems, is that it confirmed a perception that M47 already held about M86 and perhaps made it easier for M47 to nominate M86 to the *negative* networks despite never actually working with M86. Similarly, M71, who to that point sent no *negative* nominations, finally sent one to M86 as well.

The overall effect is that in the span of one time period, five new *negative* nominations were formed, three of which were directed at M86—and as the data indicates, not all of the nominations can be attributed to personality factors, but rather perception factors and/or network effects. That is, a plausible explanation is that two of the *negative* nominations are due to M45's shared workgroup membership with M47 and M71 (a group that also had a friendship clique), such that even without direct working experience with M86, M47 and M71's perception was influenced by M45 enough for them to nominate M86 to their *negative* networks.

Ultimately, although the incident between M45 and M86 led to *negative* relationships, it had secondary effects as well. Personality issues contributed to M45 and M86's conflict, but the secondary effects and subsequent *negative* nominations sent to M86 likely had little to do with personality. That is, within the social network framework, interdependence between actors and their ties are assumed, as such, even if personality is a causal factor in one *negative* relationship, subsequent *negative* relationships may develop absent direct influence from personality because of whom the *negative* relationships are between.

APPENDIX D. MIAC APPENDIX

D. FRIENDSHIP AND TRUST RELATIONSHIP SUPPLEMENTARY MATERIAL

1. Quantitative Summary Tables

Table 47. MIAC Directed Friendship and Trust Network Densities

MIAC Directed Friendship and Trust Network Densities					
Network:	Density	No. of Ties	Std Dev	Avg Degree	Alpha
Friendship T1	0.432	57	0.495	4.750	0.901
Friendship T2	0.598	79	0.490	6.583	0.947
Friendship T3	0.727	96	0.445	8.000	0.970
Trust T1	0.652	86	0.476	7.167	0.957
Trust T2	0.742	98	0.437	8.167	0.972
Trust T3	0.720	95	0.449	7.917	0.969

Table 48. MIAC Undirected Friendship and Trust Network Densities

MIAC Undirected Friendship and Trust Network Densities					
Network:	Density	No. of Ties	Std Dev	Avg Degree	Alpha
Friendship T1	0.212	28.000	0.409	2.333	0.764
Friendship T2	0.409	54.000	0.492	4.500	0.893
Friendship T3	0.545	72.000	0.498	6.000	0.935
Trust T1	0.394	52.000	0.489	4.333	0.886
Trust T2	0.530	70.000	0.499	5.833	0.931
Trust T3	0.530	70.000	0.499	5.833	0.931

Table 49. MIAC QAP Correlation-Friendship/Trust Directed Networks

MIAC QAP Correlation for Friendship / Trust Directed Networks							
	Friendship T1	Friendship T2	Friendship T3	Trust T1	Trust T2	Trust T3	Workgroups
Friendship T1	1.000						
Friendship T2	0.683**	1.000					
Friendship T3	0.396**	0.574**	1.000				
Trust T1	0.252	0.309*	0.445**	1.000			
Trust T2	0.234	0.401**	0.573**	0.769**	1.000		
Trust T3	0.204	0.383**	0.640**	0.676**	0.828**	1.000	
Workgroups	0.038	-0.065	0.133	0.019	-0.001	0.013	1.000
Previous Relationship	0.213*	0.176	0.047	0.029	0.038	0.051	-0.040

p-value < .05 *, < .01 **

Table 50. MIAC QAP Correlation-Friendship/Trust Undirected Networks

MIAC QAP Correlation for Friendship / Trust Undirected Networks							
	Friendship T1	Friendship T2	Friendship T3	Trust T1	Trust T2	Trust T3	Workgroups
Friendship T1	1.000						
Friendship T2	0.548**	1.000					
Friendship T3	0.399**	0.636**	1.000				
Trust T1	0.340*	0.401**	0.362*	1.000			
Trust T2	0.266	0.536**	0.604**	0.697**	1.000		
Trust T3	0.340*	0.598**	0.726**	0.510**	0.818**	1.000	
Workgroups	0.106	-0.042	0.127	-0.075	-0.027	-0.027	1.000
Previous Relationship	0.272	0.228	0.146	0.004	0.040	0.040	-0.040
p-value < .05 *; < .01 **							

Table 51. MIAC Friendship Network Centrality-Personality Correlations

MIAC Friendship Network Centrality - Personality Correlations:									
Friendship: Correlations:	Out-Degree			In-Degree			Degree		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
Extraversion	-0.175	-0.184	-0.135	0.244	0.169	0.294	-0.002	-0.035	0.080
Sociability	-0.211	-0.118	0.114	0.352	0.306	0.306	-0.101	0.064	0.336
Assertiveness	0.013	-0.253	-0.511**	0.108	-0.240	0.080	0.193	-0.289	-0.401
Energy Level	-0.269	-0.047	0.032	0.083	0.451*	0.384	-0.114	0.223	0.261
Agreeableness	-0.161	0.094	0.333	0.165	0.177	-0.089	-0.229	0.141	0.290
Compassion	-0.444*	-0.012	0.112	0.297	0.275	-0.199	-0.470*	0.197	0.014
Respectfulness	-0.234	-0.016	0.167	0.051	-0.033	-0.091	-0.231	-0.108	0.136
Trust	0.147	0.219	0.496**	0.107	0.247	0.032	0.016	0.276	0.502**
Conscientiousness	0.193	0.048	-0.037	-0.250	-0.421*	-0.007	0.322	-0.265	-0.059
Organization	0.153	0.189	-0.033	-0.089	-0.371	-0.073	0.266	-0.084	-0.068
Productiveness	0.387	0.187	-0.100	-0.418	-0.384	0.036	0.455*	-0.130	-0.090
Responsibility	-0.175	-0.230	0.048	-0.037	-0.361	0.021	-0.050	-0.473*	0.013
Negative Emotionality	-0.151	0.096	0.101	0.411*	0.248	0.057	-0.107	0.276	0.116
Anxiety	-0.107	-0.015	0.018	0.393	0.444*	0.238	0.067	0.261	0.111
Depression	-0.318	-0.006	0.187	0.449*	-0.134	-0.270	-0.323	-0.039	-0.017
Emotional Volatility	-0.015	0.253	0.083	0.245	0.297	0.091	-0.082	0.459*	0.169
Open-Mindedness	0.063	0.018	0.032	-0.418*	-0.373	-0.197	-0.031	-0.137	-0.087
Intellectual Curiosity	0.069	0.126	-0.021	-0.025	-0.251	-0.426*	0.152	-0.011	-0.266
Aesthetic Sensitivity	-0.146	-0.137	0.148	-0.178	-0.063	0.098	-0.303	-0.059	0.192
Creative Imagination	0.237	0.064	-0.119	-0.469*	-0.373	-0.086	0.211	-0.172	-0.161
Acquisitive Self-Monitoring	-0.246	-0.060	-0.032	0.146	0.168	-0.028	-0.238	0.114	-0.009
Protective Self-Monitoring	0.073	0.056	0.323	-0.277	-0.145	-0.272	-0.095	0.135	0.161
Traditional Self-Monitoring	-0.057	-0.040	0.160	-0.202	-0.156	-0.424*	-0.143	0.034	-0.078
p-value: < .1 *, < .05 **, < .01 ***									

Table 52. MIAC Trust Network Centrality-Personality Correlations

MIAC Trust Network Centrality - Personality Correlations:											
Trust: Correlations:	Out-Degree			In-Degree			Degree				
	T1	T2	T3	T1	T2	T3	T1	T2	T3		
Extraversion	0.015	0.061	0.046	0.237	0.097	0.272	0.048	0.038	0.112		
Sociability	0.320	0.370	0.293	-0.090	-0.185	0.141	0.345	0.348	0.323		
Assertiveness	-0.287	-0.338	-0.411*	0.415	0.249	0.320	-0.292	-0.405	-0.343		
Energy Level	-0.097	0.132	0.227	0.401	0.243	0.261	-0.015	0.193	0.306		
Agreeableness	0.528**	0.652**	0.536**	-0.522**	-0.557**	-0.415	0.517**	0.648**	0.324		
Compassion	0.304	0.584**	0.478*	-0.276	-0.309	-0.528**	0.306	0.632**	0.192		
Respectfulness	0.322	0.338	0.208	-0.329	-0.509*	-0.186	0.274	0.297	0.084		
Trust	0.671**	0.784***	0.636***	-0.672**	-0.600**	-0.356	0.683**	0.782***	0.493**		
Conscientiousness	-0.104	-0.330	-0.282	0.034	0.072	-0.011	-0.169	-0.353	-0.312		
Organization	0.141	-0.203	-0.177	-0.248	-0.062	-0.174	0.047	-0.222	-0.281		
Productiveness	-0.220	-0.370	-0.474*	0.238	0.046	0.148	-0.229	-0.405*	-0.398		
Responsibility	-0.205	-0.302	-0.062	0.125	0.199	-0.004	-0.250	-0.310	-0.118		
Negative Emotionality	-0.091	0.091	0.245	0.307	0.080	-0.006	-0.033	0.099	0.269		
Anxiety	-0.170	0.077	0.093	0.477*	0.140	0.336	-0.101	0.092	0.257		
Depression	0.136	0.144	0.273	0.007	-0.153	-0.373	0.165	0.077	0.148		
Emotional Volatility	-0.144	0.034	0.280	0.238	0.188	-0.070	-0.097	0.093	0.267		
Open-Mindedness	-0.184	-0.149	-0.133	0.132	0.087	-0.203	-0.117	-0.102	-0.194		
Intellectual Curiosity	-0.395	-0.039	-0.106	0.574**	-0.136	-0.234	-0.280	-0.046	-0.194		
Aesthetic Sensitivity	0.207	0.082	0.150	-0.297	0.198	-0.124	0.239	0.164	0.138		
Creative Imagination	-0.271	-0.317	-0.300	0.158	0.067	0.030	-0.286	-0.313	-0.309		
Acquisitive Self-Monitoring	0.201	0.308	0.289	-0.053	-0.104	-0.125	0.181	0.261	0.126		
Protective Self-Monitoring	0.088	0.328	0.414*	0.031	-0.211	-0.534**	0.177	0.330	0.239		
Traditional Self-Monitoring	-0.076	0.057	0.249	0.262	-0.080	-0.546**	-0.010	0.059	0.013		

p-value: < .1 *; < .05 **; < .01 ***

2. Mixed Methods Supplementary Information

The following procedures were used in the MIOC case study (see Appendix C for details), so I do not repeat that here, but rather focus on the findings.

Inconsistencies in how participants defined and applied the friendship concept may account for its inconsistency in the *friendship* network's centrality-personality correlations. The qualitative data suggested that situational factors provided an opportunity for participants to deviate from their definitional criteria, but mixed methods analysis is required to see if it also suggests actors deviated from their personality expectations.

Table 53. MIAC Unconditional Friendship Ties

MIAC Unconditional Friendship Ties			
Node:	Qualitative Information	Personality Information	Consistency
C2	<ul style="list-style-type: none"> • Out-degree inconsistent with definition 	<ul style="list-style-type: none"> • Above average extraversion (2d highest in class) 	<ul style="list-style-type: none"> • Consistent with personality; inconsistent with definition
C7	<ul style="list-style-type: none"> • Out-degree consistent with definition - "anybody you can have an engaging conversation with..." • "Anybody in that classroom I'd be fine...getting to know them" 	<ul style="list-style-type: none"> • Below average extraversion 	<ul style="list-style-type: none"> • Inconsistent with personality; consistent with definition
C14	<ul style="list-style-type: none"> • Out-degree inconsistent with definition 	<ul style="list-style-type: none"> • Below average extraversion (2d lowest in the class) 	<ul style="list-style-type: none"> • Inconsistent with personality and definition

Table 54. MIAC Unconditional Trust Ties

MIAC Unconditional Trust Ties			
Node	Qualitative Information	Personality Information	Consistency
C2	<ul style="list-style-type: none"> • Out-degree inconsistent with definition 	<ul style="list-style-type: none"> • Below average agreeableness (3d lowest in class) 	<ul style="list-style-type: none"> • Inconsistent with personality and definition
C14	<ul style="list-style-type: none"> • Out-degree consistent with definition • "I trust people until they give me a reason not to" 	<ul style="list-style-type: none"> • Below average agreeableness • Trust facet is .08 standard deviations below class average 	<ul style="list-style-type: none"> • Slightly inconsistent with personality; consistent with definition
C17	<ul style="list-style-type: none"> • Out-degree is inconsistent with definition • Mentions trust is based "off of time spent together and personality traits" 	<ul style="list-style-type: none"> • Above average agreeableness (2d highest in class) • 2d highest average trust facet score in class 	<ul style="list-style-type: none"> • Consistent with personality; inconsistent with definition
C30	<ul style="list-style-type: none"> • Out-degree is mixed with definition, but seems inconsistent (e.g., "ability to count on each other...") 	<ul style="list-style-type: none"> • Above average agreeableness • Trust facet is highest amongst the agreeableness facets 	<ul style="list-style-type: none"> • Consistent with personality; inconsistent with definition
C64	<ul style="list-style-type: none"> • Out-degree consistent with definition • "I trust most people on a neutral level at first..." 	<ul style="list-style-type: none"> • Above average agreeableness 	<ul style="list-style-type: none"> • Consistent with personality and definition
C77	<ul style="list-style-type: none"> • Out-degree consistent with note from questionnaire: "I trust everyone until they give me a reason not to trust them" 	<ul style="list-style-type: none"> • Above average agreeableness (highest in the class) • Highest average trust facet score in class 	<ul style="list-style-type: none"> • Consistent with personality and definition

Table 55. MIAC Conditional Friendship Ties

MIAC Conditional Friendship Ties				
Node:	Out-Degree	Qualitative Information	Personality Information	Consistency
C9	Time 1: 4 Time 2: 8 Time 3: 10	<ul style="list-style-type: none"> Noted conversation was critical to assessing friendship, makes sense network developed over time; noted context influence 	<ul style="list-style-type: none"> Below average extraversion (lowest in the class) Considers self "reserved" 	<ul style="list-style-type: none"> Somewhat consistent with personality; consistent with definition - when context considered
C17	Time 1: 0 Time 2: 3 Time 3: 7	<ul style="list-style-type: none"> Consistent with definition as multiple friendship definitions provided 	<ul style="list-style-type: none"> Above average extraversion Highest average sociability facet score in class 	<ul style="list-style-type: none"> Consistent with personality and definition
C30	Time 1: 6 Time 2: 9 Time 3: 10	<ul style="list-style-type: none"> Consistent given noted contextual influence on nominations 	<ul style="list-style-type: none"> Below average extraversion 	<ul style="list-style-type: none"> Inconsistent with personality; consistent with definition given context note
C60	Time 1: 0 Time 2: 0 Time 3: 0	<ul style="list-style-type: none"> Consistent with definition Highest ranking / most experienced Quoted as not seeking friends "...because I don't want to talk to anybody new type thing, I've been told it can come off as cold, mean..." 	<ul style="list-style-type: none"> Below average extraversion (3d lowest in class) Above average in assertiveness facet; lowest average sociability score in class Considers self "quiet" 	<ul style="list-style-type: none"> Consistent with personality and definition
C64	Time 1: 3 Time 2: 6 Time 3: 11	<ul style="list-style-type: none"> "I act friendly towards everyone regardless if I trust you or not" Inconsistent with definition - but noted context effects 	<ul style="list-style-type: none"> Slightly above average extraversion 	<ul style="list-style-type: none"> Consistent with personality; inconsistent with definition but noted context
C76	Time 1: 2 Time 2: 5 Time 3: 6	<ul style="list-style-type: none"> Unclear definition of friendship "I don't really look for a particular thing..." Notes friends typically have shared interest / experience Previous relationships account for 3 ties 	<ul style="list-style-type: none"> Above average extraversion (highest in the class) Sociability is lowest scoring facet for extraversion 	<ul style="list-style-type: none"> Inconsistent with personality; might be consistent with definition
C77	Time 1: 3 Time 2: 5 Time 3: 11	<ul style="list-style-type: none"> Consistent with definition - took time to develop ("someone who puts effort of getting to know me...") 	<ul style="list-style-type: none"> Below average extraversion Sociability facet average score is above average 	<ul style="list-style-type: none"> Consistent with personality and definition
C81	Time 1: 4 Time 2: 4 Time 3: 4	<ul style="list-style-type: none"> Consistent with definition - takes time to develop 3 of 4 nominations are from previous relationships 	<ul style="list-style-type: none"> Above average extraversion Sociability facet average score is below average 	<ul style="list-style-type: none"> Mostly inconsistent with personality; consistent with definition
C84	Time 1: 2 Time 2: 6 Time 3: 6	<ul style="list-style-type: none"> Mixed consistency with definition given note about context, but generally suggests it takes time to develop (i.e., trust process involved) 	<ul style="list-style-type: none"> Above average extraversion (3d highest in the class) 2d highest sociability facet score in class 	<ul style="list-style-type: none"> Inconsistent with personality; consistent with definition given context note

Table 56. MIAC Conditional Trust Ties

MIAC Conditional Trust Ties				
Node:	Out-Degree	Qualitative Information	Personality Information	Consistency
C7	Time 1: 3 Time 2: 6 Time 3: 6	<ul style="list-style-type: none"> Consistent with definition - notes levels of trust; requires previous relationships (3 of 6 nominations from previous relationships) or recent demonstration 	<ul style="list-style-type: none"> Below average agreeableness Trust facet is above average 	<ul style="list-style-type: none"> Consistent with personality and definition - but impacted by previous relationships
C9	Time 1: 5 Time 2: 10 Time 3: 10	<ul style="list-style-type: none"> Generally inconsistent with definition, but noted context "I'm very hesitant to trust..." but noted how context helped 	<ul style="list-style-type: none"> Above average agreeableness Trust facet is lowest scoring of agreeableness facets 	<ul style="list-style-type: none"> Consistent with personality; inconsistent with definition - context influence
C60	Time 1: 0 Time 2: 0 Time 3: 0	<ul style="list-style-type: none"> Consistent with definition "trust is earned and developed over time" "...it's not enough time spent with them..." 	<ul style="list-style-type: none"> Below average agreeableness (2d lowest in class) Lowest average trust facet score in class 	<ul style="list-style-type: none"> Consistent with personality and definition
C76	Time 1: 2 Time 2: 5 Time 3: 6	<ul style="list-style-type: none"> Unclear definition of trust; same trust nominations as friendship nominations Previous relationships account for 3 ties 	<ul style="list-style-type: none"> Below average agreeableness (lowest in the class) 	<ul style="list-style-type: none"> Consistent with personality and definition - but impacted by previous relationships
C81	Time 1: 1 Time 2: 1 Time 3: 1	<ul style="list-style-type: none"> Consistent with definition Tie based on previous relationship 	<ul style="list-style-type: none"> Below average agreeableness Trust facet is lowest of agreeableness facets 	<ul style="list-style-type: none"> Consistent with personality and definition
C84	Time 1: 9 Time 2: 11 Time 3: 11	<ul style="list-style-type: none"> Inconsistent with definition, but context explains nominations 	<ul style="list-style-type: none"> Below average agreeableness 	<ul style="list-style-type: none"> Inconsistent with personality and definition - context influence

The data from the four previous tables can be consolidated into two, two by two matrices. For each relationship, the matrices display how consistent a participant was given their definition of a concept and how consistent they were to their measured personality scores.

Table 57. MIAC Friendship Definition-Personality Consistency

MIAC Friendship Definition - Personality Consistency Quad Chart		
Friendship:	Consistent with personality	Inconsistent with personality
Consistent with definition	C9, C17, C60, C77	C7, C30, C76, C81, C84
Inconsistent with definition	C2, C64	C14

Table 58. MIAC Trust Definition-Personality Consistency

MIAC Trust Definition - Personality Consistency Quad Chart		
Trust:	Consistent with personality	Inconsistent with personality
Consistent with definition	C7, C60, C64, C76, C77, C81	C14
Inconsistent with definition	C9, C17, C30	C2, C84

The six tables suggest that the inconsistencies in the *friendship* network’s centrality-personality correlations are likely due to situational factors, and, to a lesser extent, by the influence of the *previous relationships* network. Because so many participants sent *friendship* nominations outside of personality expectations (i.e., extraversion), it is not possible to reconcile personality’s influence on the *friendship* network. Conversely, the charts suggest that trust was applied far more consistently to personality expectations (i.e., agreeableness—particularly the trust facet), and that inconsistencies in trust application are attributable to situational factors, although the *previous relationships* network may also have a small effect.

Although the effect of situation is broadly assessed to be a significant reason for inconsistencies in the *friendship* network, some nuance is required.

First, some participants nominated friends because the course’s situation made it easier to make friends. Sometimes this meant going against both personality and definitional expectations. However, because not everyone was interviewed or mentioned situation’s influence on their questionnaires, this is an inference, albeit one supported by evidence.

Second, although the *friendship* network had considerable variability in how and why nominations were sent, some participants were consistent with their definition and/or their personality, but their consistency is washed out in aggregation. Nine of the twelve actors were consistent with their friendship definition versus six of the twelve as consistent with their measured personality. This highlights that friendship is a multifaceted term and trying to apply friendship to a single trait such as extraversion is overly simplistic. Conversely, trust appears to be a more uniform concept and the “trust” personality facet corresponds highly to it.

Third, although friendship is multifaceted, the situation provided an unusual situation for many participants because it differed significantly from their normal working environment. As such, while the situation and flattened rank hierarchy made it easier to be friendly, it did not necessarily mean everyone was a friend, factors such as age and rank differences—as noted by C7 and C60—existed. It may be easier to trust someone of greater or lesser rank than it is to consider them a friend.

Finally, seven participants had at least one previous relationship with another member, and this effect showed up in the time 1 *friendship* network, and further influence cannot be discounted. What is more, some previous relationships were unreported because the *previous relationships* network was based on reciprocal ties. The effect is that previous relationships act as “free” ties because participants tended to nominate those alters initially, and such nominations were often (but not always) reciprocated and carried forward throughout the class. Further, with so many previous relationships, additional relationships could have formed through transitive processes—i.e., the friend of a friend becomes a friend, thereby creating additional relationships outside the influence of attributes such as personality.

Overall, the mixed methods analysis suggests that friendship was highly variable in both definition and application, making personality correlation inconsistent. On the other hand, trust was more consistently applied and aligned with the agreeableness trait and “trust” facet. Factors such as situation and situation strength, rank, and previous relationships influenced the results, especially in the *friendship* network.

E. MOST PREFER TO WORK WITH RELATIONSHIP SUPPLEMENTARY MATERIAL

1. Quantitative Summary Charts

Table 59. MIAC Directed Most Prefer to Work with Network Densities

MIAC Directed Most Prefer Network Densities					
Network	Density	No. of Ties	Std Dev	Avg Degree	Alpha
Most Prefer T2	0.295	39	0.456	3.250	0.834
Most Prefer T3	0.318	42	0.466	3.500	0.848

Table 60. MIAC Undirected Most Prefer to Work with Network Densities

MIAC Undirected Most Prefer Network Densities					
Network:	Density	No. of Ties	Std Dev	Avg Degree	Alpha
Most Prefer T2	0.121	16.000	0.326	1.333	0.623
Most Prefer T3	0.182	24.000	0.386	2.000	0.727

Table 61. MIAC Most Prefer to Work with QAP Correlation-Directed Networks

MIAC Most Prefer QAP Correlation Directed Networks		
	Most Prefer T2	Most Prefer T3
Friendship T1	0.173*	0.127
Friendship T2	0.293**	0.228**
Friendship T3	0.247**	0.345**
Trust T1	0.230**	0.158*
Trust T2	0.230**	0.254**
Trust T3	0.256**	0.318**
Work Groups	0.023	0.302**
Previous Relationship	0.128	0.173
Most Prefer T2	1.000	0.413**
p-value < .05 *; < .01 **		

Table 62. MIAC Most Prefer to Work with QAP Correlation-Undirected Networks

MIAC Most Prefer QAP Correlation Undirected Networks		
	Most Prefer T2	Most Prefer T3
Friendship T1	0.262	0.140
Friendship T2	0.352**	0.327*
Friendship T3	0.246	0.351**
Trust T1	0.271*	0.183
Trust T2	0.257	0.286*
Trust T3	0.257	0.365**
Work Groups	-0.070	0.265*
Previous Relationship	0.245	0.162
Most Prefer T2	1.000	0.547**
p-value < .05 *; < .01 **		

Table 63. MIAC Most Prefer to Work with Centrality-Personality Correlations

MIAC Most Prefer to Work With Centrality - Personality Correlations						
Most Prefer:	Out Degree		In Degree		Degree	
Correlations:	T2	T3	T2	T3	T2	T3
Extraversion	0.088	-0.437*	0.418*	0.299	0.066	0.235
Sociability	-0.011	-0.116	0.201	0.292	-0.194	0.378
Assertiveness	0.106	-0.800***	0.478*	0.036	0.197	-0.218
Energy Level	0.153	-0.240	0.361	0.462	0.236	0.453*
Agreeableness	0.152	0.484*	-0.690***	-0.045	-0.255	0.133
Compassion	0.114	0.176	-0.547**	-0.159	-0.217	-0.025
Respectfulness	0.005	0.490*	-0.708***	-0.117	-0.294	-0.082
Trust	0.254	0.494*	-0.590**	0.122	-0.184	0.381
Conscientiousness	0.184	-0.341	-0.229	-0.238	0.217	-0.180
Organization	0.134	-0.269	-0.317	-0.370	0.138	-0.245
Productiveness	0.245	-0.393	-0.109	-0.157	0.303	-0.163
Responsibility	0.113	-0.221	-0.178	-0.079	0.140	-0.047
Negative Emotionality	0.055	0.034	0.442*	0.350	0.079	0.201
Anxiety	-0.212	-0.042	0.541**	0.585**	0.000	0.291
Depression	0.223	0.000	0.168	0.061	-0.096	-0.030
Emotional Volatility	0.153	0.115	0.434*	0.205	0.271	0.204
Open-Mindedness	0.508*	0.172	-0.161	-0.202	0.258	-0.092
Intellectual Curiosity	0.276	-0.178	0.134	-0.144	0.171	-0.481*
Aesthetic Sensitivity	0.330	0.237	-0.348	0.042	0.067	0.427*
Creative Imagination	0.309	0.100	-0.038	-0.240	0.235	-0.291
Acquisitive Self-Monitoring	0.349	0.058	0.140	0.125	0.025	0.140
Protective Self-Monitoring	0.571**	0.356	-0.145	0.038	0.063	0.226
Traditional Self-Monitoring	0.417	0.321	-0.158	-0.193	-0.092	0.044

p-value: < .1 *; < .05 **; < .01 ***

Negative emotionality's significance is likely spurious. An examination of the time 2 in-degree nominations shows that C76 and C84 account for more than a third of the nominations, and both individuals are well above the class average for negative emotionality and anxiety. By time 3, a new set of traits and facets became significant, in line with the increase in ties sent by C9 (four new nominations) and C77 (three new nominations) and the commensurate drop in ties sent by others between time 2 and time 3. The anxiety facet was significantly positively correlated with receiving nominations at time

3, but C76 and C84 remained popular nodes, as did C14 and C30, with only C30's anxiety score below class average. What is more, the small size of the network makes it vulnerable to popular nodes which can inflate the significance of the correlation. Both C76 and C84 benefited from previous relationships (if non-reciprocal and unreported relationship ties are included), as previous relationships account for three of C76's ties, two of C84's ties, one of C14's ties, and at least one, but potentially two of C30's ties. The effect of the *previous relationships* network cannot be discounted, particularly given the importance of workgroups and previous experience noted earlier.

2. Mixed Methods Summary

There is weak evidence to suggest participants preferred alters low in conscientiousness. It is further speculated that alters scoring higher in acquisitive and protective self-monitoring were popular despite scoring low in desirable personality traits. Both findings are confounded, however, by the impacts of the *previous relationships* and *workgroups* networks.

Although the class did not have a preference for an alter with generalizable characteristics, examination of the comparison chart provides three items worthy of discussion. First, of the 42 relationships listed on the chart, the most common trait finding is below class average conscientiousness, appearing 30 times. Second, despite the qualitative data which suggested that participants sought agreeable others, the numbers indicate that those scoring below class average in agreeableness were selected most often, with 27 nominations. Finally, both above average acquisitive and protective self-monitoring showed up 25 and 26 times respectively, which is noteworthy given its conceptual meaning. To be clear, however, simple counts of the number of below average or above average nominations for a particular trait is not a replacement for previous quantitative analysis, but rather serves as a discussion point considering the other findings.

The class's preference for alters scoring below average in conscientiousness fits with the class's characterization offered by the instructors and C7, C60, and C84. This is also supported by centrality-personality correlations for conscientiousness at time 2 and time 3 for in-degree centrality in that although the correlations are not statistically

significant, they are negative. It is surmised that because the class did not have a work-focused demeanor, participants preferred alters who took a more relaxed approach to work.

Acquisitive and protective self-monitoring's potential relevance is noteworthy because, as described in the literature review, the bivariate model is underdeveloped (Wilmot, 2015). As discussed, individuals are said to possess both constructs (Wolfe et al., 1986), with acquisitive self-monitoring associated with seeking social approval and status, and protective self-monitoring associated with getting along and conforming to social expectations (Lennox, 1988; Wolfe et al., 1986). The relevance of acquisitive and protective self-monitoring to the *most prefer to work with* findings are that some participants desired hard working alters, such as C60 and C76, but of their five nominated alters, three were below average in conscientiousness. Of those who were below average, two were above average in both acquisitive and protective self-monitoring. What is more, in relationships in which agreeableness was assessed to be a desired trait, and the nominated alter had a below average agreeableness score, a total of 15 occurrences, the alter had either an above average acquisitive or protective self-monitoring score, or both, 10 and 9 times respectively. One explanation is that individuals scoring highly in one or both constructs are socially adept at managing social situations and overcoming trait deficiencies.

There are potentially better explanations as well, although the explanations need not be mutually exclusive. The available data supports the idea that participants may have preferred those scoring lower on conscientiousness and theoretically, it is possible that acquisitive and/or protective self-monitoring could be an important factor in social situations. Alternatively, neither explanation may be true, but the available data does not provide for a more robust explanation, and this finding, while speculative, is nonetheless a topic for future study.

F. NEGATIVE RELATIONSHIPS SUPPLEMENTARY MATERIAL

1. Quantitative Summary Charts

Table 64. MIAC Directed Negative Networks Densities

MIAC Directed Negative Network Densities					
Network:	Density	No. of Ties	Std Dev	Avg Degree	Alpha
Difficult T1	0.076	10	0.265	0.833	0.496
Difficult T2	0.083	11	0.276	0.917	0.522
Difficult T3	0.121	16	0.326	1.333	0.623
Least Prefer T2	0.061	8	0.239	0.667	0.436
Least Prefer T3	0.114	15	0.317	1.250	0.606

Table 65. MIAC Undirected Negative Networks Densities

MIAC Undirected Negative Network Densities					
Network:	Density	No. of Ties	Std Dev	Avg Degree	Alpha
Difficult T1	0.000	0.000	0.000	0.000	0.000
Difficult T2	0.030	4.000	0.171	0.333	0.273
Difficult T3	0.030	4.000	0.171	0.333	0.273
Least Prefer T2	0.015	2.000	0.122	0.167	0.156
Least Prefer T3	0.030	4.000	0.171	0.333	0.273

Table 66. MIAC QAP Correlation-Directed Negative Networks

MIAC QAP Correlation Directed Negative Networks					
	Difficult T1	Difficult T2	Difficult T3	Least Prefer T2	Least Prefer T3
Friendship T1	-0.134	-0.208*	-0.230*	-0.157	-0.216*
Friendship T2	-0.174	-0.312**	-0.311*	-0.245*	-0.291*
Friendship T3	-0.082	-0.185	-0.450**	-0.130	-0.424**
Trust T1	-0.031	-0.182*	-0.167	-0.147	-0.139
Trust T2	-0.093	-0.261**	-0.312*	-0.213*	-0.280
Trust T3	-0.140	-0.300**	-0.440**	-0.195*	-0.414**
Work Groups	0.132	0.101	0.116	0.015	0.046
Previous Relationship	0.026	-0.086	-0.106	-0.073	-0.103
Most Prefer T2	-0.185*	-0.195*	-0.190*	-0.164	-0.180*
Most Prefer T3	-0.196*	-0.206*	-0.254**	-0.174	-0.245**
Difficult T1	1.000				
Difficult T2	0.535**	1.000			
Difficult T3	0.420**	0.476**	1.000		
Least Prefer T2	0.527**	0.728**	0.489**	1.000	
Least Prefer T3	0.439**	0.410**	0.818**	0.409**	1.000
p-value < .05 *; < .01 **					

Table 67. MIAC QAP Correlation-Undirected Negative Networks

MIAC QAP Correlation Undirected Negative Networks					
	Difficult T1	Difficult T2	Difficult T3	Least Prefer T2	Least Prefer T3
Friendship T1	0	-0.092	-0.092	-0.064	-0.092
Friendship T2	0	-0.147	-0.147	-0.103	-0.147
Friendship T3	0	-0.194	-0.194	-0.136	-0.194
Trust T1	0	-0.143	0.038	-0.100	0.038
Trust T2	0	-0.188	-0.188	-0.132	-0.188
Trust T3	0	-0.188	-0.188	-0.132	-0.188
Work Groups	0	0.188	0.188	0.132	0.011
Previous Relationship	0	-0.051	-0.051	-0.036	-0.051
Most Prefer T2	0	-0.066	-0.066	-0.046	-0.066
Most Prefer T3	0	-0.083	-0.083	-0.058	-0.083
Difficult T1	1.000				
Difficult T2	0	1.000			
Difficult T3	0	0.484	1.000		
Least Prefer T2	0	0.702*	0.702*	1.000	
Least Prefer T3	0	-0.031	0.484	-0.022	1.000
p-value < .05 *; < .01 **					

Table 68. MIAC Difficult to Work with Centrality-Personality Correlations

MIAC Difficult to Work With Centrality - Personality Correlations									
Difficult: Correlations:	Out-Degree			In-Degree			Degree		
	T1	T2	T3	T1	T2	T3	T1	T2	T3
Extraversion	-0.648***	-0.587**	-0.406	-0.140	-0.374	-0.143		-0.561**	-0.496*
Sociability	-0.555**	-0.677**	-0.620***	-0.207	-0.418*	-0.204		-0.677***	-0.567**
Assertiveness	-0.401*	-0.244	0.096	0.068	-0.052	0.000		-0.132	-0.209
Energy Level	-0.738***	-0.528*	-0.520**	-0.230	-0.519*	-0.163		-0.613**	-0.510*
Agreeableness	0.196	-0.307	-0.161	0.101	-0.112	0.080		-0.292	0.247
Compassion	0.351	-0.217	0.176	0.000	-0.081	0.215		-0.193	0.454*
Respectfulness	0.035	-0.124	-0.155	0.290	0.005	-0.021		-0.151	0.177
Trust	0.149	-0.429*	-0.342	-0.009	-0.197	0.037		-0.389	0.052
Conscientiousness	0.388	0.389*	0.134	0.061	0.154	0.242		0.337	0.274
Organization	0.566**	0.293	0.242	-0.187	0.046	0.225		0.310	0.333
Productiveness	0.031	0.204	0.036	-0.004	0.113	0.260		0.169	0.137
Responsibility	0.293	0.520**	0.065	0.445*	0.243	0.138		0.403*	0.248
Negative Emotionality	-0.469*	-0.295	-0.051	0.333	0.069	-0.173		-0.246	-0.245
Anxiety	-0.534**	-0.359	-0.225	0.200	-0.157	-0.216		-0.374	-0.343
Depression	-0.059	-0.174	0.092	0.316	0.448*	0.094		-0.072	0.087
Emotional Volatility	-0.526**	-0.242	0.031	0.352	-0.046	-0.253		-0.190	-0.293
Open-Mindedness	-0.059	0.249	0.013	-0.028	0.262	0.490*		0.319	0.501*
Intellectual Curiosity	-0.040	-0.077	-0.255	-0.048	0.110	0.435*		0.062	0.339
Aesthetic Sensitivity	-0.063	0.326	0.167	0.054	0.284	0.228		0.285	0.227
Creative Imagination	0.009	0.167	0.010	-0.078	0.067	0.113		0.211	0.204
Acquisitive Self-Monitoring	-0.579**	-0.778***	-0.391*	-0.047	-0.293	-0.166		-0.609**	-0.373
Protective Self-Monitoring	-0.681***	-0.390*	-0.256	0.428*	0.216	0.317		-0.161	0.093
Traditional Self-Monitoring	-0.876***	-0.306	-0.123	0.372*	0.231	0.168		-0.160	-0.031

p-value: < .1 *; < .05 **; < .01 ***

Table 69. MIAC Least Prefer to Work with Centrality-Personality Correlations

MIAC Least Prefer to Work With Centrality - Personality Correlations						
Least Prefer: Correlations:	Out Degree		In Degree		Degree	
	T2	T3	T2	T3	T2	T3
Extraversion	-0.556**	-0.356	-0.375	-0.163	-0.606**	-0.298
Sociability	-0.470*	-0.550**	-0.395	-0.102	-0.624**	-0.330
Assertiveness	-0.312	0.081	-0.068	-0.126	-0.201	-0.104
Energy Level	-0.653**	-0.444*	-0.534	-0.206	-0.746**	-0.340
Agreeableness	-0.186	-0.114	-0.136	0.269	-0.276	0.367
Compassion	-0.081	0.198	-0.095	0.292	-0.222	0.382
Respectfulness	-0.042	-0.201	-0.028	0.117	-0.127	0.177
Trust	-0.314	-0.215	-0.212	0.271	-0.359	0.365
Conscientiousness	-0.020	0.086	0.100	0.124	0.220	0.297
Organization	0.109	0.166	0.046	0.142	0.300	0.215
Productiveness	-0.141	-0.049	0.076	0.076	0.056	0.078
Responsibility	-0.026	0.113	0.140	0.106	0.221	0.520*
Negative Emotionality	-0.141	0.054	0.088	-0.073	-0.266	-0.088
Anxiety	-0.117	-0.132	-0.132	-0.245	-0.352	-0.150
Depression	-0.121	0.146	0.438*	0.197	-0.106	0.000
Emotional Volatility	-0.135	0.143	-0.017	-0.071	-0.233	-0.059
Open-Mindedness	-0.031	-0.082	0.222	0.358	0.236	0.276
Intellectual Curiosity	-0.021	-0.426	0.091	0.384	0.083	-0.097
Aesthetic Sensitivity	-0.026	0.327	0.232	0.236	0.079	0.635**
Creative Imagination	-0.009	-0.197	0.069	-0.053	0.260	-0.297
Acquisitive Self-Monitoring	-0.589**	-0.362	-0.236	-0.023	-0.510*	-0.328
Protective Self-Monitoring	-0.291	-0.224	0.206	0.438*	-0.263	-0.046
Traditional Self-Monitoring	-0.123	-0.090	0.294	0.376	-0.112	-0.125

p-value: < .1 *; < .05 **; < .01 ***

2. Qualitative Summary

The most detailed example of misperception was between C9 and C7. At all three collection periods C9 nominated C7 to the *negative* networks, describing C7 as aloof and unwilling to have conversations. For example, “C7: same as above, thinks [C7 is] above others” (C9, Time 2 Questionnaire), and further added:

They’re not really willing to continue conversation and I think that’s still the biggest part of it. It’s just that the communication and collaboration I see as big keys to success. And so if I can’t get that from somebody, that’s

going to make it very, very difficult work situation. (C9, Time 2 Interview, discussing C7 and C60)

I mean I think it's still just the... Some of the attitude of almost like holding or thinking [C7 is] above others or being almost standoff-ish too... I think [C7's] the only one that I really have had like next to no conversation with. Basically, if I mentioned something in a conversation, in the conversation at least [C7's] involvement in conversations, just ends and it's just is kind of an awkward situation... And not that we've had any like head butting in any way or anything of that sort, but kind of like not willing to continue any conversation. (C9, Time 2 Interview)

Kind of, kind of the, the attitude, the not willing to continue a conversation, or just kind of bring a conversation to an immediate halt, and especially kind of in like an almost an awkward way. (C9, Time 3 Interview)

Given C9's history of ameliorating *negative* relationships through conversation and the sustained period of the *negative* nominations, the relationship stood out, and C7 was asked about it during the time 3 interview. Specifically, C7 held no ill-will toward C9, but rather found C9 to be loquacious and preferred not to engage C9 in conversations, noting:

So we talked a couple times. [C9] gives out too much information sometimes when you ask [C9] one question, which is a little bit overwhelming in the sense that, 'Okay, well I don't really want to ask you one question if we're going to go on for 20 minutes starting off'... [C9's] super friendly and that just might be, I don't know, environment. Just people don't talk enough maybe and [C9] just supplies the conversation... I asked one question about lunch and then it just went on and I was just, I feel like I was trying to get the last word and then I was like, 'Oh no, I just need to leave it' But it feels rude to leave it. So that's why. (C7, Time 3 Interview)

C7 previously discussed C9's talkativeness, for example, "[C9] wants to be heard. [C9] has a lot to say. [C9] has a lot to offer. But not everyone gives [C9] the chance, because [C9's] so outgoing" (C7, Time 2 Interview). Other participants echoed C7's remarks, for example, in describing C9, one said, "Intelligent but discombobulated. Sometimes [C9] has a difficult time expressing, I think what's going through [C9's] head" (C84 discussing C9, Time 2 Interview), and another said, "I've told [C9] before like, 'Hey, you need to get to the point. You spent a lot of time talking,'" (C60, Time 3 Interview).

C7 held no animosity toward C9, but did not want to partake in a drawn-out conversation with C9. C9, on the other hand, misinterpreted C7's actions as intentional and

rude, believing it signaled that C7 had a high opinion of C7, which is, ironically, what C7 was trying to avoid.

In the two other examples, perception through observation rather than direct interaction resulted in *negative* nominations. In the first example, C77 nominated both C60 and C64 to the *negative* networks, with C77's use of the word "seems" as indicative that the nominations were based on perception, noting, "Seems like [C60] would take control of everything. [C60] hasn't worked with me a lot but it seems like [C60] doesn't listen to other opinions if [C60] thinks [C60's] correct" (C77, Time 3 Questionnaire). And for C64, "[C64's] confidence seems misplaced... doesn't seem like [C64] would listen to seniors on how to correctly apply tools learned to produce a product" (C77, Time 3 Questionnaire).

Similarly, C60 nominated C7, C17, and C76 to the *negative* networks all without direct experience, even mentioning that the inferences were based on observations rather than direct experience:

C7, again would just do [C7's] own thing and it didn't appear like [C7] was too much a part of the group... Again, not in my group. From what I could observe, if there was discussions, I could see arguments or debates going on, [C7] would just remove [C7's self] and go do something else, instead of contributing to the group solution to a problem or issue. (C60, Time 3 Interview)

For C17, I didn't think [C17] had a very good work ethic from what I could observe. [C17] was not in my group, so that's an unfounded outside observation. (C60, Time 3 Interview)

For specifically C76 and C81, both of them took criticism personally and would get defeated. Now, C81 I worked with directly, C76 I observed in the other group. (C60, Time 3 Interview)

This finding demonstrates that participants make inferences about alters based on observations and interactions, sometimes these inferences and interactions lead to misperceptions or miscommunications that result in *negative* relationships.

3. Mixed Methods Supplementary Material

Although C64 was unpopular, the *positive* relationship formed with C81 and C64's previous *negative* relationships resulted transitivity of ties within C64's workgroup. The

significance of the finding is that the multiplex relationships between actors may impact the formation of other relationships between them, and these follow-on relationships may not be explicitly related to actor attributes.

At time 2, C2, C14, C30, and C81 all sent at least one *negative* nomination to C64. However, by time 3, C64 had worked closely with C81 and the two became friends, with C81 dropping C64 from the *negative* networks and adding C64 to the *friendship* network. Further, at time 3, C2, C14, and C30 all resumed or continued their *negative* relationship with C64, with the *negative* relationship between C30 and C64 being the most intense given that C64 sent C64's only *negative* nominations to C30 at that time as well.

The shift in relationships between C81 and C64 appeared to influence C81's views of C30, as prior to time 3, C81 had neither a *positive* nor *negative* relationship with C30. As noted, the final project created a situation in which workgroups were forced to work together in close proximity for long periods of time. In this setting, it seems that C30's *negative* relationship bubbled over and became open, as prior to time 3, the *negative* relationship was one-sided vice reciprocal. In turn, as the *negative* relationship between C30 and C64 further developed, C81 sided with C64 and nominated C30 to the *negative* network, likewise, two close friends of C30, C2 and C14, nominated C64 as difficult to work with—but maintained positive ties with C81. In total, the conflict between C30 and C64 at time 3 resulted in three additional *negative* nominations (five total) than what was present in the network at time 2 (two *negative* relationships). This is an example of transitivity, specifically balance, in which there are two *negative* relationships and one *positive* relationship (Kadushin, 2012 quoting Heider, 1946; Robins, 2015).

The methodological significance is that antecedents to relationship formation and dissolution may be affected by network mechanisms as well, and at times, be independent of personal attributes such as personality. Accounting for network effects such as transitivity is important, particularly when both *positive* and *negative* relationships are evaluated.

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LIST OF REFERENCES

- Arkin, R. M. (1981). Self-presentation styles. In J. T. Tedeschi (Ed.), *Impression management: Theory and social psychological research* (pp. 311–333). Academic Press.
- Asendorpf, J. B., & Wilpers, S. (1998). Personality effects on social relationships. *Journal of Personality and Social Psychology, 74*(6), 1531–1544.
- Baams, L., Overbeek, G., van de Bongardt, D., Reitz, E., Dubas, J. S., & van Aken, M. A. G. (2015). Adolescents' and their friends' sexual behavior and intention: Selection effects of personality dimensions. *Journal of Research in Personality, 54*, 2–12. <http://dx.doi.org/10.1016/j.jrp.2014.07.009>
- Baer, M. (2010). The strength-of-weak-ties perspective on creativity: a comprehensive examination and extension. *Journal of Applied Psychology, 95*(3), 592–601. DOI: 10.1037/a0018761.
- Ballantyne, N. (2019). Epistemic trespassing. *Mind, 128*(510), 367–395.
- Barrick, M. R., Mitchell, T. R., & Stewart, G. L. (2003). Situational and motivational influences on trait-behavior relationships. In Barrick, M. R. & Ryan, A. M. (Eds.), *Personality and work* (1st ed., pp. 60–82). Jossey-Bass.
- Barrick, M. R., & Mount, M. K. (1993). Autonomy as a moderator of the relationships between the big five personality dimensions and job performance. *Journal of Applied Psychology, 78*(1), 111–118.
- Barrick, M. R., & Mount, M. K. (2005). Yes, personality matters: Moving on to more important matters. *Human Performance, 18*(4), 359–372. DOI:10.1093/mind/fzx042.
- Battistoni, E., & Fronzetti Colladon, A. (2014). Personality correlates of key roles in informal advice networks. *Learning and Individual Differences, 34*(2014), 63–69. Retrieved from <http://dx.doi.org/10.1016/j.lindif.2014.05.007>
- Bhardwaj, A., Qureshi, I., Konrad, A. M., & Lee S. H. (2016). A two-wave study of self-monitoring personality, social network churn, and in-degree centrality in close friendship and general socializing networks. *Group & Organization Management, 41*(4), 526–559. DOI: 10.1177/1059601115608027.
- Bolger, N., & Eckenrode, J. (1991). Social relationships, personality, and anxiety during a major stressful event. *Journal of Personality and Social Psychology, 61*(3), 440–449.

- Bon, A. C., Moraes, S. T. A., & Silva, J. F. (2017). The influence of social network and self-monitoring on career. *Revista de Administracao FACES Journal*, 17(1), 70–88. <http://dx.doi.org/10.21714/1984-6975FACES2018V17N1ART5041>
- Borgatti, S.P., Everett, M.G., & Freeman, L.C. (2002). Ucinet 6 for Windows: Software for Social Network Analysis. Analytic Technologies. Used version 6.699.
- Borgatti, S. P., Everett, M. G., & Johnson, J. C. (2013). Analyzing social networks. SAGE.
- Brandes, U., Robins, G., McCranie, A., & Wasserman, S. (2013). What is network science?. *Network Science*, 1(1), 1–15. DOI:10.1017.nws.2013.2.
- Burt, R. S. (1992). The social structure of competition. In N. Nohria & R. G. Eccles (Eds.), *Networks and organizations: Structure, form and action* (pp. 57–91). Harvard University Press.
- Casciaro, T. (1998). Seeing things clearly: Social structure, personality, and accuracy in social network perception. *Social Networks*, 20, 331–351.
- Costello, C. K., & Srivastava, S. (2020). Perceiving personality through the grapevine: A network approach to reputations. *Personality and Social Psychology*. <https://psycnet.apa.org/doi/10.1037/pspp0000362>. [preprint]
- Creswell, J. W., & Plano Clark, V. L. (2018). *Designing and conducting mixed methods research* (3d ed.). Sage.
- Crossley, N., & Edwards, G. (2016). Cases, mechanisms and the real: The theory and methodology of mixed-method social network analysis. *Sociological Research Online*, 21(2), 13. <http://www.socresonline.org.uk/21/2/13.html>. DOI: 10.5153/sro.3920.
- Daly, A. J., Liou, Y-H., Tran, N. A., Cornelissen, F., & Park, V. (2014). The rise of neurotics: Social networks, leadership, and efficacy in district reform. *Educational Administration Quarterly*, 50(2), 233–278. DOI: 10.1177/0013161X13492795.
- DeYoung, C. G. (2015). Cybernetic big five theory. *Journal of Research in Personality*, 56(2015), 33–58. <http://dox.doi.org/10.1016/j.jrp.2014.07.004>
- Doeven-Eggens, L., De Fruyt, F., Hendriks, A. A. J., Bosker, R. J., & Van der Werf, M. P. C. (2008). Personality and personal network type. *Personality and Individual Differences*, 45, 689–693. DOI:10.1016/j.paid.2008.07.017.
- Dickison, M. E., Magnani, M., & Rossi, L. (2016). *Multilayer social networks*. Cambridge University Press.

- Emery, C. (2012). Uncovering the role of emotional abilities in leadership emergence. A longitudinal analysis of leadership networks. *Social Networks*, 34, 429–437. DOI:10.1016/j.socnet.2012.02.001.
- Emery, C., Calvard, T. S., & Pierce, M. E. (2013). Leadership as an emergent process: A social network study of personality and leadership. *Group Processes & Intergroup Relations*, 16(1), 28–45. DOI: 10.1177/1368430212461835.
- Emirbayer, M., & Goodwin, J. (1994). Network analysis, culture, and the problem of agency. *The American Journal of Sociology*, 99(6), 1411–1454. <http://www.jstor.org/stable/2782580>
- Everton, S. F. (2012). *Disrupting dark networks*. New York, NY: Cambridge University Press.
- Fang, R. (2010). Peer influence on undermining behaviors in the workplace: A social network perspective (UMI Number: 3408393) [Doctoral dissertation, University of Minnesota]. ProQuest.
- Fang, R., Landis, B., Zhang, Z., Anderson, M. H., Shaw, J. D., & Kilduff, M. (2015). Integrating personality and social networks: A meta-analysis of personality, network position, and work outcomes in organizations. *Organization Science*, 26(4), 1243–1260. <https://doi.org/10.1287/orsc.2015.0972>
- Fang, R., & Shaw, J. D. (2009). Self-monitoring, status, and justice-related information flow. *Journal of Occupational and Organizational Psychology*, 82, 405–430. DOI:10.1348/096317908X311705.
- Feiler, D. C., & Kleinbaum, A. M. (2015). Popularity, similarity, and the network extraversion bias. *Psychological Science*, 26(5), 593–603. DOI: 10.1177/0956797615569580.
- Fisher, G., & Aguinis, H. (2017). Using theory elaboration to make theoretical advancements. *Organizational Research Methods*, 20(3), 438–464. DOI: 10.1177/1094428116689707.
- Flynn, F. J., & Reagans, R. E. (2006). Helping one's way to the top: Self-monitors achieve status by helping others and knowing who helps whom. *Journal of Personality and Social Psychology*, 91(6), 1123–1137. DOI: 10.1037/0022-3514.91.6.1123.
- Fuglestad, P. T., & Snyder, M. (2010). Status and the motivational foundations of self-monitoring. *Social and Personality Compass*, 4/11(2010), 1031–1041. doi:10.1111/j.1751-9004.2010.00311.x.
- Funder, D. C. (1995). On the accuracy of personality judgment: A realistic approach. *Psychological Review*, 102(4), 652–670.

- Gangestad, S., & Snyder, M. (1985). To care nature at its joints: On the existence of discrete classes in personality. *Psychological Review*, 92(3), 317–349.
- Gangestad, S. W., & Snyder, M. (1991). Taxonomic analysis redux: Some statistical considerations for testing a latent class model. *Journal of Personality and Social Psychology*, 61(1), 141–146.
- Gangestad, S. W., & Snyder, M. (2000). Self-monitoring: Appraisal and reappraisal. *Psychological Bulletin*, 126, 530–555.
- Gloor, P. A., Fischbach, K., Fuehres, H., Lassenius, C., Niinimäki, T., Olguin D O., Pentland, S., Piri, A., & Putzke, J. (2011). Towards “honest signals” of creativity—Identifying personality characteristics through microscopic social network analysis. *Procedia—Social and Behavioral Sciences*, 26, 166–179. DOI: 10.1016/j.sbspro.2011.10.573.
- Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist*, 48(1), 26–34.
- Harris, K., & Vazire, S. (2016). On friendship development and the big five personality traits. *Social and Personality Psychology Compass*, 10, 647–667. DOI 10.1111/spc3.12287.
- Hogan, R. (2005). In defense of personality measurement: New wine for old whiners. *Human Performance*, 18(4), 331–341.
- Hopp, C., & Zenk, L. (2012). Collaborative team networks and implications for strategic HRM. *The International Journal of Human Resource Management*, 23(14), 2975–2994. <http://dx.doi.org/10.1080/09585192.2011.637063>
- John, O. P., Cheek, J. M., & Klohnen, E. C. (1996). On the nature of self-monitoring: Construct explication with Q-sort ratings. *Journal of Personality and Social Psychology*, 71(4), 763–776.
- John, O. P., Naumann, L. P., & Soto, C. J. (2008). Paradigm shift to the integrative big five trait taxonomy. In O. P. John, R. W. Robins, & L. A. Pervin (Eds.), *Handbook of personality, third edition: Theory and research* (pp. 114–158). The Guilford Press.
- Johns, G. (2001). In praise of context. *Journal of Organizational Behavior*, 22, 31–42.
- Kadushin, C. (2012). *Understanding social networks, theories, concepts, and findings*. Oxford University Press.
- Kalish, Y. (2008). Bridging in social networks: Who are the people in structural holes and why are they there? *Asian Journal of Social Psychology*, 11, 53–66. DOI: 10.1111/j.1467-839X.2007.00243.x.

- Kalish, Y., & Robins, G. (2006). Psychological predispositions and network structure: The relationship between individual predispositions, structural holes and network closure. *Social Networks*, 28, 56–84. DOI: 10.1016/j.socnet.2005.04.004.
- Kenrick, D. T., & Funder, D. C. (1988). Profiting from controversy: Lessons from the person-situation debate. *American Psychologist*, 43(1), 23–34.
- Kenrick, D. T., & Funder, D. C. (1991). The person-situation debate: Do personality traits really exist? In Derlega, V. J., Winstead, B. A., & Jones, W. H. (Eds.), *Personality Contemporary Theory and Research* (pp. 149–174). Nelson-Hall.
- Kilduff, M. (1988). Decision making in context: Social and personality correlates of choices of organizations [Doctoral Dissertation, Cornell University, Ithaca, NY].
- Kilduff, M., & Krackhardt, D. (1994). Bringing the individual back in: A structural analysis of the internal market for reputation in organizations. *Academy of Management Journal*, 37, 87–108.
- Kilduff, M., Mehra, A., Gioia, D., & Borgatti, S. (2017). Brokering trust to enhance leadership: A self-monitoring approach to leadership emergence. In J. Gluckler et al. (Eds.), *Knowledge and Networks, Knowledge and Space 11*, DOI 10.1007/978-3-319-45023-0_11.
- Kilduff, M., & Tsai, W. (2003). *Social networks and organizations*. Sage.
- Kilduff, M., Tsai, W., & Hanke, R. (2006). A paradigm too far? A dynamic stability reconsideration of the social network research program. *Academy of Management Review*, 31(4), 1031–1048.
- Kim, S.-K., & Kim, M.-J. (2007). Mentoring network and self-monitoring personality. *Management Revue*, 18(1), 42–54.
- Klein, K. J., Lim, B.-C., Saltz, J. L., & Mayer, D. M. (2004). How do they get there? An examination of the antecedents of centrality in team networks. *The Academy of Management Journal*, 47(6), 952–963. <https://www.jstor.org/stable/20159634>
- Kleinbaum, A. M., Jordan, A. H., & Audia, P. G. (2015). An altercentric perspective on the origins of brokerage in social networks: How perceived empathy moderates the self-monitoring effect. *Organization Science* 26(4), 1226–1242. <https://doi.org/10.1287/orsc.2014.0961>
- Krackhardt, D., & Brass, D. J. (1994). Intraorganizational networks: The micro side. In *Advances in social network analysis: Research in the social and behavioral sciences* (207-229). Sage. <https://dx.doi.org/10.4135/9781452243528>

- Kudret, S., Erdogan, B., & Bauer, T. N. (2019). Self-monitoring personality trait at work: An integrative narrative review and future research directions. *Journal of Organizational Behavior*, 40, 193–208. DOI: 10.1002/job.2346.
- Kwok, N., Hanig, S., Brown, D. J., & Shen, W. (2018). How leader role identity influences the process of leader emergence: A social network analysis. *The Leadership Quarterly*, 29, 648–662. <https://doi.org/10.1016/j.leafqua.2018.04.003>
- Labianca, G. (2014). Negative ties in organizational networks. In *Contemporary perspectives on organizational social networks research in the sociology of organizations (239-259)*. Emerald Group Publishing Limited. DOI:10.1108/S0733-558X(2014)0000040012.
- Labianca, G., & Brass, D. J. (2006). Exploring the social ledger: Negative relationships and negative asymmetry in social networks in organizations. *Academy of Management Review*, 31(3), 596–614. Retrieved from <https://www.jstor.org/stable/20159231>
- Landis, B. (2015). Personality and social networks in organizations: A review and future directions. *Journal of Organizational Behavior*, 37, S107-S121. [https://doi.org/10.1002.job.2004](https://doi.org/10.1002/job.2004)
- Lee, T. W., Mitchell, T. R., & Sablinski, C. J. (1999). Qualitative research in organizational and vocational psychology, 1979–1999. *Journal of Vocational Behavior*, 55, 161–187.
- Lee, Y.-H., Yang, L.-S., & Wan K. M. (2010). Interactive effects of personality and friendship networks on contextual performance. *Social Behavior and Personality*, 38(2), 197–208. DOI 10.2224/sbp.2010.38.2.197.
- Lennox, R. (1988). The problem with self-monitoring: A two-sided scale and a one-sided theory. *Journal of Personality Assessment* 52(1), 58–73.
- Lennox, R. D., & Wolfe, R. N. (1984). Revision of the self-monitoring scale. *Journal of Personality and Social Psychology* 46(6), 1349–1364.
- Lewicki, R. J., McAllister, D. J., & Bies, R. J. (1998). Trust and distrust: New relationships and realities. *The Academy of Management Review*, 23(3), 438–458. <https://www.jstor.org/stable/259288>
- Liu, Y., & Ipe, M. (2010). How do they become nodes? Revisiting team member network centrality. *The Journal of Psychology*, 144(3), 243–258.
- Lusher, D., Koskinen, J., & Robins, G. (2013). Introduction. In D. Lusher, J. Koskinen, & G. Robins (Eds.), *Exponential random graph models for social networks* (pp. 1–6). Cambridge University Press.

- Lusher, D., & Robins, G. (2013). Formation of social network structure. In D. Lusher, J. Koskinen, & G. Robins (Eds.), *Exponential random graph models for social networks* (pp. 16–28). Cambridge University Press.
- Markon, K. E. (2009). Hierarchies in the structure of personality traits. *Social and Personality Psychology Compass*, 3/5(2009), 812–826. doi:10.1111/j.1751-9004.2009.00213.x.
- Marrone, J. A. (2004). Cutting across team boundaries: Antecedents and implications of individual boundary spanning behavior within consulting teams [Doctoral Dissertation, University of Maryland].
- McCrae, R. R., & Costa Jr., P. T. (2008). Empirical and theoretical status of the five-factor model of personality traits. In G. J. Boyle, G. Matthews, & D. H. Saklofske (Eds.), *The SAGE handbook of personality theory and assessment: volume 1—personality theories and models* (pp. 273–294). SAGE Publications Ltd. doi: <http://dx.doi.org/10.4135/9781849200462.n13>
- McCulloh, I., Armstrong, H., & Johnson, A. (2013). *Social network analysis: With applications*. Wiley.
- McPherson, M., Smith-Lovin, L., & Cook, J. M. (2001). Birds of a feather: Homophily in social networks. *Annual Review of Sociology*, 27, 415–444.
- Mehra, A., Kilduff, M., & Brass, D. J. (2001). The social networks of high and low self-monitors: Implications for workplace performance. *Administrative Science Quarterly*, 46, 121–146.
- Miles, M. B., Huberman, A. M., & Saldana, J. (2014). *Qualitative data analysis: A methods source book* (3rd ed.). Sage.
- Miners, C. T. H. (2008). It is who you know and what you know: An examination of the relations among emotional intelligence, social network centrality, and performance [Doctoral Dissertation, University of Toronto].
- Mishler, E. G. (1979). Meaning in context: Is there any other kind? *Harvard Educational Review*, 49(1), 1–19.
- Moore, G. J. (2006). The longitudinal effects of self-monitoring and locus of control on social network position in friendship networks [Master's thesis, Air Force Institute of Technology]. AFIT/GEM/ENV/06M-11.
- Mund, M., & Neyer, F. J. (2014). Treating personality-relationship transactions with respect: Narrow facets, advanced models, and extended time frames. *Journal of Personality and Social Psychology*, 107(2), 352–368. <http://dx.doi.org/10.1037/a0036719>

- Neubert, M. J., & Taggar, S. (2004). Pathways to informal leadership: The moderating role of gender on the relationship of individual differences and team member network centrality to informal leadership emergence. *The Leadership Quarterly*, 15, 175–194. DOI:10.1016/j.leaqua.2004.02.006.
- Oh, H., & Kilduff, M. (2008). The ripple effect of personality on social structure: Self-monitoring origins of network brokerage. *Journal of Applied Psychology*, 93(5), 1155–1164. DOI: 10.1037/0021-9010.93.5.1155.
- Pollet, T. V., Roberts, S. G. B., & Dunbar, R. I. M. (2011). Extraverts have larger social network layers but do not feel emotionally closer to individuals at any level. *Journal of Individual Differences*, 32(3), 161–169. DOI: 10.1027/1614-0001/a000048.
- Rapp, C., Ingold, K., & Freitag, M. (2019). Personalized networks? How the big five personality traits influence the structure of egocentric networks. *Social Science Research*, 77, 148–160. <https://doi.org/10.1016/j.ssresearch.2018.09.001>
- Roberts, S. G. B., Wilson, R., Fedurek, P., & Dunbar, R. I. M. (2008). Individual differences and personal social network size and structure. *Personality and Individual Differences*, 44, 954–964. DOI:10.1016/j.paid.2007.10.033.
- Robins, G. (2015). *Doing social network research. Network-based research design for social scientists*. Sage.
- Robins, G., & Lusher, D. (2013). What are exponential random graph models?. In D. Lusher, J. Koskinen, & G. Robins (Eds.), *Exponential random graph models for social networks* (pp. 9–15). Cambridge University Press.
- Russell, D. W., Booth, B., Reed, D., & Laughlin, P. R. (1997). Personality, social networks, and perceived social support among alcoholics: A structural equation analysis. *Journal of Personality*, 65(3), 649–692.
- Sasovova, Z., Mehra, A., Borgatti, S. P., & Schippers, M. C. (2010). Network churn: The effects of self-monitoring personality on brokerage dynamics. *Administrative Science Quarterly*, 55, 639–670.
- Schotter, R. C. (2015). *Bridging the gap: Enhancing SNA within the Marine Corps intelligence community* [Master's thesis, Naval Postgraduate School]. NPS Archive: Calhoun. <http://hdl.handle.net/10945/45936>
- Schulte, M., Cohen, N. A., & Klein, K. J. (2012). The coevolution of network ties and perceptions of team psychological safety. *Organization Science*, 23(2), 564–581. <http://dx.doi.org/10.1287/orsc.1100.0582>
- Scott, B. A. (2007). *Employee popularity: Its nature, measurement, and organizational relevance* [Doctoral Dissertation, University of Florida].

- Selden, M., & Goodie, A. S. (2018). Review of the effects of Five Factor Model personality traits on network structures and perceptions of structure. *Social Networks*, 52(2018), 81–99. <http://dx.doi.org/10.1016/j.socnet.2017.05.007>
- Selfhout, M., Burk, W., Branje, S., Denissen, J., van Aken, M., & Meeus, W. (2010). Emerging late adolescent friendship networks and big five personality traits: A social network approach. *Journal of Personality*, 78(2), 509–538. DOI: 10.1111/j.1467-6494.2010.00625.x.
- Snyder, M. (1974). Self-monitoring of expressive behavior. *Journal of Personality and Social Psychology*, 30(4), 526–537.
- Snyder, M., & Gangestad, S. (1986). On the nature of self-monitoring: Matters of assessment, matters of validity. *Journal of Personality and Social Psychology*, 51(1), 125–139.
- Soto, C.J. (2021). Do links between personality and life outcomes generalize? Testing the robustness of trait-outcome associations across gender, age, ethnicity, and analytic approaches. *Social Psychological and Personality Science*, 12(1), 118–130. DOI: 10.1177/1948550619900572.
- Soto, C. J., & John, O. P. (2017). The next big five inventory (BFI-2): Developing and assessing a hierarchical model with 15 facets to enhance bandwidth, fidelity, and predictive power. *Journal of Personality and Social Psychology*, 113(1), 117–143. <http://dx.doi.org/10.1037.pspp0000096>
- Soto, C. J., & John, O. P. (2019). Optimizing the length, width, and balance of a personality scale: How do internal characteristics affect external validity? *Psychological Assessment*, 31(4), 444–459. Retrieved from <http://dx.doi.org/10.1037/pas0000586>
- Srivastava, S. (2010). The five-factor model describes the structure of social perceptions. *Psychological Inquiry*, 21, 69–75. DOI: 10.1080/10478401003648815.
- Stewart, G. L., & Barrick, M. R. (2004). Four lessons learned from the person-situation debate: A review and research agenda. In Schneider, B. & Smith, D. B. (Eds.), *Personality and Organizations* (pp. 61–85). Taylor & Francis Group.
- Stokes, J. P. (1985). The relation of social network and individual difference variables to loneliness. *Journal of Personality and Social Psychology*, 48(4), 981–990.
- Swann, W. B., Jr., & Seyle, C. (2005). Personality psychology's comeback and its emerging symbiosis with social psychology. *Personality and Social Psychology Bulletin*, 31(2), 155–165. DOI: 10.1177/0146167204271591.

- Swickert, R. J., Rosentreter, C. J., Hittner, J. B., & Mushrush, J. E. (2002). Extraversion, social support processes, and stress. *Personality and Individual Differences*, 32, 877–891.
- Tasselli, S., & Kilduff, M. (2018). When brokerage between friendship cliques endangers trust: A personality-network fit perspective. *Academy of Management Journal*, 61(3), 802–825. <https://doi.org/10.5465/amj.2015.0856>
- Tasselli, S., Kilduff, M., & Menges, J. I. (2015). The microfoundations of organizational social networks: A review and an agenda for future research. *Journal of Management*, 41(5), 1361–1387. DOI: 10.1177/0149206315573996.
- Toegel, G., Anand, N., & Kilduff, M. (2007). Emotion helpers: The role of high positive affectivity and high self-monitoring managers. *Personnel Psychology*, 60, 337–365.
- Totterdell, P., Holman, D., & Hukin, A. (2008). Social networkers: Measuring and examining individual differences in propensity to connect with others. *Social Networks*, 30, 283–296. DOI:10.1016/j.socnet.2008.04.003.
- United States Marine Corps. (2019). Commandant’s Planning Guidance: 38th Commandant of the Marine Corps. <https://www.marines.mil/News/-Publications/Electronic-Library-Display/Article/1907265/38th-commandants-planning-guidance-cpg>
- Venkataramani, V., Green, S. G., & Schleicher, D. J. (2010). Well-connected leaders: The impact of leaders’ social network ties on LMX and members’ work attitudes. *Journal of Applied Psychology*, 95(6), 1071–1084. DOI: 10.1037/a0020214.
- Wagner, J., Ludtke, O., Roberts, B. W., & Trautwein, U. (2014). Who belongs to me? Social relationship and personality characteristics in the transition to young adulthood. *European Journal of Personality*, 28, 586–603. DOI: 10.1002/per.1974.
- Wasserman, S., & Faust, K. (1994). *Social network analysis: methods and applications*. Cambridge University Press.
- Wilmot, M. P. (2015). A contemporary taxometric analysis of the latent structure of self-monitoring. *Psychological Assessment*, 27(2), 353–364. <http://dx.doi.org/10.1037/pas000030>
- Wilmot, M. P., DeYoung, C. G., Stillwell, D., & Kosinski, M. (2015). Self-monitoring and the metatraits. *Journal of Personality*, 84(3), 335–347. DOI: 10.1111/jopy.12162.

- Wilmot, M. P., Kostal, J. W., Stillwell, D., & Kosinski, M. (2017). Using item response theory to develop measures of acquisitive and protective self-monitoring from the original self-monitoring scale. *Assessment, 24*(5), 677–691. DOI: 10.1177/1073191115615213.
- Wilmot, M. P., & Ones, D. S. (2019). A century of research on conscientiousness at work. *Proceedings of the National Academy of Sciences, 116*(46), 23004–23010. www.pnas.org/cgi/doi/10.1073/pnas.1908430116
- Wisker, Z. L. (2011). The effect of personality, emotional intelligence and social network characteristics on sales performance: The mediating roles of market intelligence use, adaptive selling behaviour and improvisation [Doctoral dissertation, The University of Waikato]. <http://researchcommons.waikato.ac.nz/>
- Wolfe, R. N., Lennox, R. D., & Cutler, B. L. (1986). Getting along and getting ahead: Empirical support for a theory of protective and acquisitive self-presentation. *Journal of Personality and Social Psychology, 50*(2), 356–361.
- Xia, L., Yuan, Y. C., & Gay, G. (2009). Exploring negative group dynamics. Adversarial network, personality, and performance in project groups. *Management Communication Quarterly, 23*(1), 32–62. DOI: 10.1177/0893318909335416.
- Zell, D., McGrath, C., & Vance, C. M. (2014). Examining the interaction of extroversion and network structure in the formation of effective informal support networks. *Institute of Behavioral and Applied Management, 59–81*.
- Zhu, X., Woo, S. E., Porter, C., & Brzezinski, M. (2013). Pathways to happiness: From personality to social networks and perceived support. *Social Networks, 35*, 382–393. <http://dx.doi.org/10.1016/j.socnet.2013.04.005>
- Zou, X. (2009). Social networks and subjective well-being: Regulatory fit between self-regulation and network structure [Doctoral dissertation, Columbia University].

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