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Nursing Home Administrators' Personality And Nursing Home Quality: Correlations Between The Predictive Index And Cms Ratings

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NURSING HOME ADMINISTRATORS' PERSONALITY AND NURSING HOME QUALITY:

CORRELATIONS BETWEEN THE PREDICTIVE INDEX AND CMS RATINGS

By

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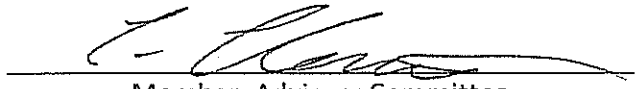

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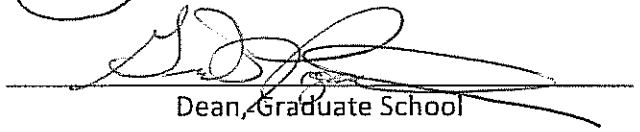

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DEDICATION

This thesis is dedicated to my husband
Richard Osbaldiston
for his patience, unwavering support, and unconditional love.

ABSTRACT

The approximately two million residents in nursing homes are nearly totally dependent on the care they receive from the nursing homes' staff. The quality of care ranges from excellent to substandard, and the goal of this project is to understand how the top administrators' personality is related to the quality of the facility. Very little research has been done from an organizational psychology perspective on how to improve the care that residents receive in nursing homes. To help address this problem, I examined the relationship between administrator personality factors (measured by Predictive Index) and nursing home quality (measured by the Center for Medicare and Medicaid Services Five-Star Ratings). Administrators from 107 Florida nursing homes completed the Predictive Index, and these scores were correlated with the Center for Medicare and Medicaid Services ratings. The factors of extraversion and patience were most strongly correlated with nursing home quality.

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CHAPTER 1

RESEARCH ON PERSONALITY AND WORK OUTCOMES

There are approximately two million residents in nursing homes in the United States. These residents are there because they can no longer care for themselves, nor can their families care for them. Thus, they rely almost completely on the nursing home staff for all of their care. Of course there is a distribution of care quality in nursing homes, ranging from nursing homes where residents receive top quality care to nursing homes where residents receive substandard care. The goal of this research project is to begin to understand what contributes to this variation and what steps can be taken to improve care quality. Ultimately, I seek to improve patient care in nursing homes across the country.

There are approximately 17,000 nursing homes in the United States, and while there is wide variation in how these nursing homes are owned and operated, ranging from privately owned single facilities to corporate ownership of multiple facilities, a common organizational structure exists (Castle, Ferguson, & Hughes, 2009). The typical nursing home has an on-site nursing home administrator (NHA) who is responsible for most of the day-to-day decisions for operating the nursing home. The staff under the NHA oversees the operations of the major components of the nursing home, including medical, social and ancillary services, and administration. Therefore, from an organizational perspective, the NHA is the leader of the facility and thus would likely have an influence

on the quality of the facility (Castle et al., 2009). In other words, the NHA's job performance and leadership effectiveness should be related to the quality of the facility.

Given the empirical evidence suggesting personality is a valid predictor of job performance and leadership effectiveness under some conditions (e.g., Barrick, Mount, & Judge, 2001; Judge, Bono, Ilies, & Gerhardt, 2002) in the current study I seek to examine the relationship between NHA personality and how this relates to NHA performance and leader effectiveness as measured by the quality of the facility. First, I will review the literature on the relationship between personality, work performance, leadership, and organizational performance; second, I will discuss how the quality of the facility is measured; and third, I will discuss how the NHA's personality may influence the quality of the facility.

The Big Five Personality Factors

Psychology has a rich history of defining and measuring personality. Freud was arguably the first personality psychologist, followed by his student Jung and the neo-Freudian movement. Empirically based personality measurements were developed by Eysenck, Cattell, Wiggins, and others. The general goal of personality research is to identify how individual differences influence behavior (Larson & Buss, 2010). A general goal within Industrial-Organizational (I/O) Psychology is to demonstrate which individual differences, including personality, relate best to which work-related outcomes.

The five-factor model (or the Big Five) is the leading theory describing personality. The Big Five is thought to describe the five most important dimensions of

personality, and these factors have been replicated in many studies in the United States and cross-culturally (Costa & McCrae, 1995; McCrae & John, 1992; Saucier & Goldberg, 1996). The primary factors are extraversion, agreeableness, neuroticism, conscientiousness, and openness to experience. Norman (1963) has provided a set of personality trait adjectives to define each of the factors. Extraversion is defined as being sociable, talkative, adventurous, and personally open (as opposed to silent, reclusive, and secretive). Agreeableness is defined as being good-natured, cooperative, and gentle (as opposed to headstrong and irritable). Neuroticism is the opposite of emotional stability. Neurotic people are anxious, excitable, and hypochondriacal (as opposed to calm, composed, and poised). Conscientiousness is defined as being responsible, scrupulous, and persevering (as opposed to undependable, unscrupulous, and careless). Openness to experience is sometimes referred to as culture or intellect, and it includes the traits of intellectual, artistic, imaginative, and refined (as opposed to unreflective, non-artistic, crude, and boorish).

Personality and Job Performance Outcomes

Many researchers have examined the question, *Which personality factors predict performance in which jobs?* This research has been summarized in two meta-analyses (Barrick & Mount, 1991; Barrick et al., 2001). Barrick et al. (2001) conducted a secondary analysis of 15 meta-analyses concerning the relationship between personality styles and work performance. For each of the Big Five personality factors, they summarized hundreds of studies with tens of thousands of observations for a variety of

work outcomes. They found that conscientiousness is the factor most strongly correlated with desirable work outcomes, with validity coefficients in the range of .10 to .15 (depending on what work outcome is being considered). For the factors of extraversion, emotional stability, agreeableness, and openness, the average sample weighted correlations were .06, .07, .06, and .03. Validity coefficients of similar magnitude were found earlier by Barrick and Mount (1991). Tett, Jackson, and Rothstein (1991) did a smaller meta-analysis (4-15 studies per Big Five factor) and found correlations in the range of .10 to .22.

Barrick et al. (2001) offer some explanations as to why the Big Five personality factors are correlated with job performance outcomes. They note that both conscientiousness and emotional stability are likely to be important in practically all work situations. "It is hard to conceive of a job where it is beneficial to be careless, irresponsible, lazy, impulsive, and low in achievement striving." They continue, "Similarly, being anxious, hostile, personally insecure, and depressed is unlikely to lead to high performance in any job" (p. 11). Thus, conscientiousness and emotional stability are the Big Five factors that are most strongly correlated with job performance across settings. Furthermore, they note that the other three factors (agreeableness, extraversion, and openness) are likely to have nonlinear relationships with job performance. For example, being high in extraversion is advantageous for people in management and sales, but being low in extraversion is advantageous for people in computer fields and some clerical positions.

Thus, some of the Big Five factors are fairly valid predictors of job performance under certain circumstances and some explanations for why this is the case have been put

forth. Based on this evidence, it appears fruitful to examine the relationship between personality traits and job performance in the context of nursing home administration. Given that NHAs are in leadership positions in the typical nursing home organizational structure, and would therefore be expected to influence work-related outcomes, the current study utilizes a measure of personality developed specifically for the context of work to examine these relationships. The Predictive Index (PI) is a commercially available personality assessment consisting of four primary factors, two secondary factors, and three domains (described in greater detail below). The primary purpose of the PI is to measure workplace personality factors; therefore the current study utilizes this measure to examine the relationship between NHA's personality and performance outcomes.

Personality and Leadership

Given the typical organizational structure of nursing homes, NHAs are in formal leadership positions. Therefore, the effectiveness of these individuals as leaders would be suggested to contribute to effective organizational functioning. Although many would agree that the influence of leader performance on organizational effectiveness is complex and limited by factors outside of the leader's control (e.g., Marion & Uhl-Bien, 2001; Meindl, 1998; Meindl, Ehrlich, & Dukerich, 1985; Pfeffer, 1977), the fact that leaders *have* an impact on organizational outcomes has been documented (e.g., Bertrand & Schoar, 2003; Day & Lord, 1998; Peterson, Smith, Martorana, & Owens, 2003). *Why* this is the case has not been as well delineated in the literature, however some researchers

have suggested that leaders influence organizational outcomes through the organizational context and conditions they create, which to some extent is dependent on the leader's characteristics (e.g., Finkelstein & Hambrick, 1996; Hambrick & Mason, 1984; Kaiser & Hogan, 2007; Resick, Whitman, Weingarden, & Hiller, 2009).

The conclusions of researchers studying the relationship between personality and leadership performance have wavered over time. In the 1950's, it appeared that no universal traits associated with effective leadership could be identified (House & Aditya, 1997). However, the last 20 years have shown resurgence, and now numerous researchers have documented this relationship. Judge et al. (2002) meta-analyzed the literature on personality and leadership. For leadership, they examined two separate criteria, emergence and effectiveness. Emergence is defined as the extent to which an individual is viewed as a leader by others (Hogan, Curphy, & Hogan, 1994). Emergence depends on the perceptions of people around the potential leader, and does not reflect formal authority or status. For this reason, emergence is not of further interest in this study.

Effectiveness, the key outcome variable of this study, is defined as "a leader's performance in influencing and guiding the activities of his or her unit toward the achievement of its goals" (Judge et al., 2002, p. 767). Although this definition captures the essence of effectiveness, measuring the criteria of effectiveness in empirical studies has not been done consistently. Typically, effectiveness is measured by asking supervisors, peers, or subordinates to rate a leader. Such ratings are potentially contaminated in that they confound emergence and effectiveness. Kaiser, Hogan, and Craig (2008) developed a taxonomy of dependent variables to be used in leadership

studies. They found that most studies tell us more about the career success of individual managers than about the success of groups, teams, and organizations, and that different factors are likely associated with each. These problems with measuring leadership performance exist in the scientific studies and influence the results that are reported below.

Judge et al. (2002) meta-analyzed 73 studies that provided 222 correlations between the Big Five factors and leadership emergence and effectiveness. Their main findings are displayed in Table 1. [1] The strongest observed relationship is between extroversion and leadership, and the weakest relationship is between agreeableness and leadership. They also report a multiple correlation of .48 between the Big Five factors and leadership.

Table 1, also shows the results for the criteria of emergence and effectiveness examined separately. For leadership effectiveness (the criteria of interest in the current research), the relationship between extroversion and effectiveness is weaker, and the relationship between agreeableness and effectiveness is much stronger, when compared to the overall results.

These results can be further analyzed by examining the sample used in the research. Table 1 shows the findings from Judge et al. (2002) for business, government/military, and student samples. In general, relationships were stronger for the student samples than for the other settings. For business samples, agreeableness and conscientiousness are not significantly correlated with leadership, although this finding does not separate emergence and effectiveness. Judge et al. suggest one reason for these

[1] All tables are in the appendix.

differences across samples may be due to situational strength. Structured situations, which may be expected in military and business settings compared to the more unstructured settings found in the student samples, may weaken the effects of personality on outcomes (House, Shane, & Herold, 1996).

The Judge et al. (2002) meta-analysis examines only the bivariate correlations of the Big Five factors and leadership performance. Other individual differences have also been examined in relation to leadership, however the majority of these studies have examined leader emergence and therefore will not be reviewed here.

Taken as a whole, the research mentioned above provides some evidence for personality characteristics as valid predictors of leader performance and effectiveness. In general, although the magnitude and nature of the relationships differ depending on the specific personality factors and criteria in question, meta-analytic based validity evidence does exist for the role of personality in determining leader performance. Based on these findings, it is expected that in the context of nursing homes, NHA personality will be related to organizational performance outcomes. In the current research, indirect measures of leader performance and effectiveness are used. While most NHAs aspire to be good leaders and effective in their jobs, this research utilizes the federal government's ratings of nursing home facilities as the criterion of interest, which is essentially a measure of organizational effectiveness. This rating system is called the CMS Five-Star rating system, and is introduced in the next chapter. Although the explanatory mechanisms for this relationship will not be explored, this study provides a first step in examining the relationship between leader personality and organizational outcomes in the nursing home industry.

CHAPTER 2

RESEARCH ON NURSING HOMES

In general, nursing homes specifically and health care in general has not received much attention from an organizational psychology perspective. The available research on nursing home administration is grounded in a focus on public health, health policy and management, and health administration. Organizational psychology is well-suited to study the organizational processes within nursing homes.

CMS Five-Star Rating System

A global measure of facility effectiveness of nursing homes is provided by the Center for Medicare and Medicaid Services (CMS). Each nursing home is evaluated on an ongoing basis by various government agencies that are authorized to license the nursing facility. The most comprehensive government organization overseeing nursing homes is the CMS within the Department of Health and Human Services. CMS made enhancements to its Nursing Home Compare public reporting site by including a five-star rating system to help consumers, families, and caregivers easily compare the quality of nursing homes. This information was first made public in December, 2008. The rating system is based on three factors: health inspections, quality measures, and staffing levels.

These performance measures are determined individually, and then the overall quality rating is calculated using a specific formula.

The measures of facility outcomes warrant further elaboration. Regarding health inspections, health deficiencies are found during government inspections and are rated along a four-point continuum: 1) no actual harm with potential for minimal harm, 2) no actual harm with potential for more than minimal harm that is immediate jeopardy, 3) actual harm that is not immediate jeopardy, and 4) immediate jeopardy to resident health or safety. A health deficiency score is formed by summing all the found deficiencies. A higher score corresponds to a greater number of deficiencies or lower care at that facility.

"Quality measures" is the term used in the industry to describe the patients' quality of life. Quality measures are assessments of residents' functioning and health status in multiple care areas, including pressure sores, urinary tract infections, change in mobility, need for physical restraint, and severity of pain. Objectively assessing these quality measures is difficult. Although things like number of pressure sores and number of urinary tract infections can be counted or measured, they can change quickly, they rely on the resident to report to the medical staff, and they rely on the medical staff to report to the administration.

Staffing in nursing homes is an important issue on two fronts; both high staff turnover and insufficient clinical staffing levels have been shown to lead to lower quality patient care (Castle & Engberg, 2008; Castle & Lin, 2010). While in an ideal world, it may be possible to objectively measure staffing levels by having observers spot check employees, in practice this is not done. Rather, administrators simply report the level of staffing and these reports may or may not reflect reality.

According to the CMS website (CMS, 2010), calculation of the overall CMS rating starts with the health inspection rating that a facility receives for the three most recent annual inspections and any complaint health inspections within those three years. Health inspection scores are calculated based on the facility's weighted deficiencies and number of repeat revisits needed. This score is converted to the five-star rating scale using state normed cut points. Next, a star is added to the overall rating if a facility received a five-star quality measures rating, or a star is subtracted if a facility received a one-star quality measures rating. Quality measures are based on performance on ten quality measures (seven long-stay measures and three short-stay measures). Finally, a star is added to the overall rating for a facility with a four- or five-star staffing rating or a star is subtracted for a one-star staffing rating. Staffing level measures are based on registered nurse hours per resident per day and total staffing hours (registered nurse + licensed practicing nurse + nurse aide hours).

The CMS rating system is not without its limitations. The backbone of the rating system is the health inspection rating. These ratings are based on annual unannounced visits by government inspectors and announced visits as necessary to address complaints. Naturally, there can be wide variation in the actual health status of the nursing home within any one-year period. Further, there is the potential for variation between the states due to differences in inspection processes, licensing requirements, and surveyor interpretations**.** The overall rating is also influenced by the quality measures and staffing levels. The primary limitation with the quality measures and staffing levels are that they are self-reported by the facility and may not be accurate. Even though the scale has these limitations, it is useful in comparing all nursing homes in the nation on the same metrics.

NHA and Facility Quality

As mentioned above, the CMS rating system is a global measure of facility quality. Organizationally, the NHA is the leader of the facility, and as discussed above, the NHA's actions will have an effect on all the employees of the facility through the organizational conditions they create. Therefore, it is logical that the NHA is the person that influences the facility's CMS rating the most.

Very little scientific research is available on the nature of the relationship between the NHA and the facility's quality. The most relevant study was reported by Donoghue and Castle (2009). They surveyed 2,900 NHA in 2005 and measured their leadership style with the Bonoma-Slevin model that identifies four types of leaders. These types are consensus manager (seeks input from the work group and allows the work group's input to influence decision-making), consultative autocrat (seeks input but makes all important decisions on his or her own), autocrat (does not seek any input and makes all decision on his or her own), and shareholder manager (fails to solicit input from the staff and neglects to share important information with the staff, yet the staff has the responsibility for making final decisions). They found that leaders who are consensus managers have the lowest staffing turnover rates and leaders who are shareholder managers have the highest rates, but they measured no other organizational outcome variables.

Several other studies have looked at characteristics of top managers and facility outcomes. Castle et al. (2009) summarized 14 studies (published between 1986 and 2003) that examined the impact of top managers of nursing homes on facility outcomes. These studies examined organizational predictors like NHA turnover (Castle, 2001; Christensen

& Beaver, 1996; Rubin & Shuttlesworth, 1986; Singh & Schwab, 1998, 2000; Zimmerman et al., 2002), climate and communication (Anderson, Corazzini & McDaniel, 2002), management practices (Anderson, Issel & McDaniel, 1997), and administrative resources (Castle & Banaszak-Holl, 2003). They also examined studies that looked at individual factors like job tenure of NHAs (Castle & Shugarman, 2005; Singh & Schwab, 1998, 2000), membership in professional associations (Castle & Fogel, 2002; Castle & Shugarman, 2005), and education (Castle & Shugarman, 2005; Singh, Amidon, Shi, & Samuels, 1996). None of these studies looked at more dispositional variables such as personality. Further, the facility outcomes that were examined mostly focused on health deficiencies (Christensen & Beaver, 1996; Zimmerman et al., 2002), quality measures (Anderson et al., 1997; Castle, 2001; Castle & Banaszak-Holl, 2003; Castle & Fogel, 2002; Singh et al., 1996), and staff turnover (Anderson et al., 2002; Castle, 2001; Castle & Shugarman, 2005). None of these studies examined CMS ratings. Table 2 presents a summary of the studies that are most relevant to the current research. Collectively, these studies all confirm intuitive relationships: low NHA turnover, membership in professional organizations, sufficient resources, longer working hours, longer tenure, and emphasis on satisfaction are all positively related to nursing home quality.

I sought to advance the research in this area by making two significant improvements. First, I use a more global measure of facility quality. Other studies only examined parts of the total quality picture, whereas I will use the CMS ratings which are a composite measure of the entire facility's level of care. Second, I use a workplace-specific measure of personality (presented in the next chapter) rather than more general measures of organizational and individual factors.

CHAPTER 3

PREDICTIVE INDEX: DESCRIPTION AND VALIDATION STUDIES

In chapter one, I discussed the research on personality and work outcomes. Most of the research in that area has used the Big Five as the primary taxonomy of personality. It is important to note that the Big Five was developed as a general description of human personality factors and was not designed to specifically explain work behavior. Other measures assess characteristics thought to be more specifically related to work behaviors. The assessment tool used for this study, the Predictive Index (PI), is one such measure.

Description of Predictive Index

The Predictive Index (PI) is a commercially available measure of personality developed for predicting job performance. It is a personality assessment tool that has myriad uses for selection, retention, and promotion purposes. The PI consists of two check lists of 86 adjectives. The same 86 adjectives appear in each list but the instructions to the respondents differ. For the first list, respondents are told to check the adjectives "you yourself believe really describe you," and for the second list, to check the adjectives that describe "the way you are expected to act by others." These two lists are used to determine the domains of self and self-concept, respectively, which will be

explained below. The PI can be administered paper-and-pencil or electronically, and takes approximately 10 minutes to complete.

The PI consists of four primary factors, two secondary factors, and three domains. The primary factors include: dominance, extraversion, patience, and formality. Because the PI is a proprietary scale, access to the full scoring criteria indicating which adjectives make up the factors was not available. However, PI provided a sample of representative adjectives making up the factors. Representative adjectives of a person high in dominance would include adventurous, brave, and persistent. Adjectives representative of a person high in extraversion are appealing, popular, and polished. Adjectives describing a person high in patience would include patient, relaxed, and satisfied. Finally, adjectives representative of a person high in formality would include neat, careful, and conventional. A respondent's score for each factor is formed by counting the number of adjectives checked.

The PI includes two secondary factors: decision-making and response-level. Decision-making measures how an individual processes information. Some people make decisions in objective, logical, and data-oriented manners; these people score high on this factor. Individuals who score low on this factor are subjective, intuitive, and emotional. Response-level measures an individual's overall responsiveness to the environment. Some individuals are energetic and active, whereas other individuals have less stamina. The reason these are called secondary factors is that they are made up from selected adjectives that describe the other factors. We are unable to determine which adjectives make up the secondary factors based on the most recent information provided by PI

Worldwide. The developers of the PI found that these two secondary factors provided additional insight into work behaviors above and beyond the four primary factors.

Further, the PI assesses these factors across two behavioral domains: the self and the self-concept. As previously noted, these domains are assessed by changing the instructions for each checklist. The self is measured using the first adjective checklist that instructs respondents to select those adjectives which they feel describe them. The self-concept is measured using the second adjective checklist that instructs respondents to select those adjectives that describe how they feel others expect them to behave. A third implied domain, the synthesis, is a reflection of observable behaviors in the workplace and is scored by summing across the self and self-concept checklists.

It is important to distinguish between the factors of the Big Five and the PI. Although they are both measures of personality, they measure different aspects of personality. The Big Five has five personality factors and the PI has four primary and two secondary factors, but the factors of the two theories are largely independent. Both measures include extraversion and define it in similar ways conceptually. The Big Five factor of agreeableness is a part of the PI factor of dominance, but dominance includes other traits like persistent and adventurous. The Big Five factor of conscientiousness is a part of the PI factor of formality, which also includes traits of conventional and neat. Thus, these factors of agreeableness and conscientiousness only overlap somewhat with PI factors. The remaining two Big Five factors, emotional stability and openness, are not correlated with the PI factors of dominance, decision-making, and response-level.

PI Validation Studies

The PI is a proprietary product, and as such, there is no publically available research. A wide array of internal studies conducted by PI Worldwide, the developer of the instrument, demonstrates that PI factors are correlated with various work outcomes. In 2008, a PI meta-analysis examining the most recent 57 validity studies was conducted. The cumulative sample size of these studies was 5,765 people drawn from 20 different industries and 15 different occupational classifications. In each of these validity studies, the 18 PI factors were correlated with measures of job performance. These measures of job performance varied widely from precise individual performance (e.g., bank teller errors) to global organizational measures (e.g., bank branch performance). Across all of these studies, the average correlations between factors and job performance measures were .17 to .19.

The meta-analysis summarized a very broad range of studies. To help narrow down the research, PI Worldwide provided several relevant validity studies done in the long-term care industry. These are unpublished studies produced by the PI research team, and only minimal detail about methods and results was provided. Despite this, these studies are useful for setting the context of the current research. These studies are conceptually similar to the current research project. In both the validation studies and the current study, NHAs were administered the PI, and their scores were correlated with CMS ratings. The validation studies discussed below were done at facilities spread across seven states. As previously stated, CMS scores are normed within states, and

there is state-to-state variation in CMS scores. An advantage of the current study is that all the data were collected within the same state.

To gather these data, PI partnered with a major nursing home organization that has facilities in seven states across the U.S. The executives of this organization required all their NHAs, Director of Nursing (DONs), and Rehabilitation Service Managers (RSMs) to take the PI survey. The raw data were handed back to PI Worldwide who performed the analyses that are summarized below. Although the participants' job titles and location of the facilities (40% of the facilities were urban and 60% were rural) are known, no other characteristics were provided.

The organization provided several measures of job performance outcomes. The exact details of how these outcomes were measured are not known. However, some descriptive statistics were provided that allowed inferences to be made. The measure most relevant to this thesis is the CMS rating system, although several other measures were assessed, including Quality-Mix, employee engagement, staff turnover, and total occupancy.

Quality-Mix (Q-Mix as it is known in the industry) is a measure of the amount of revenue that residents generate for the facility. This is different than the amount that Medicare pays, so facilities prefer that residents pay more from private sources than from public or government sources. Q-Mix is measured as a percentage of total revenues that are paid from private sources. Employee engagement was measured by a survey of staff engagement using a 5-point Likert scale. This variable had a mean of 4.05 and standard deviation of 0.39, so there was very little variation in this variable across the sample. Staff turnover was measured as a percent of staff leaving the organization during the

2009 year. Total occupancy was measured as the average percent of beds that were occupied during the year. Total referral growth rate and total operating potential are outcomes that I am unable to speculate the meaning of from the descriptive statistics given. Below I describe the validation study, and the findings are also summarized in Table 3.

The first research question concerned the relationship between NHA PI scores and job performance outcomes. Recall that the PI consists of six factors (dominance, extraversion, patience, formality, decision-making, and response level) measured across three domains (self, self-concept, and synthesis). Each NHA receives a score on each factor for each domain, resulting in 18 scores. These PI scores were then correlated with job performance outcomes. The strongest correlations were between the PI and the Q-Mix and employee engagement, but these outcome measures are not relevant to the current research project. The correlations between the PI factor of dominance and decision-making and the CMS rating were -.25 and -.27, ($p < .05$ for both correlations), respectively. Thus, NHAs who were lower in the factors of dominance and decision-making ran facilities that had higher CMS ratings. This finding is in the opposite direction of the meta-analysis of PI and job performance, which showed that all factors are positively correlated with job performance. This is the first evidence that what happens in other industries may not be applicable to the nursing home industry.

The second research question concerned the relationship between DON PI scores and job performance outcomes. While the PI factors were significantly related to other measures of DON job performance (employee engagement, prevalence of falls, physical restraints, and nursing stability), they were not correlated with CMS ratings. The lone

exception to this was the difference between formality and dominance scores (this is called the D-A spread, $r = .25$, $p = .05$). This non-significant finding is surprising because many DON job duties directly affect health inspections and quality measures, which are two important features of CMS ratings.

The third research question concerned the relationship between RSM PI scores and job performance outcomes. While the PI factors were significantly related to other measures of RSM job performance (rehab efficiency, part-B minutes, percent threshold), they were not correlated with CMS ratings.

The fourth research question concerned the relationship between the NHA PI scores and the DON PI scores and job performance outcomes. For these analyses, they computed job performance by combining CMS scores, employee engagement scores, and operating potential. The pattern that emerged is that when both the NHA and DON have high scores on formality, the facility operates well. They also found a complimentary relationship between NHA and DON extraversion scores. The facility operates best when one person scores high on extraversion and the other scores low.

The primary objective of the present research is to correlate the personality of NHAs as measured by the PI with CMS ratings. Because previous research has shown that personality in general, and scores on the PI specifically, is related to many work outcomes, a general research question is put forth: to what extent, and in what nature, is personality as assessed by the PI related to leader effectiveness as assessed by CMS scores? This research is exploratory in nature; therefore no specific hypotheses are advanced regarding which personality factors will be correlated with CMS scores.

CHAPTER 4

METHOD

Participants and Procedure

A convenience sample was collected of NHAs throughout Florida who agreed to serve as volunteer participants. Initial contact with these administrators was through the Florida Health Care Association's (FHCA) monthly newsletter that goes out to all of its members. A follow-up email was sent by the FHCA two weeks later directly to each member who is a NHA. This email included a detailed explanation of the project and the link to the study. The total number of NHAs receiving this email is unknown, but is estimated to be at least 500. Follow-up phone calls were subsequently made and emails were sent to non-responders inviting them to participate. The NHA clicked on the link and completed the survey on-line. Responses were received from 107 NHA (estimated 21% response rate).

Based on the meta-analysis of PI correlations with work outcomes, a power analysis was performed. The correlations between PI scores and work outcomes in general are in the range of .10 to .20. Based on this assumption, the minimum sample size needed to reach significance for a correlation of .20 is 100 participants; the minimum sample size needed for a significant correlation of .10 is 400. The population of Florida nursing homes is less than 700, so the cooperation of over half of the administrators would have been necessary to obtain a sample this large.

Measures

The primary variables of interest for this project were the PI and the CMS ratings. The PI is a well-validated measure of work-related personality factors. Using a free-choice response format, respondents were presented with two lists of 86 adjectives. The PI takes 10 minutes to complete. The CMS Five-Star Rating System data is publicly available online. The CMS data used in this study were obtained from the CMS website on August 18, 2010.

The survey contained three variables that were used as control variables. These control variables included NHA tenure at the present facility (self-reported by the respondent), the cost of living in the area of the facility (based on zip code of mailing address and www.bestplaces.net\col\, this information was collected by the researchers), and the amount of control the NHA had over staffing decisions (assessed using a 0-100% scale estimated by the respondent).

NHA tenure was included as a control variable because administrators who have been at their job longer may be more effective in leading their teams which may impact CMS ratings. Cost of living was included because facilities located in areas with a higher cost of living may have more resources to utilize for hiring more staff, making it easier to monitor if health inspection criteria are being followed, and if quality measures are consistently maintained. The amount of control over staffing decisions was included because NHAs with more control can make sure shortages in staffing are limited which will have a positive impact on CMS ratings.

CHAPTER 5

RESULTS

Sample Characteristics and Descriptive Statistics

The CMS rating system rates each nursing home on a five-star scale. For the 652 nursing homes in Florida, 11% received 1 star, 22% received 2 stars, 21% received 3 stars, 32% received 4 stars, and 13% received 5 stars. Our sample was similarly distributed, 8%, 21%, 21%, 39%, and 11%, respectively.

The scores for the four primary factors of the PI were compared to a reference sample of managers collected by PI over the last decade. In general, the scores were similar, but the NHA sample scored lower on dominance and extraversion, equivalent on patience, and higher on formality. This information was reported by PI Worldwide, and no additional information about the domains of self, self-concept, or synthesis was made available.

Three control variables were also included in the study. In terms of tenure at the facility, the length of time that the NHA had been in their current positions was not normally distributed, the mean was 54 months (SD = 55.63) and the median was 42 months. Cost of living was reported as the national average being 100, the data were normally distributed with a mean of 90.65 (SD = 10.27), which indicates that the cost of living in the zip codes from which data were obtained is somewhat less than the national

average. In terms of control over staffing decisions, the data were not normally distributed. The mean was 69% (SD = 29.92%) and the median was 80%. Two modes were found: 26% of respondents reported that they had 50% control over staffing decisions at their facilities, and 29% reported that they had 100% control over staffing decisions.

Bivariate and Partial Correlations

Table 4 presents the correlations for all of the PI factors, all of the CMS scores, and the three control variables. The correlations between the PI scores and the overall CMS ratings are in bold font in Table 4. For the overall CMS scores, 10 of the 18 bivariate correlations with the PI scores had values greater than .10. Whereas for the CMS subscales (health inspections, quality measures, and staffing), only 3 of the other 54 bivariate correlations had values of that magnitude (also in bold font in Table 4). Some of the correlations are consistent with previous research on the PI, but there are two caveats. First, none of the correlations reached statistical significance. Second, the magnitude of some of the correlations was smaller than expected. The PI typically correlates with work outcomes in the range of .10 to .20 (PI Worldwide meta-analysis), and the correlations between PI and CMS scores in Table 4 are between .00 and .17.

A few trends can be observed in the pattern of correlations. First, extraversion for all three domains is the factor that is most strongly correlated with overall CMS ratings. Second, the correlation for patience is nearly as strong as that for extraversion. Finally,

the synthesis correlations (which are combinations of the self and self-concept domains) are all greater than .05.

Three control variables were included in the survey: tenure at the facility, amount of control over staffing decisions, and cost of living. The bivariate correlations between these three control variables and the overall CMS ratings were .15, .09, .15, respectively (in all cases N = 107 and $p > .05$). None of the bivariate correlations between the control variables and the three subscales of the CMS were significant at the .05 level, although three correlations were significant at the $p < .10$ level; cost of living and health inspections, tenure and health inspections, and tenure and quality measures. The partial correlations of the PI scores and overall CMS ratings were computed while controlling for these three variables. Controlling for these variables had little effect on the PI-CMS relationship.

Stepwise Regression

To further explore the relationship between the PI and the CMS ratings, I examined the relationships between specific PI adjectives and the CMS overall rating and the three subscales. Initially, I computed stepwise regressions for all 86 adjectives on each dependent measure (CMS rating). All were highly significant. One of the CMS subscales, staffing, produced a multiple R of .57 ($R^2 = .32$). It is very possible, however, that these findings could have been due to chance. Thus, the next step involved identifying the specific adjectives most likely to predict ratings of facility effectiveness and testing their predictive effectiveness as specific *a priori* hypotheses.

Eight experts who have worked in nursing facilities rated each of the 86 adjectives in terms of what they felt NHAs should possess in order to do their job effectively. They rated the adjectives on a three-point scale (1 = *not important*, 2 = *somewhat important*, 3 = *very important*).

Thirty of the 86 adjectives had a mean rating of 2.5 or higher; these were then used in the same stepwise regressions, with overall ratings, health inspections, quality measures, and staffing as dependent variables. None were significant. Following this, adjectives with mean ratings of 1.5 or lower (N = 25) were analyzed the same way. None were significant. Inspection of ratings across all adjectives found that the adjectives significant in the initial exploratory analyses received a variety of subsequent importance ratings. I conclude that the initial stepwise regressions capitalized on chance, and these results will not be discussed further.

CHAPTER 6

DISCUSSION

Summary of Results and Implications

Five conclusions emerge from the relationships between the PI scores and the CMS ratings. First, the pattern of findings from this study on NHA and CMS ratings are consistent with the meta-analysis examining the relationships between the PI factors and work outcomes (PI Worldwide meta-analysis discussed previously). The PI meta-analysis found correlations between the PI factors and many work outcomes in the range of .17 to .19. The technical report did not provide confidence intervals for these estimates. The current study's results for the synthesis domain were in the range of .05 to .17. Although these correlations are lower than that point estimates from the meta-analysis, it is unlikely that they fall outside of the confidence interval. Further, the work outcomes variable in the meta-analysis was measured in many different ways and many of these ways focused on individual and immediate performance. The CMS rating does not have these qualities because it is based on the entire team's performance and is measured across time.

There was a discrepancy between the PI validation studies and the current research. Recall that the validation studies found a negative correlation between both dominance and decision-making and the CMS ratings. The current study found these relationships were in the positive direction but small. The current research provides no

insight into reconciling these contradictory findings. Clearly this is an area where more research is needed.

In addition to insufficient power to detect small effect sizes, similar to the reasoning of Judge et al. (2002), it is possible that the context of NHA presents a strong situation where individual differences such as personality are limited in their effects. Although the average reported control in staffing decisions was high, it is possible that other situational factors in the structure afforded by a business setting such as this would suppress the influence of individual differences on performance outcomes, especially (as described below), when the outcome is a distal measure of performance.

Second, determining which of the four primary factors (dominance, extraversion, patience, and formality) is most important is equivocal, but the data reveal some patterns. Dominance seems to be the factor that is least related to CMS scores. The pattern for formality is not clear. Respondents reported that formality is a factor that is expected of them in their jobs, but it did not correlate strongly as a descriptive factor of themselves. Extraversion and patience seem to be the two most important factors for predicting CMS scores. Given the findings of Judge et al. (2002), it is not surprising that extraversion generally appears to have the strongest relationship with the CMS ratings. Unfortunately, patience, which is the second strongest correlation with CMS ratings, does not have an equivalent factor in the Big Five so there is no way to compare the results.

This finding has implications for the selection and placement of NHAs. NHAs who are high in extraversion and patience run facilities that have higher CMS scores. Thus, an effort should be made to recruit and hire administrators who present with these factors.

Third, the overall CMS rating is more highly correlated with PI scores than any of the three subscales (health inspections, quality measures, or staffing). Recall that the overall score is computed using a mathematical combination of the three subscales. The overall score is more closely tied to NHA personality factors than any of the specific measures.

Fourth, I hypothesized that the variables of tenure at the facility, cost of living in the surrounding area, and amount of control over staffing decisions would strongly influence the CMS ratings, and for that reason, I measured those constructs to statistically control for them. However, the three control variables did not significantly predict the CMS scores, and made little difference to the correlations between PI scores and CMS ratings. My intuition was that these kinds of situational factors would be quite strong predictors of the quality of the nursing homes, but results demonstrated that the PI was nearly as good a predictor as these situational factors.

Fifth, there is a discrepancy between the results of the Big Five-leadership studies and the current research. Table 1 shows larger correlations between Big Five factors and leadership effectiveness than the correlations in Table 4 between PI factors and CMS ratings. This discrepancy may be explained by the fact that the CMS rating is a more distal measure of leadership effectiveness.

This discrepancy is also related to the taxonomy of criterion variables to be used in leadership studies. As Kaiser et al. (2008) noted, most studies on leadership have used an outcome variable that focuses more on individual performance and success than on the ability of a leader to guide a team toward its goals. Based on the conceptual definition of leader "effectiveness," the CMS may be a better measure of leader effectiveness than

what is typically used (e.g., the CMS rating is more similar to a team accomplishment than individual perceptions of leader effectiveness). However, as mentioned above, given this is a more distal measure of effectiveness and many intervening variables affect CMS ratings, more proximal measures of effectiveness may demonstrate stronger relationships with PI scores. This suggestion will be discussed in more detail below in future directions.

Limitations

There were two primary limitations to the study. First, the sample size was too small to reach statistical significance. As stated previously, the power analysis showed that the minimum sample size needed to reach significance was about half of the NHAs in Florida. It is unrealistic to expect a 50% response rate to a voluntary survey. Every reasonable effort was made to recruit participants.

A corollary to the limited sample size is that a convenience sample was used. Although the sample's distribution of CMS scores was fairly similar to the state's overall distribution, the sample was still subject to self-selection bias. It is quite possible that only those NHAs who are concerned about patient care and interested in knowing what they can do to improve responded to the survey. It is difficult to assess the amount of bias that a self-selected sample could induce.

Second, the CMS is a very diffuse measure of administrator work performance, and shortcomings of the CMS rating system were discussed above. While it is currently the best system for assessing nursing home quality, it is clearly an imperfect rating

system. In addition to the problems with the CMS rating system, it poses an additional methodological problem. The PI has consistently been validated as an effective tool for predicting work performance, but most frequently, work performance is assessed at an individual level. That is, the employee is primarily responsible for the outcomes. In the case of the NHA-CMS relationship, one administrator is tied to the performance of a large set of people. Many of these people are under the administrator's direct control (e.g. nurses, aids, custodians), at least from the employment perspective, but most are not directly supervised or managed by the administrator. In fact, the employees who provide the direct care to patients may be two or three levels down the management hierarchy, such that the NHA has very little control over their daily actions. Although it is difficult to quantify the extent to which these limitations influenced the results, it seems likely that they could have affected the relationships between the variables of interest.

Future Directions

I have four recommendations for future directions. First, the study could be expanded to include measuring the PI of the employees within a nursing home. This approach could be particularly insightful because it is possible that the personalities of the workers who provide the direct care (the nurses and aids) are more important to the quality of the nursing homes than the NHAs' personality.

Second, alternative methods of assessing the quality of nursing homes could be used. One alternative measure could be a resident and family satisfaction survey. The subjective experience of being satisfied with the care one receives may be a more

important indicator of quality of care than the relatively objective measures used in the CMS.

The primary concerns with using CMS ratings are that they are a measure of team performance and they are measured over a fairly long period of time (approximately 12 months). For research purposes, CMS data (health inspections, quality measures, and staffing levels) could be collected internally much more frequently, perhaps every month. Further, performance of various departments within a nursing home (e.g., nursing, rehabilitation, housekeeping, and dietary) could be monitored separately. In this way, more accurate data could be gathered and the relationship between the variables better assessed.

Third, there are other possible intervening factors besides the three measured control variables that might affect CMS ratings. For example, some nursing homes cater to special populations or people with particular needs. There was no way of assessing this variable in the current study, but several administrators indicated their facilities serve special populations (e.g., people on respirators or people with acute health conditions) that prevent their quality measures scores from ever being competitive with non-specialized nursing homes.

Fourth, the utility of the PI for selection and placement purposes needs to be determined. The PI is a proprietary measure, and as such, PI Worldwide charges for each administration of it. The cost of the PI varies according to the contract entered with PI Worldwide, with prices starting at $150 per person per survey. Is the PI cost effective? Executives who are considering using the PI to either select or train NHAs need to

determine the financial returns of using the PI. The executives should determine if the PI is cost effective, especially compared to Big Five, which is free.

Although the relationship between personality traits and work performance has been an integral part of the organizational psychology literature for over 30 years, there has been little research done in the setting of nursing homes. This study measured the relationship between NHA personality factors and facility outcomes.

The approximately two million residents of nursing homes are almost completely dependent on the care they receive from the facilities' staff. There is a continuum of quality of care ranging from excellent care to substandard care. Ultimately, NHAs are responsible for the care that residents at their facility receive. This research has provided some insight into the factors that influence leadership within a nursing facility, and it is my hope that the quality of care for all patients can be improved.

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APPENDIX:

Tables

Table 1
Correlations between Big Five Factors and Leadership

Personality Factor	Overall Finding	Leadership Emergence	Leadership Effectiveness	Business Sample	Government Military Sample	Student Sample
Neuroticism	-.24	-.24	-.22	-.15	-.23	-.27
Extraversion	.31	.33	.24	.25	.16	.40
Openness	.24	.24	.24	.23	.06	.28
Agreeableness	.08	.05	.21	-.04	-.04	.18
Conscientiousness	.28	.33	.16	.05	.17	.36

Source: Judge, T. A., Bono, J. E., Ilies, R., & Gerhardt, M. W. (2002). Personality and Leadership: A qualitative and quantitative review. *Journal of Applied Psychology, 87,* 765-780.

Note: Leadership emergence and leadership effectiveness are computed across samples (business, government/military, and student). Business, government/military, and student samples are computed for the entire data set without separating out leadership emergence or effectiveness.

Table 2
Summary of Research on NHA Predictors and Facility Outcomes

Predictor Variable	Outcome Variable	Results
NHA Turnover		
Castle, 2001	Quality of care outcomes: catheterization, pressure ulcers, use of psychoactive drugs, and use of restraints	Negative relationship between NHA turnover and quality of care outcomes
Castle & Lin, 2010	Quality indicators	NHA turnover is significantly related to poorer quality for 4 of 14 quality indicators
Christensen & Beaver, 1996	Score state health inspections (higher score means more deficiencies)	Negative relationship between NHA turnover and inspections
Membership in Professional Associations		
Castle & Fogel, 2002	Quality of care outcomes: catheterization, pressure ulcers, use of psychoactive drugs, and use of restraints	Negative relationship between membership and quality of care outcomes
Castle & Shugarman, 2005	NHA turnover	Negative relationship between membership and NHA turnover
Administrative resources: total administrative costs divided by resident care and dietary costs		
Anderson, Issel, & McDaniel, 1997	NHA turnover	Negative relationship between administrative resources and turnover

Table 2 (continued)

Predictor Variable	Outcome Variable	Results
NHA hours spent on job		
Castle & Banaszak-Holl, 2003	Quality of care outcomes: catheterization, pressure ulcers, use of psychoactive drugs, use of restraints, and the number of health-related deficiencies	Negative relationship between NHA number of hours spent on the job and quality of care outcomes
Compared NHA who had been on the job >3 years vs. <3 years		
Singh & Schwab, 2000	NHA stability, community attachment, organizational commitment, and facility performance	Longer tenured NHA have greater stability, attachment, and facility performance
NHA emphasis on staff satisfaction		
Zimmerman et al., 2002	High hospital rates secondary to infection	Negative relationship between NHA emphasis and hospital rates

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Table 2 (continued)

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Table 3
PI Validation Studies Predicting Job Performance Outcomes

Relationships Studied	PI Correlations with CMS	PI Correlations with Other Outcomes
NHA PI	Dominance r = -.25 Decision-making r = -.27	Q-Mix, Employee Engagement
DON PI	No Significant Correlations	Employee Engagement, Prevalence of Falls, Use of Physical Restraints, Nursing Stability
RSM PI	No Significant Correlations	Rehabilitations Efficiency, Part-B Minutes, Percent Threshold
NHA and DON PI	Not Reported	Combination Job Performance Outcomes

Table 4.
Correlations between CMS Ratings and PI Factors

	M	*SD*	1	2	3	4
1. CMS Overall Ratings	3.24	1.15	--			
2. Inspections	2.93	1.23	.86**	--		
3. Staffing	3.44	0.88	.34**	.08	--	
4. Quality	2.94	1.16	.24*	.00	-.11	--
5. Cost of Living	90.65	10.26	.15	.19	.15	-.13
6. Percent Control	69.41	29.92	.09	.03	.10	.12
7. Months at Position	54.19	55.63	.15	.19	.13	.17
8. Self Concept Dominance	4.77	3.16	**.09**	.05	-.01	.06
9. Self Concept Extraversion	7.42	4.88	**.14**	.09	-.09	**.11**
10. Self Concept Patience	5.32	3.08	**.10**	.04	.01	-.00
11. Self Concept Formality	12.78	5.2	**.11**	.03	-.02	.06
12. Self Concept Dec Making	5.38	2.76	**.15**	.07	.00	.09
13. Self Concept Resp Level	34.22	16.05	**.13**	.07	-.04	.07
14. Self Dominance	6.1	3.32	**.01**	-.02	-.10	.05
15. Self Extraversion	8.21	5.01	**.17**	**.11**	.08	.05
16. Self Patience	7.24	3.80	**.13**	.08	.07	-.06
17. Self Formality	14.79	5.50	**.03**	.01	.01	-.07
18. Self Dec Making	6.2	2.88	**.00**	-.02	-.09	-.02
19. Self Resp Level	36.79	15.89	**.09**	.05	.03	-.00
20. Synthesis Dominance	10.87	5.97	**.05**	.02	-.06	.06
21. Synthesis Extraversion	15.64	9.05	**.17**	**.11**	-.00	.09
22. Synthesis Patience	12.56	6.24	**.13**	.07	.04	-.03
23. Synthesis Formality	27.56	9.86	**.07**	.02	-.00	-.00
24. Synthesis Dec Making	11.58	5.27	**.08**	.03	-.05	.03
25. Synthesis Resp Level	71.02	29.94	**.12**	.07	-.01	.03

Table 4 (continued)

	5	6	7	8	9	10
5. Cost of Living	--					
6. Percent Control	.11	--				
7. Months at Position	-.04	.22*	--			
8. Self Concept Dominance	-.01	.07	.06	--		
9. Self Concept Extraversion	.14	-.01	.00	.72**	--	
10. Self Concept Patience	.02	-.04	.03	.62**	.74**	--
11. Self Concept Formality	.04	.05	.05	.75**	.79**	.83**
12. Self Concept Dec Making	.01	.06	.02	.82**	.70**	.67**
13. Self Concept Resp Level	.06	.02	.05	.83**	.91**	.87**
14. Self Dominance	-.05	-.00	.01	.69**	.55**	.45**
15. Self Extraversion	.04	-.05	-.00	.64**	.67**	.54**
16. Self Patience	.03	-.13	.03	.64**	.60**	.63**
17. Self Formality	.00	-.04	.04	.64**	.55**	.59**
18. Self Dec Making	-.07	.02	.03	.66**	.55**	.57**
19. Self Resp Level	.01	-.06	.00	.74**	.67**	.64**
20. Synthesis Dominance	-.03	.03	.03	.91**	.69**	.58**
21. Synthesis Extraversion	.10	-.04	.00	.74**	.91**	.70**
22. Synthesis Patience	.03	-.10	.03	.70**	.73**	.88**
23. Synthesis Formality	.03	.00	.05	.75**	.72**	.77**
24. Synthesis Dec Making	-.03	.04	.03	.79**	.67**	.67**
25. Synthesis Resp Level	.04	-.02	.04	.84**	.85**	.80**

Table 4 (continued)

	11	12	13	14	15	16
11. Self Concept Formality	--					
12. Self Concept Dec Making	.82**	--				
13. Self Concept Resp Level	.94**	.83**	--			
14. Self Dominance	.56**	.62**	.62**	--		
15. Self Extraversion	.57**	.56**	.67**	.71**	--	
16. Self Patience	.61**	.65**	.68**	.59**	.76**	--
17. Self Formality	.69**	.66**	.68**	.64**	.69**	.79**
18. Self Dec Making	.65**	.74**	.67**	.74**	.66**	.75**
19. Self Resp Level	.70**	.70**	.75**	.81**	.90**	.89**
20. Synthesis Dominance	.71**	.78**	.79**	.92**	.73**	.67**
21. Synthesis Extraversion	.74**	.69**	.86**	.69**	.91**	.75**
22. Synthesis Patience	.78**	.73**	.84**	.58**	.73**	.92**
23. Synthesis Formality	.91**	.80**	.88**	.66**	.69**	.76**
24. Synthesis Dec Making	.79**	.93**	.80**	.73**	.66**	.75**
25. Synthesis Resp Level	.88**	.82**	.93**	.76**	.83**	.84**

Table 4 (continued)

	17	18	19	20	21	22
17. Self Formality	--					
18. Self Dec Making	.82**	--				
19. Self Resp Level	.90**	.84**	--			
20. Synthesis Dominance	.70**	.76**	.84**	--		
21. Synthesis Extraversion	.68**	.66**	.86**	.78**	--	
22. Synthesis Patience	.77**	.74**	.86**	.69**	.80**	--
23. Synthesis Formality	.92**	.81**	.87**	.76**	.77**	.85**
24. Synthesis Dec Making	.80**	.93**	.83**	.82**	.72**	.79**
25. Synthesis Resp Level	.84**	.80**	.93**	.87**	.92**	.91**

	23	24	25
23. Synthesis Formality	--		
24. Synthesis Dec Making	.86**	--	
25. Synthesis Resp Level	.93**	.87**	--

Note. $N = 107$. Bolded values are the correlations of primary interest in this study, namely correlations between PI factors and CMS scores. Three other values are bolded to call the reader's attention to other correlations which are greater than .10.
*$p < .05$
**$p < .01$