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# CFO Intentions to Report Fraudulently on Financial Statements

By Nancy Uddin

A dissertation submitted to the

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Written under the direction of

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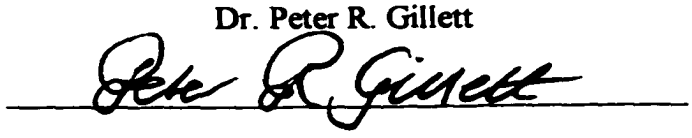

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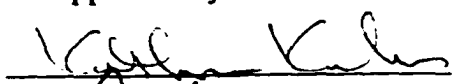
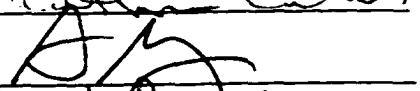
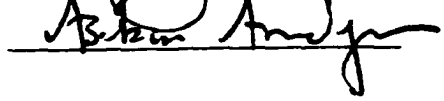
Kathryn Kadous 

Anne M. Magro 

Asokan Anandarayan 

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# ABSTRACT

## CFO Intentions to Report Fraudulently on Financial Statements

By Nancy Uddin

Dissertation director: Dr. Peter R. Gillett

Auditors are required to assess the risk of material misstatement due to fraud during every financial statement audit, and are held responsible by the courts for failure to find fraud. Palmrose (1987) found that a majority of lawsuits involving bankrupt clients also involve management fraud, and that management fraud is present in half the litigation against auditors. Nevertheless, financial reporting fraud, which is typically committed by top management (Loebbecke et al. 1989), is usually discovered by parties other than auditors (KPMG 1999).

The purpose of this study is to examine the socio-environmental, cognitive and personality characteristics that influence a CFO's intention to report fraudulently in the financial statements. Statement of Auditing Standards (SAS) No. 82 lists categories of fraud risk factors to be considered in the auditor's assessment; however, these factors have yet to be tested empirically. This study examines the predictive value of several such fraud risk factors, as well as other variables theoretically linked to fraudulent reporting. The ultimate goal is to guide auditors in detecting financial statement fraud.

The theory of reasoned action (Ajzen and Fishbein 1980) is adapted to the context of fraudulent reporting on financial statements and the model is extended by adding

new predictive factors. A mail survey is used to collect data from CFOs of publicly traded US corporations and the model is tested using structural equation modeling.

The extended version of the reasoned action model is found to fit the data well. Results indicate that individual attitudes towards fraudulent reporting on financial statements, and the size of the company, affect intention to commit fraud. Neither individual subjective norms for fraudulent reporting nor compensation structure affect intentions to report fraudulently on financial statements. As expected, high moral reasoners are more influenced than low moral reasoners by their own attitude towards the behavior. Contrary to prior research, low self-monitors are found to be more influenced than high self-monitors by subjective norms.

Further research is recommended to identify better measures of compensation structure, to confirm the lack of association between compensation structure and intention to report fraudulently, and to investigate the counter-intuitive results for self-monitors.

# ACKNOWLEDGEMENTS

Dedicated to the memory of my father, a man of principle, courage and vision.

Thanks to...

- Aklas for giving me all the space I need in which to grow and spread my wings
- Mom for your support and prayers
- Rezwan for loving me
- my brothers for doing whatever I needed whenever I needed it, for your moral support over some very difficult times, and my sanity
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# 1. INTRODUCTION

The topic of management fraud is a very important issue for public accountants. Statement of Auditing Standard (SAS) No. 82 requires the auditor specifically to assess the risk of material misstatement due to fraud and provides categories of fraud risk factors to be considered in the auditor's assessment. The pronouncement, however, does not specify how to combine or recognize these factors, nor does it claim that its list of factors is exhaustive. The pronouncement clearly states that the detection and prevention of fraud are the responsibility of management not the auditor. SAS No. 82 defines fraud as an intentional material misstatement of the financial statements. It defines two types of fraud in a financial statement: fraudulent financial reporting and misstatements arising from misappropriations of assets. The present study considers only fraudulent financial statement reporting.

Palmrose (1987) describes the role of business failures and management fraud in both legal actions brought against auditors and the settlement of such actions. She finds that a majority of lawsuits involving bankrupt clients also involve management fraud and that, overall, management fraud is present in half the litigation cases. Such cases have caused an increase in litigation costs for auditors. The publicity from these cases has also caused erosion in the confidence that the public places in public accounting firms and has made it important for auditors to be more careful and more accurate in their assessment of fraud risk. The Los Angeles Times (1998) reported that KPMG Peat Marwick agreed to pay nearly ten million dollars to settle a lawsuit "that promised to put the ethics of the accounting profession on trial." The PharMor lawsuit is another

prominent incident that occasioned the auditors, in this case Coopers & Lybrand, to pay a substantial amount of money to the plaintiffs. Prior research (Palmrose 1987; Loebbecke et al. 1989) has indicated that management fraud is the most common factor in litigation cases and that financial statement fraud is typically committed by top management. The purpose of this research program is to provide an initial answer to the question: under what circumstances does financial statement fraud occur? More specifically, what are the socio-environmental, cognitive and personality characteristics that influence management's intention to report fraudulently in the financial statements?

The ultimate goal of this project is to provide auditors with information that will help them predict who will commit financial statement fraud under what circumstances.

## 1.1 Motivation

The accounting literature contains many articles on the topic of management financial statement fraud. These articles can be arranged into two main groups covering assessment of fraud risk and fraud detection. The fraud assessment papers generally attempt to develop analytical tools or decision aids for assessing the level of fraud risk (Loebbecke et al. 1989; Pincus 1989; Hansen et al. 1996; Deshmukh et al. 1997; Green and Choi 1997;) or for identifying additional red flags[1] (Loebbecke et al. 1989; Beasley 1996; Summers and Sweeney 1998). The fraud detection papers (Johnson et al. 1991; Johnson et al. 1993; Reckers and Schultz 1993; Bernardi 1994) attempt to analyze the cognitive skills (distracters) that facilitate (hinder) an auditor's ability to detect fraud.

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[1] Red flags are potential symptoms existing within a company that would indicate a higher risk of an intentional misstatement of the financial statements (Loebbecke et al. 1989).

All of these papers focus on auditor behavior; none investigates management behavior. Of the above mentioned papers two in particular have significant relevance to the present study: Loebbecke et al. (1989) and Johnson et al. (1993).

Loebbecke et al. (1989) develop a model for assessing the risk of financial statement fraud and survey auditors regarding experience with fraud. Their analysis indicates that less than 50 percent of the auditors surveyed had experience with fraud; of those that did, few had encountered more than five such cases. Their survey also indicates that financial statement fraud is usually committed by top management, including directors. The paper provides an extensive list of 55 fraud indicators (or red flags) compiled from the survey results and the factors listed in SAS No. 53. These can be grouped into two broad categories: the quality of internal control of the company and the personality attributes of company personnel.

Many of the studies cited above have used the red flags, as compiled in Loebbecke et al.'s (1989) paper, to study financial statement fraud (Pincus 1989; Reckers and Schultz 1993; Hansen et al. 1996; Deshmukh et al. 1997), generating mixed evidence about whether they can be used effectively by auditors to identify fraud. One reason for the mixed results could be that most of the red flags have not been rigorously tested for any significant relation to financial statement fraud. Some of the red flags relevant to management financial statement fraud are:

- A single person dominates management operating and financial decisions.
- Management's attitude toward financial reporting is unduly aggressive.
- Frequent disputes about aggressive application of accounting principles that increase earnings.

- Excessive emphasis on meeting quantified targets that must be achieved to receive a substantial portion of management compensation.
- Compensation arrangements are based on recorded performance.
- Company holdings represent a significant portion of management wealth.
- Management personnel display a strong need for increased personal wealth.
- Management displays a propensity to take undue risks.
- Top management is considered to be highly unreasonable.
- Client management displays a significant lack of moral fiber.
- Management displays a significant disrespect for regulatory bodies.
- Client personnel display significant resentment of authority.
- Client personnel exhibit strong personality anomalies.

Johnson et al. (1993) offer a theoretical paper that examines management fraud as an instance of deception. The authors attempt to solve the problem of detection through reasoning rather than through recognition (red flags) and/or experience. They conclude that since the frequency of fraud occurrence is very low, auditors cannot rely on their past experiences for solutions but, instead, must understand the intentions of the deceivers and then use strategies developed for detecting the deception created by management. The present study attempts to identify factors that influence the intentions of managers.

Research to date has attempted to look at management financial statement fraud from the outside, by looking at indicators after the fact. The present research examines management financial statement fraud from the inside, and tries to understand under what circumstances it is likely to occur. Prior research has indicated that it is important

to understand the intentions of management before attempting to develop strategies to identify the deception of financial statement fraud. Prior research has also indicated that financial statement fraud is usually perpetrated by top management. The red flag literature provides some indicators that managers may have committed financial statement fraud. This research program investigates the intentions of managers, identifies factors that influence managers' intentions to report fraudulently on the financial statements, and tests the influence of some of the red flags on the managers' intentions. This should help auditors develop better strategies for assessing the risk of financial statement fraud.

The present study adapts the theory of reasoned action (Ajzen and Fishbein 1980) to the behavior of fraudulent reporting on financial statements to address the above issues. The original theory incorporates both individual and environmental factors while modeling the intentions of an individual. The adapted theory incorporates socio-environmental, cognitive, and personality factors that influence the intentions of individuals.

# 2. THEORY AND HYPOTHESES

This section describes the history and development of the theory of reasoned action, culminating in and justifying the model used in the present study.

## 2.1 Theory of Reasoned Action

Ajzen and Fishbein (1969) present a model for the prediction of behavioral intentions and corresponding behaviors. Behavioral intentions are assumed to mediate overt behavior. Behavioral intentions, in turn, are a joint function of the attitude toward performing a particular behavior in a given situation and of the norms perceived to govern that behavior combined with the motivation to comply with those norms. The normative component includes both the individual's personal beliefs about what should be done in a given situation as well as the perception of others' expectations about behavior in a given situation. Ajzen and Fishbein (1969) express these relationships with the following equation:

$$B = [BI]w_0$$

$$BI = [A\text{-}act]w_1 + [NBp]w_2 + [(NBs)(MCs)]w_3$$

where

B is overt behavior

BI is behavioral intentions

A-act is the attitude toward the behavior in a given situation

NBp is personal normative beliefs

NBs is social normative beliefs, the perceived expectation of others

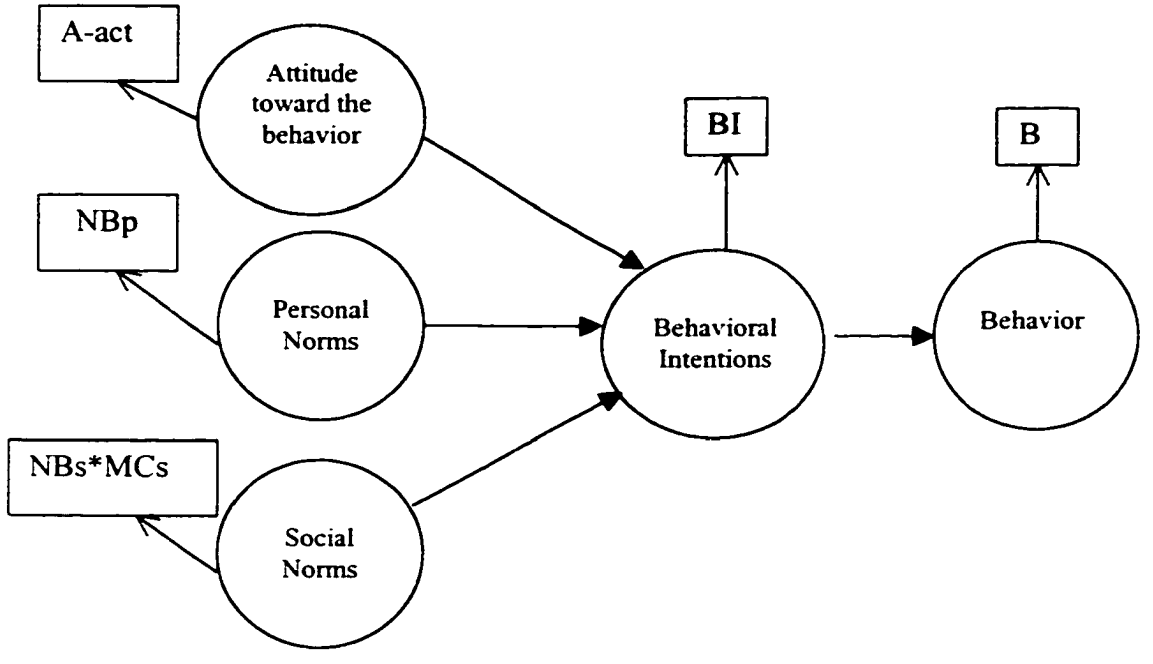
MCs is the motivation to comply with social normative beliefs

$w_i$ are empirically determined weights.

Any additional variable is held to influence BI if, and only if, it affects one or more of the model's predictors. Thus, situational variables, personality characteristics, etc., influence a person's behavioral intentions only if they are related to A-act, to NBp, or to (NBs)(MCs), or if they influence the relative weights of the three components.

**Figure 1**

**Diagrammatic Representation of Ajzen and Fishbein's 1969 Theoretical Model**




Note: Ajzen and Fishbein did not present a diagram of the model in their original paper. This diagram is the present author's representation of their theoretical model.

Figure 1 presents a diagrammatic representation of the above theory[2].

Ajzen and Fishbein (1969) use only measured variables within their study; they do not provide theoretical constructs based on latent variables. The authors perform only a partial test of the model. The variables A-act, NBp, NBs and BI are measured by presenting scenarios and then eliciting self-reports for the different components using Likert type scales and semantic differential scales. The authors use multiple regression analysis to test the model, and obtain significant results. They collect data for eight different behaviors and achieve R-squares ranging from 0.47 to 0.67. However the authors do not measure motivation to comply (MCs) or behavior. The model achieves significant regression coefficients for all three independent variables (A-act, NBs, and NBp) as predictors of intention (BI).

Ajzen and Fishbein (1980) drop the construct of personal normative beliefs since research has shown it to be little more than an alternative way of measuring behavioral intention. They also extend the model: the "attitude towards the act" construct of the model is augmented to incorporate the individual's belief about the likelihood that the behavior will result in a particular outcome together with the individual's evaluation of that outcome. The "subjective norms" construct is further developed to incorporate the beliefs of specific referents and the individual's motivation to comply with these referents. Previously, subjective norms included only general norms and not specific

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[2]The authors do not present a diagram of their own. The representation in Figure 1 uses the structural equation modeling format, where circles or ellipses represent constructs and squares or rectangles represent measured variables. This format is adopted so that it is consistent with later representations of other related models and because structural equation modeling is used to analyze the model developed in this study. Ajzen and Fishbein do not test the model shown here.

referents. A referent is an individual or group of individuals whose opinions have influence on an individual's decision processes.

According to this extended model, an individual's intention to perform a given act is a joint function of attitude toward performing that behavior (Aact) and normative beliefs (NB) about what specific others (referents) expect the individual to do in that situation. These normative beliefs (NB) are in turn multiplied by the individual's motivation to comply with the norms (MC), leading to the model:

$$B \sim BI = [Aact]w_0 + [(NB)(MC)]w_1$$

where $w_0$ and $w_1$ are empirically determined weights. The weights are expected to vary with the kind of behavior that is being modeled, with the conditions under which the behavior is to be performed, and with the person who is to perform the behavior. Any additional variables influence intention only through their influence on the two antecedents to intention, attitude and subjective norms, and their relative weights.

Figure 2a is a diagrammatic representation of Ajzen and Fishbein's (1980) extended model of reasoned action. Figure 2b is a structural equation modeling representation of that model.

Ajzen and Fishbein measure each variable with either Likert type scales or semantic differential scales. The model has generally been analyzed using regression analysis, which prevents the use of a measure for attitude and a measure of each of its components in the same regression model. Doing so would violate assumptions of independence and result in biased estimates of the regression coefficients. Researchers have used either the general attitude and subjective norm measures or their component measures when testing the model. A person's attitude toward a specific act is proposed

to be a function of the act's perceived consequences and of their values to the person. Aact is conceptualized in terms of an expectancy-value model:

$$Aact = \sum_{i=1}^{n} b_i a_i$$

where

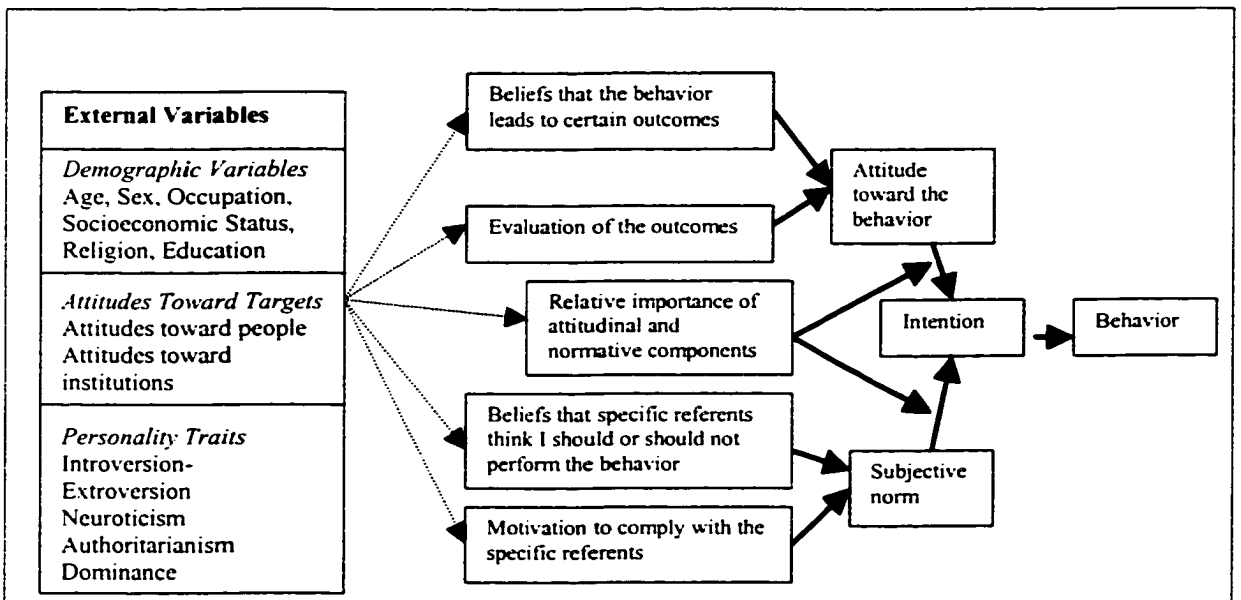
$b_i$ – the individual's belief about the likelihood that the behavior in question will result in outcome *i*.

$a_i$ – the person's evaluation of (or attitude toward) outcome *i*.

n – the total number of outcomes.

**Figure 2a**

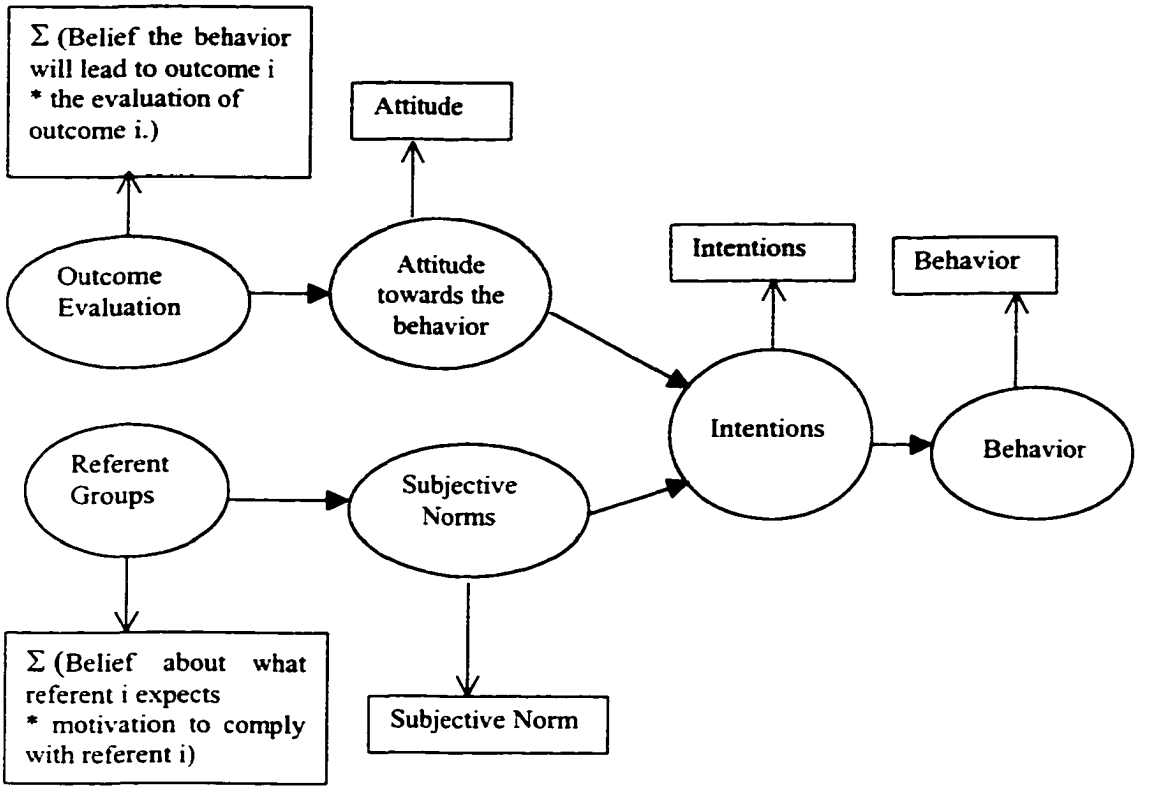
**Ajzen and Fishbein's (1980) Model**




Note: This is an exact reproduction of Ajzen and Fishbein's original model.

**Figure 2b**

**Interpretation of Ajzen and Fishbein's (1980) Extended Model**




Note: This representation of the model conforms to the standard method for presenting models in the structural equation modeling paradigm.

This is very similar to the subjective expected utility (SEU) model of behavioral decision theory. The SEU of a given alternative is a function of the subjective probability that certain outcomes will follow the act ($SP_i$) multiplied by the respective subjective utilities attached to the outcomes ($U_i$). The products are summed over all possible outcomes of the act:

$$SEU = \sum_{i=1}^{n} SPiUi$$

$\sum_{i=1}^{n} b_i a_i$ is essentially equivalent to $\sum_{i=1}^{n} SPiUi$ There models both specify that for any individual, the attractiveness of a given act is a function of the summed products of the subjective probabilities and utilities assigned to the act's outcomes.

Ajzen and Fishbein (1972) alter their measure of attitude toward the act by manipulating the subject's own probability of success; this captures outcome evaluation. They also alter their measure of subjective norms by manipulating the probability of success as estimated by referents; this captures belief about what specific referents expect. The authors analyze the model using multiple regression analysis. They use four different scenarios to test the model. Their results show that attitude toward the behavior and subjective norms together explain from 36 to 72 percent of the variance in behavioral intention. For each of the four scenarios, attitude toward the behavior carries more weight than subjective norms; also, subjective norms are significant in only one scenario whereas attitude toward the behavior is significant in each of the four scenarios.

The theory of reasoned action posits that the weights of the two components, attitude and subjective norms, will differ depending on the behavior, the context of the behavior and the individual performing the behavior. Consequently this empirical difference is to be expected.

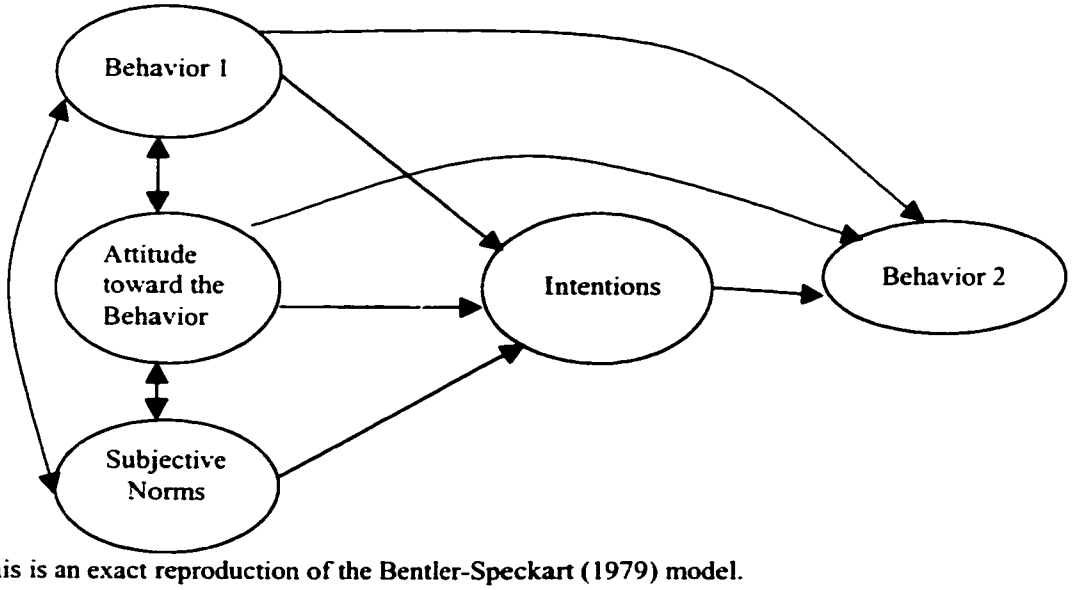
Bentler and Speckart (1979) propose and test an extension of the Ajzen and Fishbein (1980) model. The Bentler-Speckart model makes two specific changes. First, attitude directly affects behavior in their model. Second, previous behavior is added as a new component that directly affects both intention and behavior.

Figure 3 is a diagrammatic representation of the Bentler-Speckart model. Bentler and Speckart use structural equation modeling to compare their model with the Ajzen and Fishbein model. Results support the Bentler-Speckart model.

Fredricks and Dossett (1983) cite a number of flaws in the Bentler-Speckart data that may have biased the results. Attitude is measured only at the global level; beliefs and evaluations of outcomes are not measured; motivation to comply with specific referents is not measured; behavior is measured using self-reports, not by observing actual behavior; and the target behaviors studied are illegal acts: use of alcohol, marijuana, and hard drugs. Fredricks and Dossett state that these types of socially censured illegal activities are prone to biased self-reports.

**Figure 3**

**Bentler-Speckart (1979) Model**




Note: This is an exact reproduction of the Bentler-Speckart (1979) model.

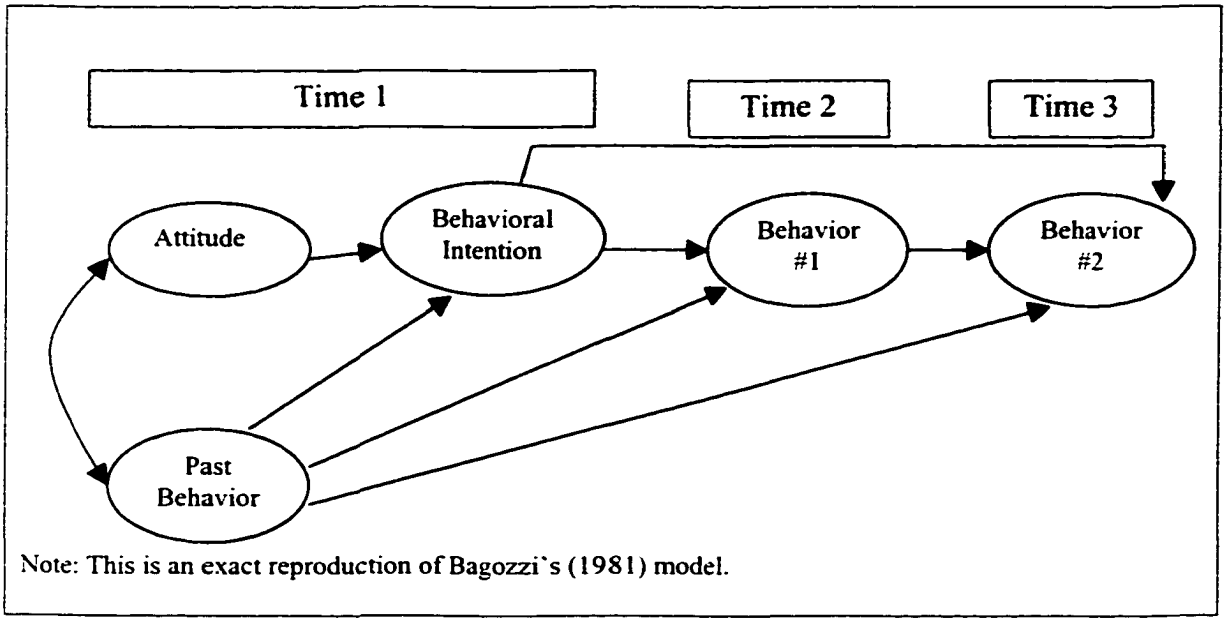
Fredricks and Dossett (1983) compare the Fishbein-Ajzen (1980) model with the Bentler-Speckart model and test for difference in predictive power between them. They use structural equation modeling, and measure attitude at both the general (semantic differential) and component (belief-evaluation) levels. They also measure subjective norms and motivation to comply, but only at the global level. They use direct observation to measure prior and target behavior. The behavior studied is attendance/absence from class. Their results provide support for the direct paths from prior behavior to both intention and behavior but provide no support for the direct path from attitude to behavior.

Bagozzi (1981) uses the theory of reasoned action (Ajzen and Fishbein 1972) to examine the relationships among attitude, intentions, and behavior. This study uses the act of donating blood to examine these constructs. Previous studies have generally assumed that the attitude an individual has toward an act or object is unidimensional in nature. To take the Fishbein-Ajzen expectancy-value model of attitude as an example, the practice to date had been to combine many perceived consequences of an act and their evaluations into a single number representing overall attitude. The validity of this model has been demonstrated many times in a wide range of contexts. Bagozzi (1981) proposes that attitude might be more complex in nature. Because the formation of an expectancy-value attitude entails a number of relatively complex judgments and evaluations and because the attitudinal act involves costly consequences, he expects expectancy-value attitude to be multidimensional. The author also models three separate types of behavior: past, proximal (the immediate behavior to be predicted) and distal

(behavior in the near future). Figure 4 is a diagrammatic representation of Bagozzi's model.

**Figure 4**

**Bagozzi's (1981) Model**




Note: This is an exact reproduction of Bagozzi's (1981) model.

The following constructs were measured in the study:

- Behavioral intention – three separate survey questions were used to measure intention.
- Past behavior – each respondent was asked to state the number times he or she had donated blood in the past five years.
- Personal normative beliefs – one survey question.
- Social normative beliefs – one survey question; motivation to comply was not measured.
- Attitude toward the act – five seven-point semantic differential scales.

- Beliefs (expectancies) – seven beliefs each measured on 11-point scales.
- Values (evaluations) – each belief in the form of an "if-then" statement followed by a five-point scale; e.g., "If I thought I would faint, I would definitely not give blood / I would definitely still give blood." This avoids semantic confusion that can occur if the same type of scale as that used for attitude toward the act is used for evaluations of beliefs.

Bagozzi makes two predictions with regard to the attitude construct. First, he hypothesizes that the five semantic differential measures will converge to indicate a single unidimensional attitude. The author believes that respondents will form relatively global affective reactions toward the act of giving blood and that these can be measured with the evaluative dimensions of the semantic differential scale. Second, the author hypothesizes that the seven expectancy-value products will not converge to measure a single underlying attitude. Rather, it is expected that the expectancy-value attitude will be multidimensional. The author hypothesizes three highly correlated, but distinct, dimensions: immediate external pain, immediate internal sickness, and delayed consequences.

The rationale for a multidimensional expectancy-value attitude is related to the nature of attitude formation and the decision task. Unlike the overall evaluation reaction measured by the semantic differential scale, the particular expectancy-value attitude measures employed in the study require that the respondent make relatively deep and complex judgments about the consequences of giving blood.

The author uses structural equation modeling to test all the hypotheses. The hypothesis regarding attitude is supported: the semantic differential scale items form a

unidimensional measure, whereas the expectancy-value items form a multidimensional measure comprised of three dimensions as proposed by the author.

Proximal behavior is found to be directly affected by intention but not by attitude. Rather, attitude influences behavior only through its impact on intention. The predictive relationship between attitude and intention is stronger for the expectancy-value attitude than for the semantic differential attitude. Past behavior does not influence proximal behavior directly but, rather, does so only through its impact on behavioral intention.

Burnkrant and Page (1988) examine the structure of the normative and attitudinal components of the reasoned action model. Prior research (including Ajzen and Fishbein 1972) has usually summed the "subjective norms - motivation to comply" ($NB_iMC_i$) products to yield a single score. Burnkrant and Page supply several reasons to believe that NBMC exists as a multidimensional rather than a unidimensional construct. First, they cite Bagozzi (1981) as evidence that expectancy-value exists as a multidimensional construct. They argue that if expectancy-value attitude exists as a multidimensional construct, it is logical to expect NBMC also to be multidimensional. The second reason the authors offer for a multidimensional structure of NBMC is theoretical. Work in information processing indicates that memory may be represented as networks of associations where strengths of the linkages between the object or event of interest and other concepts vary based on learning experience. It has been shown that information can be organized in memory around contextual features, familiar people or both. Burnkrant and Page argue that the linkages between salient referents also should vary considerably based on past experience. The authors go on to explain their point with the following example. "We may consider a situation in which there are four referents: A,

B, C, and D. If, in subjects' minds, A and B are quite similar to each other in terms of their beliefs and C and D are quite similar to each other in terms of their beliefs but A and B are quite different from C and D, we would expect strong linkages in subjects' memories between A and B and between C and D but weak linkages between A and C or D and between B and C or D. It would follow that correlation among these referents should differ similarly" (Burnkrant and Page 1988, pp. 69-70). They argue that specific referents found salient and their relationships with one another are likely to be dependent on the behavioral domain under consideration.

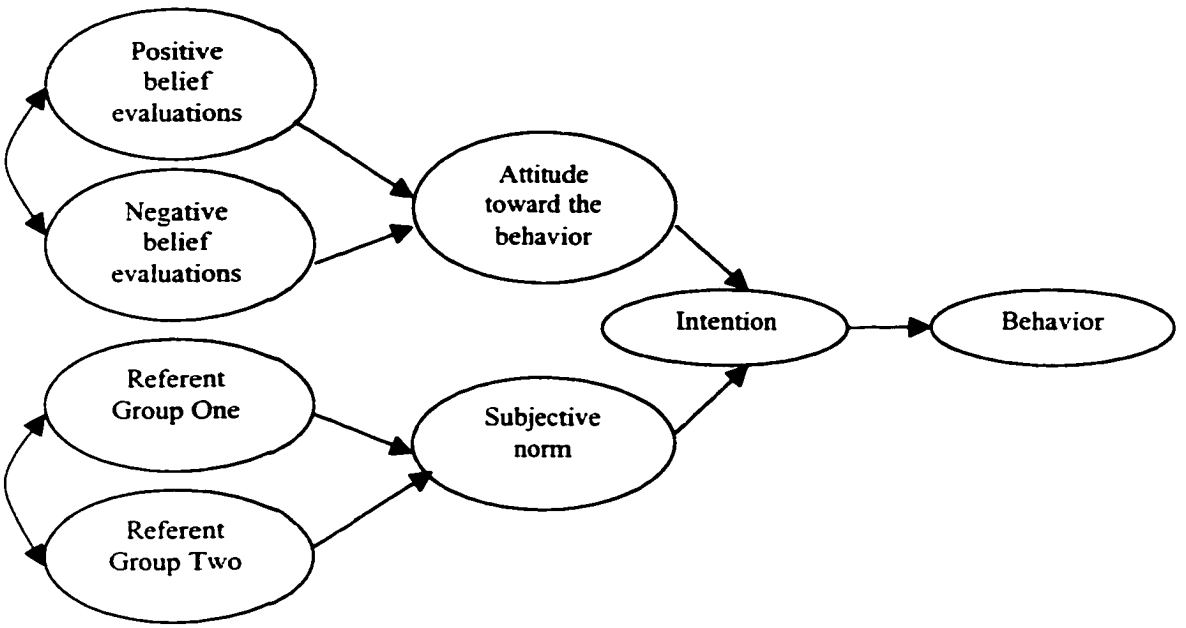
The authors also predict a specific multidimensional form for the belief-evaluation products. They expect linkages in memory among the positive consequences and linkages among the negative consequences of an act to be stronger than linkages between positive and negative consequences. This leads to stronger correlation among positive belief evaluation products and among negative belief evaluation products than between positive and negative belief evaluation products and supports a two dimensional model of expectancy-value attitude.

Their data is gathered from a survey of potential blood donors in the weeks preceding a blood drive. The researchers elicit seven salient beliefs and four salient referent groups from an independent pre-test group. Global attitudes using semantic differential scales are not measured, nor is behavior. All other parts of the reasoned action model are measured using seven-point scales. The authors use structural equation modeling to analyze the data. They find that the NBMC composite exists as a multidimensional rather than a unidimensional construct. Their research also supports the multidimensional structure of the expectancy-value attitude construct. The fully

expanded model has the best fit. Figure 5 is a diagrammatic representation of their fully expanded reasoned action model.

**Figure 5**

**Interpretation of Burnkrant and Page's (1988) Model**



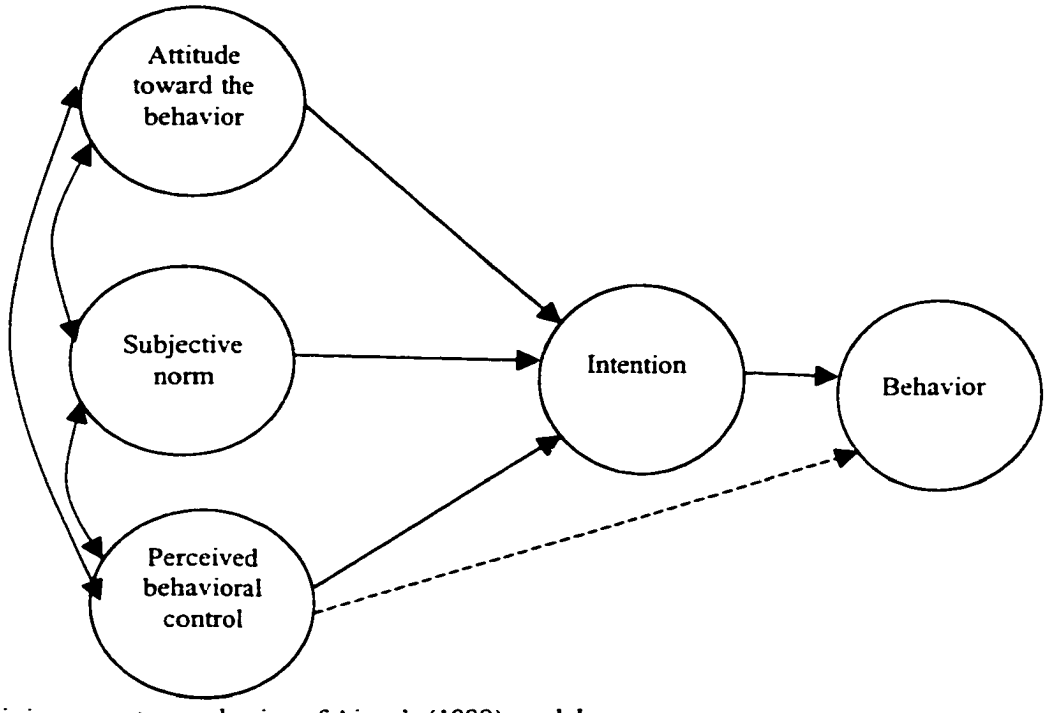

Note: Burnkrant and Page (1988) present essentially the same model in their paper except for notational differences in naming each node.

## 2.2 Other Variants of the Reasoned Action Model

The theory of planned behavior (Ajzen, 1991) is an extension of the theory of reasoned action, and deals with behaviors over which people have incomplete volitional control. Figure 6 is a diagrammatic representation of the theory of planned behavior.

**Figure 6**

**Ajzen's (1991) Theory of Planned Action**




Note: This is an exact reproduction of Ajzen's (1988) model.
The link from perceived behavioral control to behavior has only limited empirical support.

The theory of planned behavior incorporates perceived behavioral control as an antecedent to behavioral intentions. Perceived behavioral control is included as an exogenous variable that has both a direct effect on behavior and an indirect effect on behavior through intentions. When people believe that they have little control over

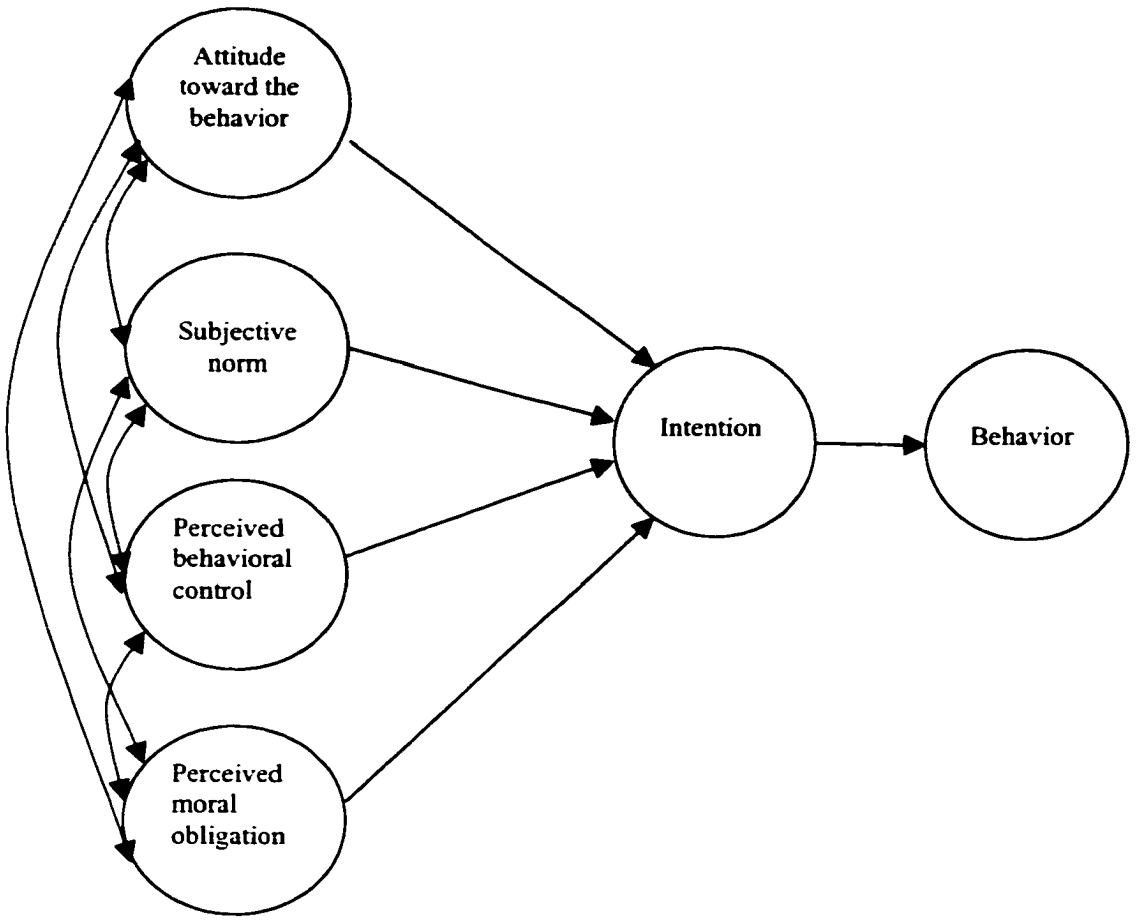
whether or not to perform the behavior then their intentions may be low even if they have favorable attitudes and/or subjective norms. In situations where the degree of actual control over performing the behavior is relatively high, the addition of perceived behavioral control has little predictive value.

The present study does not include perceived behavioral control within the model. It is assumed that the specific behavior studied here has relatively high, perceived behavioral control.

Beck and Ajzen (1991), Randall and Gibson (1991), and Kurland (1995) all model personal moral obligation within the theory of reasoned action and the theory of planned behavior. Figure 7 is a diagrammatic representation of the model with the addition of moral obligation. Moral obligation is defined as the duty or obligation that is sanctioned by one's conscience as right. Moral obligation is generally measured with one question of the following form: "I believe I have a moral obligation to (perform some behavior)" followed by a seven-point Likert type scale. Beck and Ajzen (1991), Randall and Gibson (1991), and Kurland (1995) all use regression analysis to analyze the data and achieve mixed results on the incremental ability of moral obligation to predict intention. Beck and Ajzen (1991) achieve mixed results within their study: the theory of planned behavior improves prediction of reported lying but does not improve the prediction of cheating or shoplifting. Randall and Gibson (1991) find moral obligation significantly increases explained variation in intent to report inadequate professional care of co-workers in the health profession. Kurland (1995) finds moral obligation explains a significant part of the variation in insurance agents' ethical intentions toward clients.

## Figure 7

### Representation of the Theory of Planned Behavior with Moral Obligation




Note: None of the papers that use this theory supply a diagram of the model, but they all extend the model from the theory of planned behavior.

## 2.3 Further Theory of Reasoned Action Studies

The reasoned action model has been shown to be very robust in a wide range of settings such as weight loss, family planning, brand choice, voting behavior, use of public transportation, blood donation, cheating behavior, and unethical behavior in business settings. A meta-analysis by Sheppard, Hartwick and Warshaw (1988) provides strong support for the overall predictive ability of the model. These authors calculate a frequency-weighted correlation for the Intention-Behavior relationship of 0.53. This correlation is based on 87 separate studies with a total sample of 11,566 and is significant at the 0.01 level. They also calculate a frequency-weighted average correlation for the "Attitude+Subjective Norms" to "Intention" relationship of 0.66. This correlation is based on 87 separate studies with a total sample of 12,624 and is significant at the 0.001 level.

DeVries and Ajzen (1971) use the model to study cheating behavior among the students of two colleges. They find highly significant correlation between attitudes toward cheating and cheating intentions, between subjective norms and cheating intentions, and between cheating intentions, and self-reports of cheating ($p < .001$). Kurland (1995) uses the model to predict insurance agents' ethical intentions toward clients. This study was not designed to predict actual behaviors. The population studied consists of US based financial service agents. These agents are licensed to sell products such as life and health insurance. The author uses regression analysis to test the model. Results show that agents' attitudes and subjective norms explain 42% of the variance in intentions. Gibson and Frakes (1997) examine unethical decision making in job-related

situations encountered by CPAs. In this study, the attitude towards the behavior and subjective norms explains a significant portion of unethical intention ($p < 0.001$).

## 2.4 Model Development

The present study adapts the theory of reasoned action to the specific behavior of reporting fraudulently on financial statements and adds other environmental and individual factors that prior research has shown to be linked to cheating behavior and/or corporate unethical behavior. Cheating behavior is similar to fraudulent financial statement reporting: both behaviors are carried out for personal gain or reward. People cheat, for example, to obtain better results on a test and better grades. Financial statement fraud is perpetrated to create financial statements leading to better ratings by investors and creditors.

The present study begins with an existing version of the reasoned action model developed by Burnkrant and Page (1988). The data is initially fit to this model. The study does not include prior behavior as a factor predicting intention for two main reasons. First, prior research has found mixed results for the incremental explanatory power achieved by the inclusion of prior behavior within the model (Bentler and Speckart 1979; Bagozzi 1981). Second, the behavior examined in the present study is not considered a habitual behavior; fraudulent financial statement reporting is considered an uncommon event. Loebbecke et al.'s (1989) survey found only five percent of the auditors surveyed had experience of fraud. KPMG's (1998) fraud survey results also indicate that the occurrence of financial statement fraud is very low. Thus the incidence of habitual offense is expected to be low.

The present study does not incorporate moral obligation within the model. Instead, Kohlberg's levels of moral reasoning is used to examine the effect of moral reasoning on the development of intention to commit fraud. This is a theoretically rich construct

that has been validated in many studies. Moral reasoning is not incorporated as a factor within the model; instead the differential effect of level of moral reasoning on how attitudes and subjective norms influence intention is investigated.

### 2.4.1 Internal Factors

The present study includes the following additional factors within the model of reasoned action: need for achievement and compensation structure.

#### Need for Achievement

Need for achievement is defined as "a setting where the individual acts or sees himself as acting as if he is competing with a standard of excellence, and where effort and accomplishment are tied to a sense of personal involvement and responsibility. Whatever undermines the sense of personal responsibility or removes the challenge from a situation also tends to be avoided, thereby maintaining the value of success for the individual (Schwartz et al. 1969)." Prior research has shown that need for achievement is correlated with cheating behavior. Schwartz et al. (1969) show that subjects low in need for achievement are more likely to display cheating behavior. Cheating is very similar to management financial statement fraud (as explained above). Thus, a manager low in need for achievement may be more likely to favor attitudes that support fraudulent financial statement reporting. The need for achievement construct is an individual factor and is modeled in the present study as a predictor of attitude towards the behavior.

## Compensation Structure

Compensation structure can motivate managers to inflate earnings so as to influence the market price of the company and the manager's own wealth. Compensation structure appears as a factor in the red flag literature. Two of the red flags included in Lobbecke et al.'s paper are: managers' compensation arrangements are based on recorded performance, and company holdings represent a significant portion of management wealth. The present study models compensation structure as a construct that directly affects intentions. It is hypothesized that when the compensation structure is highly contingent upon company performance, managers are more likely to report fraudulently in the financial statements. Thus, an individual might have low subjective norms and attitude toward the behavior and might still report fraudulently on the financial statement when the incentive (performance-related compensation structure) is high. The high performance-related compensation structure might cause a person to disregard evaluations of the outcome and subjective norms in anticipation of the reward derived from contingent compensation structure.

## Company Size[3]

Larger organizations are more likely to engage in illegal activity because they may be better able to absorb the negative effects of legal sanctions imposed by government regulators, and they may be less hurt by monetary fines and legal fees (Yeager 1986). Larger firms have the economic ability to afford fines and penalties. Another theory that

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[3] Company size is a relative term in the context of this study. The population under consideration includes only publicly traded firms since these are the organizations required to provide audited financial statements.

predicts a large firm effect for illegal activity argues that industries and companies that are more powerful enjoy a disproportionate influence over regulatory agencies and, accordingly, are less likely to be adversely affected by them. Large firms have lobbying power over the federal agencies that regulate them and can influence the regulations these agencies enforce (Quirk 1981). Blau (1970) presents another theory for illegal activity that argues that large firms are more complex; this leads to decentralized decision-making and problems in managerial control. As a result it is easier for employees of large firms to participate in illegal activity. However, the link between organizational complexity and illegal activity has not been established empirically (Hill et al. 1992). Dalton and Kesner (1988) performed an empirical study to examine the effect of firm size on unethical and illegal activity. Their sample consisted of all companies continuously listed on the Fortune 500 from 1980 to 1984. Their results indicated that larger firms were more likely to engage in illegal activity and more likely to be multiple violators. The types of illegal activity investigated by the above mentioned studies were violations of antitrust laws, the Federal Trade Commission Act, Environmental Protection Agency regulations, and Occupational Safety and Health Administration regulations. These illegal activities are fairly similar to financial statement fraud: they involve misrepresentation to various constituencies or the willful disregard of various codes and standards. So it seems reasonable to expect large companies also to participate in financial statement fraud more often than smaller companies.

Given these various theories, large firms are more likely to participate in illegal activity and create environments that are more tolerant towards deviant behavior. Large

firms are more likely to harbor environments that are more supportive of fraudulent financial statement reporting than small firms. It is hypothesized in this study that this environment can influence an individual's intention to report fraudulently on the financial statements.

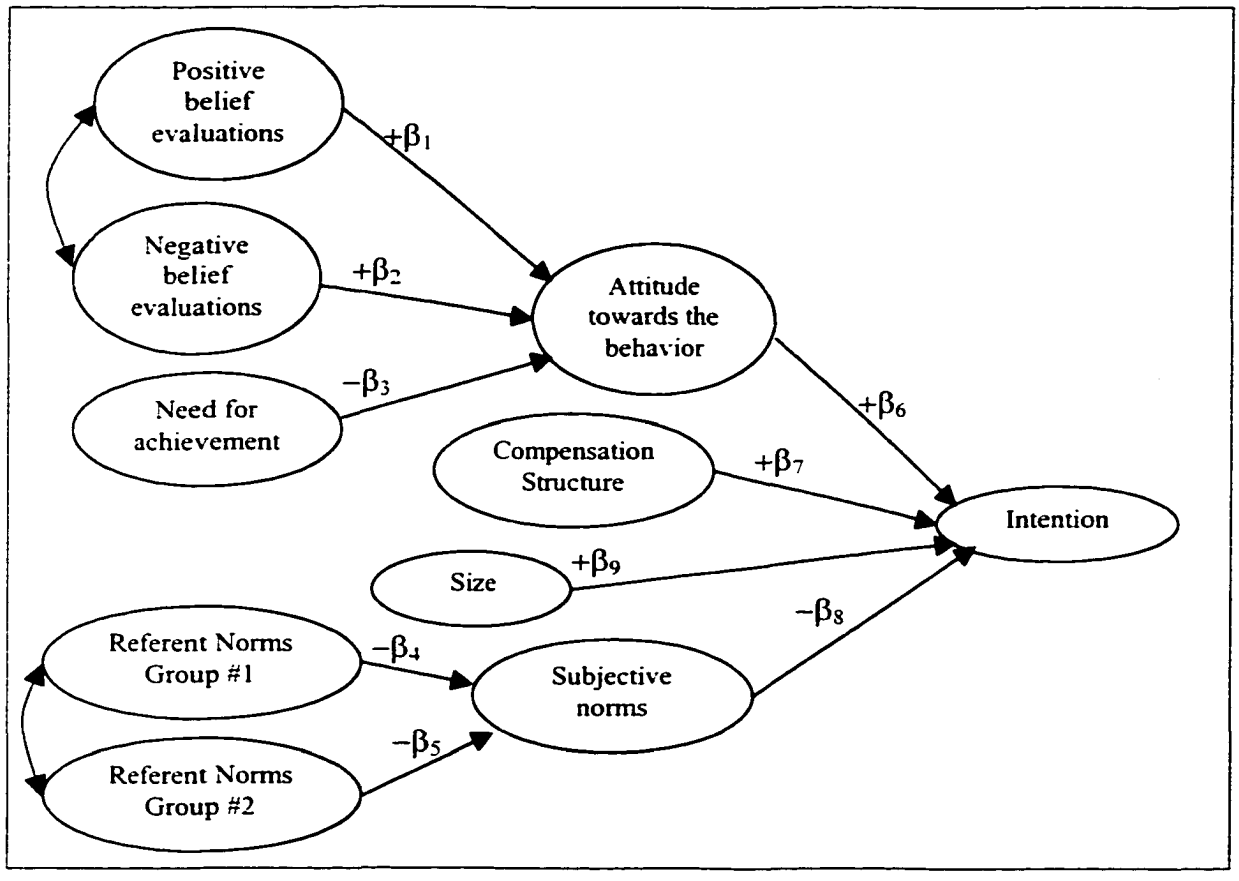
Generally speaking, there is a possibility of confounding between constructs representing compensation level and size. The present study, however, uses constructs representing compensation structure rather than compensation level. While it is certainly possible that there may be confounding between the constructs for compensation structure and size, prior studies do not suggest that such a relationship should be anticipated. Consequently, no such relationship is hypothesized or modeled *a priori*. However, models including both compensation structure and company size constructs are tested *a posteriori* for the existence of such a relationship.

Figure 8 is a diagrammatic representation of the structural part of the reasoned action model as applied to the behavior of reporting fraudulently on the financial statements. Each structural path also has a hypothesized sign. Behavior is directly affected by intention only. Intention is directly affected by attitude toward the behavior, subjective norms, and compensation structure. The belief-evaluation products are modeled as two-dimensional constructs. Positive belief evaluation products and negative belief evaluation products are expected to have strong correlation between them (Burnkrant and Page 1988). Positive belief evaluations are evaluations of positive outcomes or, in other words, outcomes that reinforce the behavior. Negative belief evaluations are evaluations of outcomes that do not reinforce the behavior but instead can be injurious to the manager. Salient referents are also modeled as two-dimensional

constructs. The exact content of each of the constructs is determined from the responses of a pre-test group. It was anticipated that the salient referents would form two related groups: coworkers, including superiors within the corporation; and non-coworkers, including friends and family members. Behavior is not measured in this study, which is based on survey data regarding hypothetical scenarios.

**Figure 8**

**Reasoned Action Model for Fraudulent Financial Statement Reporting**




Hypotheses for this study are stated in alternative form below.

Positive belief evaluations are a latent variable P that combines our expectations of the likelihood of outcomes with evaluations of those outcomes, for outcomes expected to reinforce the behavior. Negative values for the latent variable P should result in lower attitudes towards the behavior since they result from desirable but unlikely outcomes or likely undesirable outcomes. Positive values for the latent variable P should result in higher attitudes towards the behavior since they result from likely desirable outcomes or unlikely undesirable outcomes.

**H1**: Higher positive belief evaluation leads to more positive attitude towards the behavior; i.e., $\beta_1 > 0$.

Negative belief evaluations are a latent variable N that combines the expectations of the likelihood of outcomes with the evaluations of those outcomes, for outcomes expected to inhibit the behavior. Negative values for the latent variable N should result in lower attitudes towards the behavior since they result from desirable but unlikely outcomes or likely undesirable outcomes. Positive values for the latent variable N should result in higher attitudes towards the behavior since they result from likely desirable outcomes or unlikely undesirable outcomes.

**H2**: Higher negative belief evaluation leads to more positive attitude towards the behavior; i.e., $\beta_2 > 0$.

Need for achievement is hypothesized to have a negative relationship with attitude towards the behavior because it is expected that individuals high in need for achievement are less likely to intend to report fraudulently on the financial statement, as explained in the preceding section.

**H3**: Higher need for achievement leads to less positive attitude towards the behavior; i.e., $\beta_3 < 0$.

Salient referents are modeled as two-dimensional constructs: Group 1 and Group 2. The referent groups are expected to have a negative relationship with subjective norms because the scale for subjective norms is reversed (i.e., the order of the end-point words for the semantic differential scale was reversed for one of the two scales whose product measures subjective norms); this is addressed in more detail in Section 5.4.1 below.

**H4**: Higher referent norms for Group 1 lead to lower subjective norms; i.e., $\beta_4 < 0$.

**H5**: Higher referent norms for Group 2 lead to lower subjective norms; i.e., $\beta_5 < 0$.

As attitude towards the behavior increases, intention to perform the behavior also increases. Attitudes towards the behavior are evaluations of the behavior; e.g. bad/good, foolish/wise.

**H6**: More positive attitude towards the behavior leads to higher intention to report fraudulently; i.e., $\beta_6 > 0$.

**H7**: Compensation structure that is more performance-related leads to higher intention to report fraudulently; i.e., $\beta_7 > 0$.

Individuals who believe others approve of the behavior, and have a desire to comply with these others, have higher intention to report fraudulently on the financial statements. Since the scale for subjective norms is reversed, higher values for the subjective norms construct should lead lower intention to report fraudulently.

**H8**: Higher subjective norms lead to lower intention to report fraudulently; i.e., $\beta_8 > 0$.

Finally, large companies are expected to have environments that are more tolerant of deviant behavior and more capable of absorbing the costs associated with illegal activity. Therefore, large company size is expected to lead to higher intention to report fraudulently on the financial statements.

**H9**: Larger company size leads to higher intention to report fraudulently; i.e., $\beta_9 > 0$.

### 2.4.2 External Factors

There are certain personality traits that prior research has shown to be correlated with unethical behavior. Two of these are included in the present study; namely, self-monitoring and moral reasoning.

#### Self-monitoring

Self-monitoring is the manner in which one manages other people's perceptions of oneself (Snyder 1975). High and low self-monitors are theorized to differ in the extent to which they attempt to manage their public presentations. High self-monitors are more likely to assess a social situation and adjust their presentations of self to fit their perceptions of the demands of that situation. Low self-monitors are theorized to be less concerned with the perceptions of others and are more resistant to changing their public displays of self. High self-monitors, because they cheat in self-presentation, are more likely to intend to cheat in a task (Covey et al. 1988). In the context of fraudulent financial statement reporting, managers who are high self-monitors are more likely to be concerned with how investors and creditors view their performance and more likely than managers who are low self-monitors to intend to report fraudulently on the financial statements. Low self-monitors do not change their course of action just to impress other people. Consideration of these factors leads to the following hypotheses:

**H10**: Subjects who are high self-monitors express higher intention to report fraudulently than subjects who are low self-monitors.

Because high self-monitors are more concerned with the opinions of others than with their own assessments of a situation they place more emphasis on the attitudes of others when forming intentions, in this case the intention to report fraudulently in the financial statements. In comparison to high self-monitors, low self-monitors put more emphasis on their own opinions than the attitude of others. But given the evidence of prior

research with the theory of reasoned action, attitude towards the behavior should have more influence on intention than subjective norms for both high and low self-monitors.

**H11a**: For high self-monitors, attitude towards the behavior has greater effect than subjective norms on intention to report fraudulently. In other words, $\beta_6 > \beta_8$ for high self monitors.

**H11b**: For low self-monitors, attitude towards the behavior has greater effect than subjective norms on intention to report fraudulently. In other words, $\beta_6 > \beta_8$ for low self-monitors.

**H11c**: Subjective norms have greater effect on intention to report fraudulently for high self-monitors than for low self-monitors; i.e., $\beta_{8HSM} > \beta_{8LSM}$.

**H11d**: Attitude towards the behavior has greater effect on intention to report fraudulently for low self-monitors than for high self-monitors; i.e., $\beta_{6LSM} > \beta_{6HSM}$.

Incentives for cheating also moderate the relationship between self-monitoring and cheating. Covey et al. (1988) find that high self-monitors cheat more, all other things held equal. They also find that because high self-monitors are more concerned with how others view them, they are less influenced by incentives: the public reward of admiration from others is more important then other personal tangible rewards. But low self-monitors, because they are less concerned with how others view them, are more likely to cheat in the presence of substantial incentives. Incentives are rewards for performing well. In the situation of fraudulent financial statement reporting,

compensation structure that is more company performance-related represents the high incentive condition. Low self-monitors are more likely to report fraudulently on financial statements when the reward structure is high.

**H12a**: For low self-monitors, compensation structure that is more performance-related leads to higher intention to report fraudulently.

**H12b**: For high self-monitors, compensation structure that is more performance-related has no effect on intention to report fraudulently.

## Moral Reasoning

Kohlberg (1964) defines morality as involving judgments of right or wrong. Conduct in a situation of moral conflict depends upon responsible decision-making by a person who is aware of the potential effects the decision may have on others (Kohlberg 1984). A decision is also influenced by the decision-maker's personality characteristics, the attitude the individual has towards performing the behavior, and the social norms that surround the individual. Kohlberg's theory of moral reasoning identifies three levels of moral reasoning, each containing two stages.

Level I is called the preconventional level and is the level of most children under the age of nine. The moral significance of an action is seen as a real, inherent, unchanging quality; punishment is seen as important insofar as it is identified with a bad action.

Level II is the conventional level; the self is identified with or has internalized the rules and expectations of others, especially those of authorities. The individual takes the perspective of a generalized member of society. The perspective is based on a

conception of the social system as a consistent set of codes and procedures that apply impartially to all members. The Level II manager perceives himself as an integral part of the reference group and makes a conscious effort to keep the organization that supports the group going. Thus managers at the second level of moral reasoning will intend to perform behaviors that will make the company look better in the eyes of creditors and investors. They are more likely to intend to report fraudulently on the financial statements than are Level III moral reasoners.

Level III is a postconventional person who has differentiated herself from the rule and expectations of others and defines values in terms of self-chosen principles. This means equal consideration of the claims or points of view of each person affected by the moral decision to be made. Individuals progress sequentially through each of these levels without regressing, although not all people reach Level III. The higher a person's level of moral reasoning the more likely it is that the person will consider alternatives that are the least destructive to those who are affected. The Level III moral reasoner considers the effect a decision has on all groups, not just the immediate social group. Thus a manager at the third level of moral reasoning considers the effect that reporting fraudulently on the financial statements has on the company, the stockholders, creditors and any other group that may be affected. Therefore, a manger who is a Level III moral reasoner is less likely to intend to report fraudulently on the financial statements than one who is a Level II moral reasoner.

The crucial issue facing individuals contemplating financial statement fraud is a breach of trust between the manager and the financial statement user. Level II moral reasoners would be unlikely to experience strong external pressures to resist the

temptation (Schwartz et al. 1969), because the users of the financial statements are not manifest. On the other hand, the potential benefit of reporting fraudulently to the immediate social group of colleagues, the company and immediate family is more apparent. Level III moral reasoners, on the other hand, tend to base their choices on self-accepted principles and are more likely to choose alternatives that are not destructive to the individuals affected. They are likely to consider the consequence their choice has on the financial statement users.

Malinowski and Smith (1985) and Schwartz et al. (1969) examine the relationship of moral reasoning to cheating behavior and find that high moral reasoners are less likely to cheat. The present study extends the moral level theory to that of fraudulent reporting behavior of management. It is theorized here that individuals at a high level of moral reasoning consider the impact their behavior has on others, such as shareholders and creditors, and are less inclined to intend to report fraudulently on the financial statements.

**H13**: Subjects who are low moral reasoners express higher intention to report fraudulently than subjects at a high level of moral reasoning.

Kohlberg's theory of moral reasoning also states that individuals at the third level of moral reasoning have differentiated themselves from the rules and expectations of others and define values based on internalized principles. Thus, decision-makers at Level III are less influenced by subjective norms than decision-makers at Level II and base their decisions on attitudes toward the behavior. However the decision-makers at

Level II are more influenced by subjective norms and less influenced by attitude, as compared to Level III decision-makers, when forming intentions.

**H14a**: For high moral reasoners, attitude towards the behavior has greater effect than subjective norms on intention to report fraudulently. In other words, $\beta_6 > \beta_8$ for subjects with a high level of moral reasoning.

**H14b**: For low moral reasoners, attitude towards the behavior has greater effect than subjective norms on intention to report fraudulently. In other words, $\beta_6 > \beta_8$ for subjects with a low level of moral reasoning.

**H14c**: Subjective norms have greater effect on intention to report fraudulently for low moral reasoners than for high moral reasoners; i.e., $\beta_{8LMR} > \beta_{8HMR}$.

**H14d**: Attitude towards the behavior has greater effect on intention to report fraudulently for high moral reasoners than for low moral reasoners; i.e., $\beta_{6HMR} > \beta_{8LMR}$.

### Social Desirability

This measure is used to check for response bias caused by respondents answering questions in a manner that reflects broad social norms. The behavior of fraudulently reporting on the financial statements is not a behavior condoned in our society. Therefore, some subjects may change their response to reflect the behavior approved by society. This can bias the results of the survey and mask actual intentions to report fraudulently on the financial statements. No specific expectations are held about the effect of social desirability on subjects' responses. Section 5.4.5 below investigates the

possibility of bias in the present study arising from responses influenced by social desirability.

# 3. METHODOLOGY

The methodology used to test the above hypotheses was a mail survey. The survey was used to test the target population of top management, but it could not be used to elicit behaviors, only intentions to perform the behavior. Thus behavior was not measured in this study. Structural equation modeling was used to analyze the structural paths of the model.

## 3.1 Mail Survey

The survey questionnaire measured the variables for the reasoned action model. It also included the instruments for self-monitoring, need for achievement, moral reasoning, and the social desirability scale. In addition, the questionnaire contained a demographic section that included measures for company size and the respondent's compensation structure. [Table 1]. The complete questionnaire is presented in Appendix A.

The survey was prepared with the help of an expert in the methodology of survey research and in the areas of ethics and cheating behavior. This expert provided valuable advice on the format of the survey and the content of the scenarios and cover letter, with the objective of maximizing response rate while allowing for the sensitive nature of the subject matter and the length of the instrument.

## The Reasoned Action Model

Five different scenarios were developed based on prior ethics research, cases used in ethics and financial statement analysis textbooks, and actual fraud cases. The scenarios were then presented to a small group of accountants and managers who commented on the realism of the scenarios and also supplied suggested referents and outcomes for each scenario. The comments provided by this group were used to make some adjustments to the scenarios and to write the statement stubs for each scenario. These statements are the measures for the variables of the reasoned action model. Likert type scales and semantic differential scales follow these statements. The entire questionnaire was then administered to a pretest group of CFOs and managers, followed by the remaining four scenarios. This group was asked to record the time it took to complete the questionnaire and to comment on the questionnaire and the scenarios. The final version of the questionnaire was modified before mailing in light of the comments provided by this group.

**Table 1**

**Variables and Measures**

| Variable | Method of Measurement |
|---|---|
| Reasoned Action Model Variables | One scenario per subject, measured with semantic differential scales and Likert type scales |
| - Intention | Two questions using a Likert type scale. |
| - Belief that Behavior leads to certain outcomes | Four questions, one for each salient outcome, Likert type scale. |
| - Evaluation of each outcome | Four questions, one for each outcome, Likert type scale. |
| - Attitude toward performing the behavior | Four semantic differential measures |
| - Specific referents | Five salient referents, Likert type scale |
| - Motivation to comply | Five questions, one for each referent, Likert type scale |
| - Subjective Norms | Two questions, Likert type scale |
| Compensation Structure | Two questions |
| Company Size | Survey question, archival data |
| Self-Monitors | Snyder's (1975) self-monitoring scale |
| Need for Achievement | Atkinson and O'Connor's (1963) Achievement Risk Preference Scale |
| Level of Moral Reasoning | Defining Issues Test Scores (Rest, 1979) |
| Social Desirability | Marlowe-Crowne scale (1964) |

All of the Likert type scales and semantic differential scales were scored -3 to +3. The belief evaluation, subjective norms, normative belief, motivation to comply, and behavioral intention questions were phrased and scaled in the manner illustrated by Ajzen and Fishbein (1980). Examples are as follows:

Example Scenario

The revenues for the company have fallen due to the shrinkage in global demand of goods and services caused by the Asian economic crisis. Certain key financial ratios are

very close to debt covenant thresholds and the release of these figures would damage the company's position. It appears that the decline in revenues is temporary: the company is recouping losses by expanding its European markets. The projections for Europe look promising.

It occurs to you that prebilling shipments that will occur in the first three weeks of the next quarter can offset this large dip in revenues.

*Belief*. Prebilling the next quarter's shipments will increase the risk of a qualified audit report (Disagree/Agree).

*Evaluation*. Avoiding debt renegotiations is (Bad/Good).

*Referent*. If asked whether I should prebill the next quarter's shipments, most of the creditors would think (I should not/I should).

*Motivation to Comply with Referent*. I usually do what my family thinks I should do (Disagree/Agree).

*Subjective Norms*. If I prebill the next quarter's shipments, most people who are important to the company will (Disapprove/Approve).

*Attitude toward the Behavior*. Prebilling the next quarter's shipments to increase this quarter's revenue is (Bad/Good).

*Behavioral Intention*. I intend to prebill the next quarter's shipments (Disagree/Agree).

The reasoned action scenario was the second part of the questionnaire. There were five different scenarios: this was done to make the results generalizable to a broad range of fraudulent financial statement reporting and to avoid narrowing the conclusions of the study to one particular type of fraudulent reporting. Each survey subject received

only one scenario and all the questions concerning that scenario. Since the present research is an initial attempt to study the phenomenon of reporting fraudulently on financial statements it is desirable to make the conclusions as general as possible.

## Need for Achievement

Need for achievement was measured with a scale developed by Atkinson and O'Connor (1963). The scale consists of ten questions; each question has two responses from which the subject can choose. Each question is scored as one or zero depending on the response chosen by the subject; these values are then summed. The total score can therefore range from 0 to 10. Normally a subject who scores six or above is considered to be high in need for achievement, whereas a score of five or lower is considered to be low in need for achievement.

## Compensation

Two questions were used to measure compensation structure. The questions were: The percentage of my total personal assets represented by company assets is:_____%. The amount of my compensation that is based on the company's reported performance is:_____ %.

They were included in the demographics section of the questionnaire and ask the respondent to supply a percentage. These two questions were taken from the red flag literature for fraud.[4]

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[4] Loebbecke et al. (1989) describe the red flags associated with financial statement fraud; this paper was discussed in Section 1 of the present study.

## Company Size

Company size was measured from data collected from the demographics section of the survey instrument and from data collected externally. The subjects were asked to supply the average sales or revenue for their company. The additional size indices used to approximate the size of the company were total current assets, total current liabilities, total assets, total liabilities, and net sales. The data for these indices was taken from Compact Disclosure. All six of these measures were then used as indicators of company size.

## Social Desirability Scale

The Marlowe-Crowne Social Desirability Scale was developed as a means of measuring socially desirable responding. The original Marlowe-Crowne (1964) social-desirability scale consists of 33 true and false statements describing culturally approved behavior with a low probability of occurrence and is generally used in conjunction with other self-report measures to control for socially desirable response tendencies in personality research (Fischer and Fisk 1993). The statements are scored as 0 or 1 and the resulting values are summed; the total score thus ranges from 0 to 33. This study utilized the short, six-statement form validated by Fischer and Fisk (1993). The short version was used to decrease the total length of the survey in hopes of increasing the response rate. The short form has high internal consistency, as does the standard form, and high correlation to the standard form ($R = 0.958$). The scoring is similar to the original scale and the total score ranges from 0 to 6.

## Self-Monitoring Scale

Snyder's (1974) self-monitoring scale was used to measure self-monitoring. The scale consists of 25 true and false questions. Snyder validated the scale in his 1974 paper and found it to be internally consistent, temporally stable, and uncorrelated with self-report measures of related concepts.

## Moral Reasoning

The defining issues test or DIT (Rest, 1979) was used to measure level of moral reasoning. A short, three-scenario version was used instead of the six-scenario version. Three of the original six scenarios were used in this survey; the scenarios used were chosen to be the ones that most reflected issues in today's society. Scenarios that were left out dealt with issues that were not current (e.g. the Vietnam War) or no longer as socially unlikely as they were 20 years ago (e.g. male students with long hair). Rest has investigated the reliability of using any three scenarios instead of the full six-scenario version. Using the short version lowers the reliability of the instrument by 4 to 23 correlation points, but that was traded off for increased response rate in this study. The standard error for measurement also increases from 7.1 to 9.7 when the three story version is used. Rest used Cronbach's Alpha to measure internal consistency. The six story alpha was 0.77 whereas the three story alpha was 0.76. The DIT was the third section of the instrument.

The DIT P-score was used in this study and has been the most used index from the DIT for previous studies. This score is interpreted as the relative importance a subject

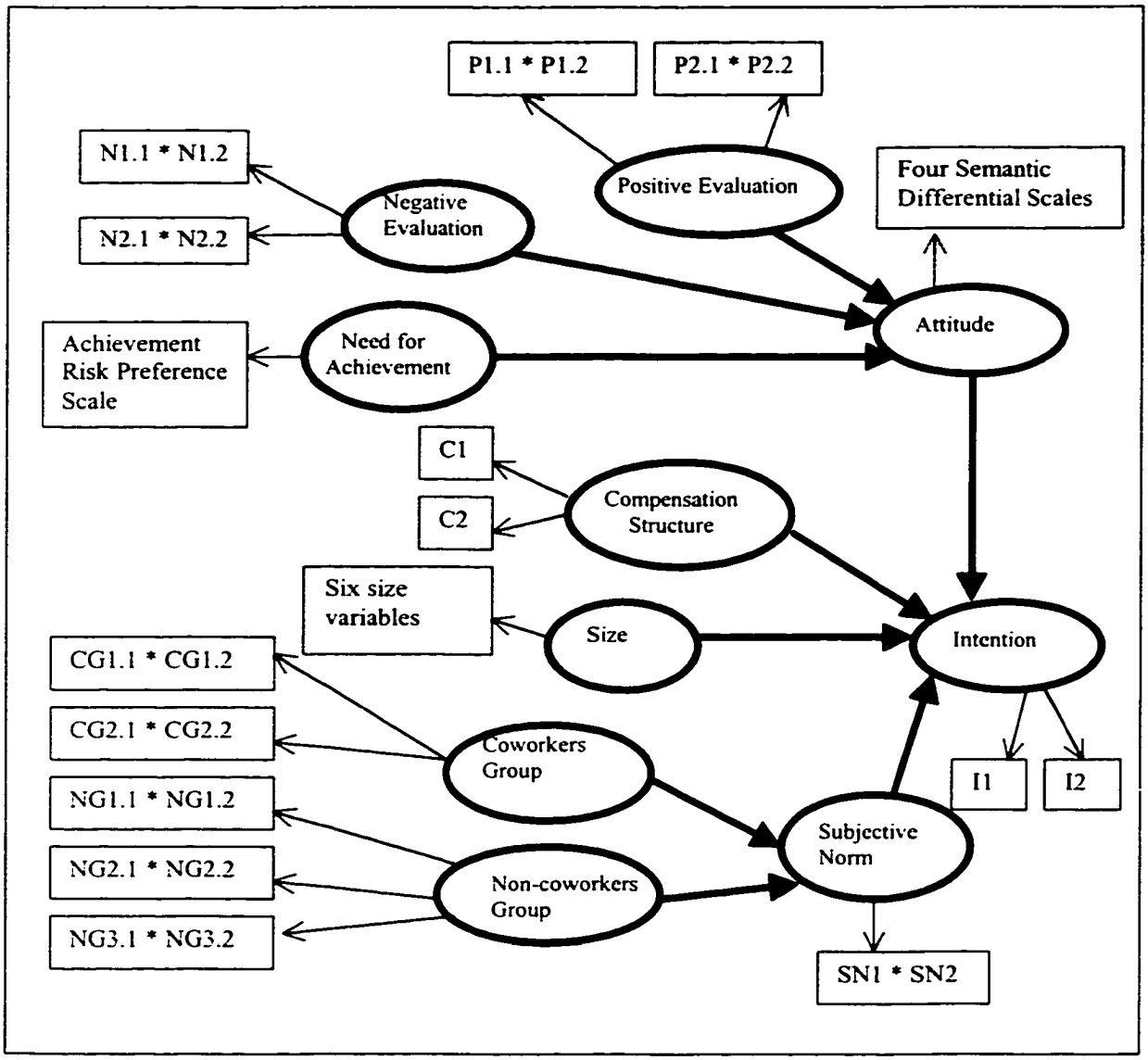
gives to principled moral considerations in making a decision about moral dilemmas (Rest 1979). Rest cautions against attempting to categorize individual subjects into Kohlberg's stages but, instead, recommends grouping subjects based on P-scores and suggests dividing at the population median (of 35). The groups are interpreted as those who make moral judgements primarily on the basis of principled moral considerations (P-scores greater than the median) and those who do not (P-scores less than the median). The median P-score for the sample in this study is 40; this is slightly higher than the population median of 35, but the population median was derived from the six scenario questionnaire whereas this study uses the three scenario version.

Figure 9 presents the structural and measurement model for the present study. The measured variables are expected to capture most of the latent factor they are intended to measure. Thus the signs for all of the measurement paths[5] in Figure 9 are expected to be positive. For the structural model, the paths from need for achievement to attitude, coworkers group to subjective norms, non-coworkers group to subjective norms, and subjective norms to intention are expected to be negative. All other structural paths are expected to be positive. This was discussed in detail in the hypotheses section, Section 2.4.1.

[5] Measurement paths link each factor to each of its measures and are drawn in non-bold lines in Figure 9. Structural paths are the causal links between the factors and are drawn with bold lines in the diagram.

**Figure 9**

**The Model with Constructs and Measures**




## Survey Format

The first section of the survey consisted of the questions used to measure self-monitoring, social desirability, and need for achievement. The instruments for self-monitoring and social desirability were combined and the order of the questions was

randomized. These instruments were combined because they use the same format for presentation and answering the questions. These 31 questions (25 for self-monitoring and six for social desirability) were then followed by the ten questions that measured need for achievement. This scale was not combined with the other two scales because its format is different and separating it streamlined the survey and made it easier for the subjects to answer the questionnaire. The second section consisted of the reasoned action scenario and the questions pertaining to it. The third section consisted of the three defining issues test scenarios. The fourth section contained demographic questions such as age, sex, education, etc. and questions about the respondents compensation structure and company size (Appendix A).

## Sample Selection

Compact Disclosure was used for the sample data and selection. Compact Disclosure is a monthly database available in CD ROM format; it contains data on all publicly traded firms listed in the United States. This study used the most recent data available, the Compact Disclosure data as of July 1998. The data contained quarterly and annual reports for each firm. This study included only domestic firms and excluded all foreign firms. A random sample of 2000 was drawn from the population of all domestic publicly traded firms. Compact Disclosure also provided the mailing address of the firm, and in most instances supplied the names of the executives of the firm. When the names were available the surveys were addressed to the chief financial officer by name. Otherwise they were addressed " Chief Financial Officer". In some instances

the firm did not identify a chief financial officer among the officers; in such a circumstance the survey was addressed to the treasurer or the chief executive officer.

The survey was administered by mail. The mailing included a cover letter, the survey instrument and a self-addressed stamped return envelope. A reminder postcard was mailed two weeks after the survey and followed up the initial mailing. All of the survey materials are included in Appendix A.

# 4. RELIABILITY AND VALIDITY

Reliability and validity of the achievement risk preference scale (Atkinson and O,Connor 1963), the Marlowe-Crowne social desirability scale (Fischer and Fick 1993), Snyder's self-monitoring scale (Snyder 1974), and the defining issues test (Rest 1986) have all been extensively tested and we can be fairly confident of their applicability across time, place and settings. The fraudulent reporting scenarios were tested with a small group of CFOs and managers who individually read the scenarios and commented subjectively on their realism and the severity of the fraud described in each scenario. All judges agreed that all the scenarios used in this study had high realism.

Certain tradeoffs in data collection were made in order to conform to the data collection methods of previous studies. The use of Likert type scales produces data that is categorical and not continuous in nature. The form of analysis used in this study is structural equation modeling. This form of analysis is best suited for use with continuous data and may cause biased or unreliable estimates when categorical data is used. The present consensus on Likert type scales is that it is a coarse discretization of an underlying continuous distribution and can be treated as continuous if there are seven or more categories within each scale (Bollen 1989). The data collected in this study utilize seven point Likert type scales and most of these are multiplied together to create 13 point scales. The original scales ranged from –3 to +3; the multiplied scales ranged from –9 to +9. The data in this study can be treated as if they were continuous (see the extended discussion in Section 5.3 below) and are accordingly analyzed as such in the next section.

# 5. RESULTS AND ANALYSIS

## 5.1 Demographics

139 of the 2000 subjects responded to the survey (7 percent response rate). Of these 139 responses, 17 are incomplete. The data is analyzed with the program EQS 5.7b (Bentler 1988). All responses are included in the data set; EQS skips any case with missing data and reports the number of cases skipped as a result of missing data. Table 2 summarizes the response rate and demographics overall, by response time (early versus late), and by scenario. The 114 early responses were returned before mailing the reminder postcards, the 25 late responses were returned after the mailing of the postcards. The demographic variables consist of personal questions such as education level, age, sex, and managerial experience of the respondent as well as questions relating to the firm. Table 3 presents the analysis of variance results for the demographic variables by scenario and the nonparametric comparison of means across time. Nonparametric analysis is performed for time because the two subsets are very unbalanced in number. The demographic variables have only one significant difference by either time or scenario: the response to the question measuring years of managerial experience is significant by scenario. Post hoc Tukey comparisons of all pairs reveals no single scenario accounts for the difference.

Brief, Dukerich, Brown and Brett (1988) investigated fraudulent decision behavior among top management using a different theory but a similar type of mail survey. The response rate in this study is much lower than the 48% response rate attained by Brief et al. (1988). This can partly be attributed to the length of the questionnaire. The length of

Brief et al.'s questionnaire was approximately four pages, whereas the length of the present questionnaire is 11 pages. Brief at al.'s questionnaire contained seven short scenarios each followed by one multiple-choice question. The present study contains one fraud scenario and three moral reasoning scenarios, all of which had numerous questions. The participants in the pilot test reported a time of 40 minutes for completion of the questionnaire. In addition, the sensitive nature of the questionnaire for both studies may have discouraged some subjects from returning the survey. Many of the questions relating to the fraud scenario were quite revealing about intentions to commit fraud.

Non-response bias creates an uncertainty for this study, as is the case for most survey research. The response rate of 7% for this study was lower than the 20% average for mail surveys in general. Again, the length of the survey may be the primary reason for the low response rate. Nevertheless, the question of whether the subjects who did not respond to the survey are in some way different from the subjects who did respond is a crucial point that needs to be addressed. The non-respondents and respondents were compared using two items of non-financial data: number of employees and a dummy variable for Big 5 auditor, and a set of financial data items that measure company size: total assets, total liabilities, total current assets, total current liabilities, net income and net sales. The means for the non-response group were compared to those of the response group, and significance was tested with the F-test, Wilcox-Mann-Whitney test and Kolmogorov-Smirnov test. The means for all variables were not significantly different except for the single case of net income which was significantly different at $p<0.038$ level for the Kolmogorov-Smirnov test alone. This indicates that the response

group and non-response group are not significantly different, at least for the firm-level variables that could be measured. These variables do not capture any individual characteristics of the respondents or non-respondents; individual variables could provide a more meaningful comparison between the two groups. Unfortunately comparative data for individual characteristics were not available for the non-response group; individual data for the response group were gathered via the survey instrument.

Given the data available for comparison between the response and non-response group, there is no evidence of non-response bias. The low response rate was traded off against the opportunity to collect data from high-level managers; consequently, the data that was collected is most relevant to the issue under study.

## Table 2

### Summary of Demographic Responses

| Description | Overall | Time | | Scenario | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Early | Late | 1 | 2 | 3 | 4 | 5 |
| Type of Business | | | | | | | | |
| Manufacturing | 34.5% | 36.0% | 28.0% | 33.3% | 27.3% | 60.0% | 8.3% | 40.9% |
| Retail | 3.6% | 3.5% | 4.0% | 0.0% | 3.0% | 0.0% | 8.3% | 9.1% |
| Banking | 21.6% | 22.8% | 16.0% | 16.7% | 39.4% | 6.7% | 29.2% | 13.6% |
| Other Service | 22.3% | 23.7% | 16.0% | 20.0% | 21.2% | 16.7% | 41.7% | 13.6% |
| Other | 18.0% | 14.0% | 36.0% | 30.0% | 9.1% | 16.7% | 12.5% | 22.7% |
| Average of years worked in this firm | 9.5 | 10 | 9.4 | 9.4 | 8.7 | 9.9 | 10 | 9.7 |
| Education | | | | | | | | |
| No college | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% | 0.0% |
| Some college | 2.2% | 2.6% | 0.0% | 0.0% | 3.0% | 6.7% | 0.0% | 0.0% |
| Professional degree | 2.2% | 2.6% | 0.0% | 3.3% | 6.1% | 0.0% | 0.0% | 0.0% |
| Bachelors degree | 55.4% | 53.5% | 64.0% | 50.0% | 57.6% | 53.3% | 58.3% | 59.1% |
| Masters degree | 33.8% | 34.2% | 32.0% | 40.0% | 30.3% | 33.3% | 29.2% | 36.4% |
| Post graduate degree | 6.5% | 7.0% | 4.0% | 6.7% | 3.0% | 6.7% | 12.5% | 4.5% |
| Sex | | | | | | | | |
| Male | 91.3% | 91.2% | 92.0% | 90.0% | 90.9% | 90.0% | 91.7% | 90.9% |
| Female | 8.6% | 8.8% | 8.0% | 6.7% | 9.1% | 10.0% | 8.3% | 9.1% |
| Average Years in Present Position | 5.8 | 5.4 | 6 | 5.8 | 6.4 | 6 | 5.2 | 5.7 |
| Age | | | | | | | | |
| under 30 | 1.4% | 0.9% | 4.0% | 3.3% | 0.0% | 0.0% | 0.0% | 4.5% |
| 30 to 39 | 19.4% | 18.4% | 24.0% | 16.7% | 21.2% | 23.3% | 16.7% | 18.2% |
| 40 to 49 | 41.7% | 44.7% | 28.0% | 56.7% | 42.4% | 23.3% | 50.0% | 36.4% |
| 50 to 59 | 30.2% | 28.9% | 36.0% | 23.3% | 30.3% | 40.0% | 25.0% | 31.8% |
| 60 and over | 7.2% | 7.0% | 8.0% | 0.0% | 6.1% | 13.3% | 8.3% | 9.1% |

**Table 2 (continued)**

| Description | Overall | Time | | Scenario | | | | |
|---|---|---|---|---|---|---|---|---|
| | | Early | Late | 1 | 2 | 3 | 4 | 5 |
| Big 5 Audit | | | | | | | | |
| Yes | 70.5% | 68.4% | 80.0% | 76.7% | 72.7% | 63.3% | 70.8% | 68.2% |
| No | 29.5% | 31.6% | 20.0% | 23.3% | 27.3% | 36.7% | 29.2% | 31.8% |
| Financial reporting decision | | | | | | | | |
| Yes - alone | 78.4% | 78.9% | 76.0% | 80.0% | 78.8% | 86.7% | 66.7% | 77.3% |
| Yes - in a group | 20.9% | 21.1% | 20.0% | 16.7% | 21.2% | 13.3% | 33.3% | 22.7% |
| No | 0.7% | 0.0% | 4.0% | 3.3% | 0.0% | 0.0% | 0.0% | 0.0% |
| Past Intentional Misstatement | | | | | | | | |
| Yes | 7.2% | 7.9% | 4.0% | 13.3% | 0.0% | 3.3% | 8.3% | 13.6% |
| No | 92.8% | 92.1% | 96.0% | 86.7% | 100.0% | 96.7% | 91.7% | 86.4% |
| Average years of managerial experience | 18.5 | 18.9 | 18.5 | 15.8 | 17.4 | 22 | 18.5 | 19.4 |
| Compensation | | | | | | | | |
| less than $100,00 | 19.9% | 19.3% | 20.8% | 20.7% | 21.9% | 20.7% | 20.8% | 13.6% |
| $100,000 to $299,999 | 65.4% | 65.2% | 66.7% | 72.4% | 62.5% | 69.0% | 62.5% | 59.1% |
| $300,000 to $599,999 | 9.6% | 9.8% | 8.3% | 6.9% | 12.5% | 3.4% | 12.5% | 13.6% |
| $600,000 to $999,999 | 2.9% | 2.7% | 4.2% | 0.0% | 0.0% | 3.4% | 4.2% | 9.1% |
| $1,000,000 and above | 2.2% | 2.7% | 0.0% | 0.0% | 3.1% | 3.4% | 0.0% | 4.5% |
| Internal Audit Department | | | | | | | | |
| Yes | 39.1% | 36.8% | 50.0% | 40.0% | 42.4% | 20.7% | 54.2% | 40.9% |
| No | 60.9% | 63.2% | 50.0% | 60.0% | 57.6% | 79.3% | 45.8% | 59.1% |
| Number of Responses | 139 | 114 | 25 | 30 | 33 | 30 | 24 | 22 |

**Table 3**

**Comparison of Means of Demographic Variables by Time and Scenario**

| Description | Significance by Time[a] | Significance by Scenario[b] |
|---|---|---|
| Type of Business | 0.105 | 0.075 |
| Years worked in this firm | 0.335 | 0.975 |
| Education | 0.810 | 0.516 |
| Sex | 0.892 | 0.996 |
| Years in present position | 0.201 | 0.957 |
| Age | 0.998 | 0.473 |
| Big 5 Audit | 0.252 | 0.846 |
| Financial reporting decision | 0.678 | 0.587 |
| Past Intentional Misstatement | 0.496 | 0.178 |
| Years of managerial experience | 0.987 | **0.032**[c] |
| Compensation | 0.763 | 0.365 |
| Internal audit department | 0.232 | 0.160 |

a. Wilcox-Mann-Whitney test.
b. F statistic is used to test for significance by scenario.
c. Post hoc Tukey comparisons of all pairs reveals no single scenario accounts for the significance of this variable.

## 5.2 Combining Time and Scenario

All non-demographic variables were analyzed for significant differences by time (early versus late response) and by scenario. The Wilcox-Mann-Whitney test was used to analyze the variables by time because the two subsets are very unbalanced in size. Analysis of variance and the F-test were used to analyze the differences by scenario. The results are presented in Table 4. For the analysis by time[6] SN1, SN2, and their product, SN1xSN2, are significant. The variables CG1.1, CG2.1, NG1.2 and NG2.2 are also significant but none of their products are significant. Given that only the products are used in the data analysis and only one product, SN1xSN2, out of 22 variables is

[6] See Appendix C for a list of variable names and definitions.

significant at the $p<0.05$ level, the early and late responses are combined and treated as one sample.

**Table 4**

**Comparison of Means for Measured Variables by Time[a] and by Scenario[b]**

| Variable | Significance by Time | Significance by Scenario | Variable | Significance by Time | Significance by Scenario |
|---|---|---|---|---|---|
| I1 | 0.489 | 0.312 | N2.2 | 0.206 | **0.000** |
| I2 | 0.345 | 0.639 | N2 | 0.556 | **0.000** |
| A1 | 0.129 | 0.398 | CG1.1 | **0.003** | 0.056 |
| A2 | 0.191 | 0.667 | CG1.2 | 0.249 | 0.222 |
| A3 | 0.462 | 0.691 | CG1 | 0.781 | 0.256 |
| A4 | 0.080 | 0.529 | CG2.1 | **0.005** | 0.090 |
| SN1 | **0.012**[c] | 0.063 | CG2.2 | 0.332 | 0.422 |
| SN2 | **0.026** | 0.410 | CG2 | 0.268 | 0.121 |
| SN1xSN2 | **0.030** | 0.881 | NG1.1 | 0.351 | 0.410 |
| C1 | 0.853 | 0.909 | NG1.2 | **0.039** | 0.215 |
| C2 | 0.450 | 0.330 | NG1 | 0.670 | 0.220 |
| P1.1 | 0.482 | **0.000** | NG2.1 | **0.010** | 0.075 |
| P1.2 | 0.452 | **0.000** | NG2.2 | **0.039** | **0.042** |
| P1 | 0.596 | **0.000** | NG2 | 0.147 | **0.006** |
| P2.1 | 0.287 | **0.000** | NG3.1 | 0.438 | 0.105 |
| P2.2 | 0.424 | **0.000** | NG3.2 | 0.292 | 0.250 |
| P2 | 0.536 | **0.000** | NG3 | 0.546 | 0.421 |
| N1.1 | 0.991 | **0.006** | ACH | 0.529 | 0.316 |
| N1.2 | 0.390 | 0.071 | SM | 0.982 | **0.003** |
| N1 | 0.763 | **0.007** | DIT | 0.482 | 0.902 |
| N2.1 | 0.728 | **0.004** | SDS | 0.312 | 0.928 |

a. Wilcox-Mann-Whitney test is used to test for significance by time.
b. The F-test is used to test for significance by scenario.
c. The numbers in bold are significant at the $p<0.05$ level.

The results by scenario indicate the following variables are significant at the $p<0.05$ level: P1.1, P1.2, P1, P2.1, P2.2, P2, N1.1, N1, N2.1, N2.2, N2, NG2.2, NG2, and Self-Monitoring (SM). Results of post hoc Tukey comparisons of all pairs of scenarios for

each significant variable are presented in Table 5. No particular scenario drives the differences; all scenarios effect one or more variables. Given the fairly large number of measured variables that are not significant and the fact that no single scenario is driving the results for the variables that are significant, the data is combined and treated as one sample. The present study is concerned only with general model fit; therefore all scenarios are combined for analysis purposes. Separate models are not fitted for each scenario because this study attempts to generalize results to fraudulent financial statement reporting in general rather than specific types of fraudulent reporting.

**Table 5**

**Results of Post Hoc Tukey Comparisons**

| Scenario | Variables it Causes Differences in |
|---|---|
| 1 | P1, N2.1, NG2 |
| 2 | P1.2, P2.2, N2.2 |
| 3 | P1.2, P2, SM |
| 4 | P1.1 |
| 5 | P1, P2.1, P2.2, N1.1, N2 |

## 5.3 Descriptive Statistics

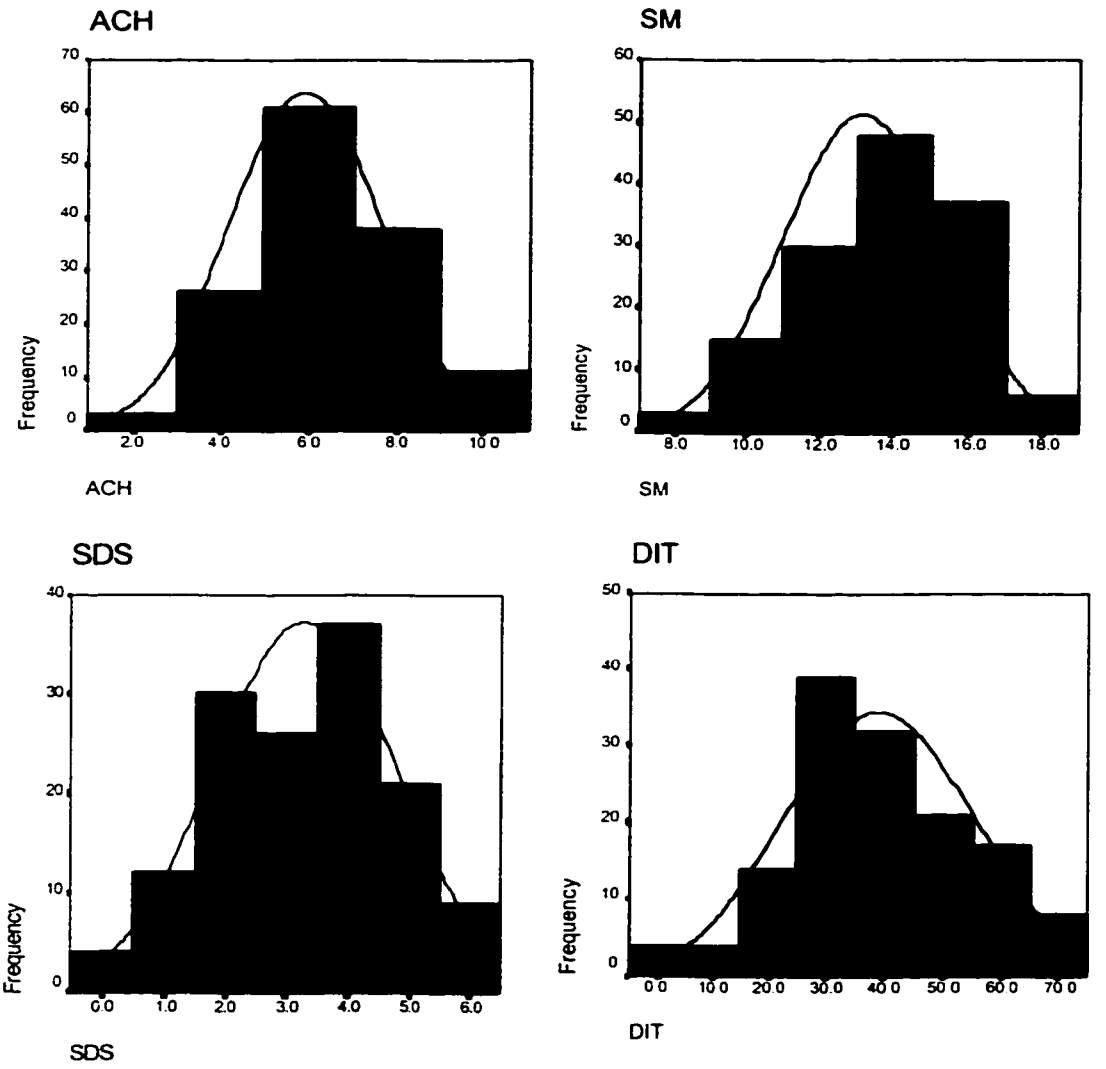
A summary of descriptive statistics for the defining issues test (DIT), social desirability (SDS), self-monitoring (SM), and need for achievement (ACH) scores is presented in Table 6. Using the Kolmogorov-Smirnov test to test for normality suggests that each variable is significantly nonnormal. But this normality test is over conservative with large sample sizes, such as the sample size of 139 that is available in

this study, because the Kolmogorov-Smirnov test is based on the largest absolute difference between the observed and the expected cumulative distributions. The histogram, with a superimposed normal curve, is presented for each variable in Table 6. Based on these it is the present author's estimate that the variables appear to have an acceptably close approximation to normality. Structural equation modeling is used to analyze the data. This form of analysis provides robust fit statistics that adjusts for nonnormal data (West et al. 1995).

**Table 6**

**Descriptive Statistics for DIT, SM, SDS and nACH Scores**

| Variable | N | Mean | Median | Standard Deviation |
|---|---|---|---|---|
| Defining Issues Test | 139 | 38.94 | 40 | 16.06 |
| Self-Monitoring Scale | 139 | 13.1583 | 13 | 2.1578 |
| Social Desirability Scale | 139 | 3.2878 | 3 | 1.4854 |
| Need for Achievement Scale | 139 | 5.9065 | 6 | 1.7358 |



The measured variables for the reasoned action model were generated by performing the appropriate multiplications. For example, each belief was multiplied by its associated evaluation to create belief evaluation products and each referent group was multiplied by its associated motivation to comply to create the group norms products. (See Figure 9 and Appendix C for an explanation of these multiplications). All structural equation models were analyzed using EQS 5.7b (Bentler, 1998). Structural equation modeling is a confirmatory statistical analysis technique. Existing theory suggests a causal relationship among a set of unobserved constructs and between the unobserved constructs and observed (measured) variables. This hypothesized set of relationships is statistically tested in a simultaneous analysis of the entire system of constructs and variables to determine the extent to which it is consistent with the data. If the hypothesized model fits the data adequately, then the model supports the theorized relationships among the constructs and variables. If the hypothesized model does not fit the data adequately then the hypothesized relationships are not supported.

The variables were checked for skewness, both univariate and multivariate kurtosis, and outliers. The following variables exhibit univariate kurtosis[7] greater than 2: I1 (12.353), I2 (5.316), A1 (9.163), and A2 (3.177). The histograms for these variables are presented in Table 7. The distributions for these variables are skewed to the left and are centered on zero or a negative number. The data is not transformed for two, unrelated reasons; first of all, transforming the data makes it much more difficult to interpret the

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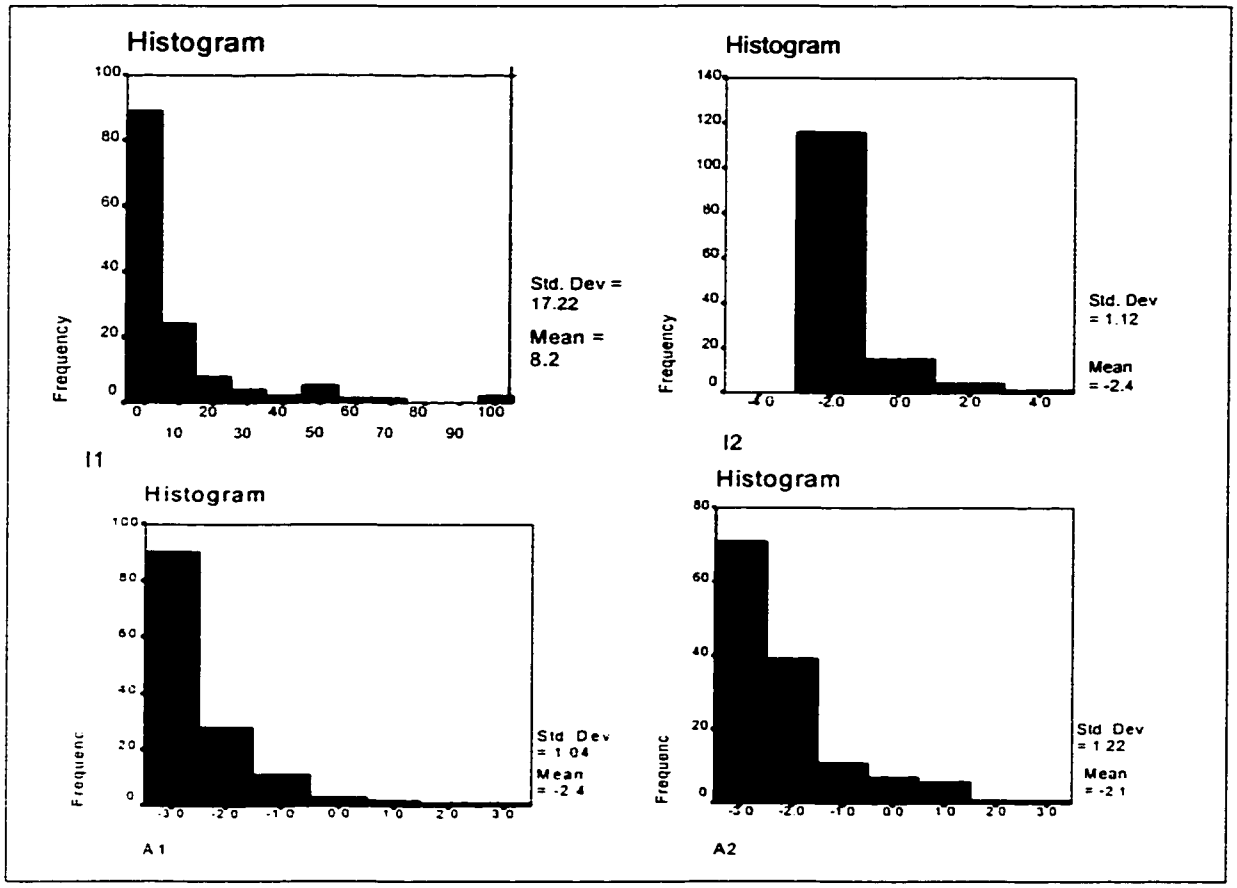
[7] Non-homogenous kurtosis estimates are indications of non-normality (for multivariate normal distributions all the marginal univariate kurtoses should be similar in size, so if a few are different, it suggests a problem). Deviations in univariate kurtosis from 0 are indications of non-normality, although Byrne (p. 79) considers aberrant values less than 2 are not excessively kurtotic.

results of the structural equation analysis. Secondly, no satisfactory transformation could be obtained for data centered on zero or on a negative number, as is the case with these variables. Consequently, the models are analyzed with robust fit statistics that adjust for nonnormal data. The sample size for this study is relatively small, 139 cases, for analysis with structural equation modeling. "For smaller sample sizes, we recommend normal theory ML or GLS estimation when the distributions are not substantially nonnormal, and the Satorra-Bentler statistic as the distributions begin to depart from normality (e.g., skewness=2, kurtosis=7). Particularly for smaller sample sizes we also recommend inspection of the CFI or Bollen's IFI, which have only a small downward bias, even under severely nonnormal conditions." (West et al. 1995).

**Table 7**

**Histograms for Variables I1, I2, A1, and A2**




As mentioned earlier, in Section 4, the use of 7-point Likert type scales approximates underlying continuous distributions. This can cause excessive kurtosis and skewness that adversely affect the chi-square and z-tests of statistical inference from maximum likelihood estimation; the degree of skewness and kurtosis is more relevant than the number of categories. In addition, calculating Pearson correlation estimates from the categorical data underestimates the correlation in the underlying distributions. The use of categorical variables can result in better estimates if polyserial

and polychoric correlations are estimated in conjunction with arbitrary distribution function estimators. "The attenuation is inversely related to the number of categories, being greatest with two or three categories and much less with seven or more." (Bollen, 1989). The Likert type scales used in this study have at least 7 and often 13 point scales. "With that many categories, they can probably be treated as continuous using a robust estimator if they are not normal." (Personal communication from Linda Muthen[8], Jan. 27, 2000).

Thus Pearson correlation estimates are used for the categorical variables; however the Satorra-Bentler scaled chi-square statistic and the robust comparative fit index are used to evaluate the models; both of these indices make adjustments for nonnormal data. According to simulation studies, likely effects of nonnormal data include overestimated chi-square statistics, underestimated fit indexes, and underestimated standard errors of parameter estimates (West et. al 1995). The Satorra-Bentler scaled chi-square and its associated robust standard errors explicitly correct for these problems using a scaling factor that is a function of multivariate kurtosis (Bentler 1995). The normalized estimate of Mardia's coefficient of multivariate kurtosis is distributed, in very large samples from a multivariate normal population, as a unit normal variable so that large values indicate significant positive kurtosis and large negative values indicate significant negative kurtosis (see Bentler 1995, p.85). Mardia's coefficient is presented in the appropriate tables for all the models analyzed in this study. Since the sample size

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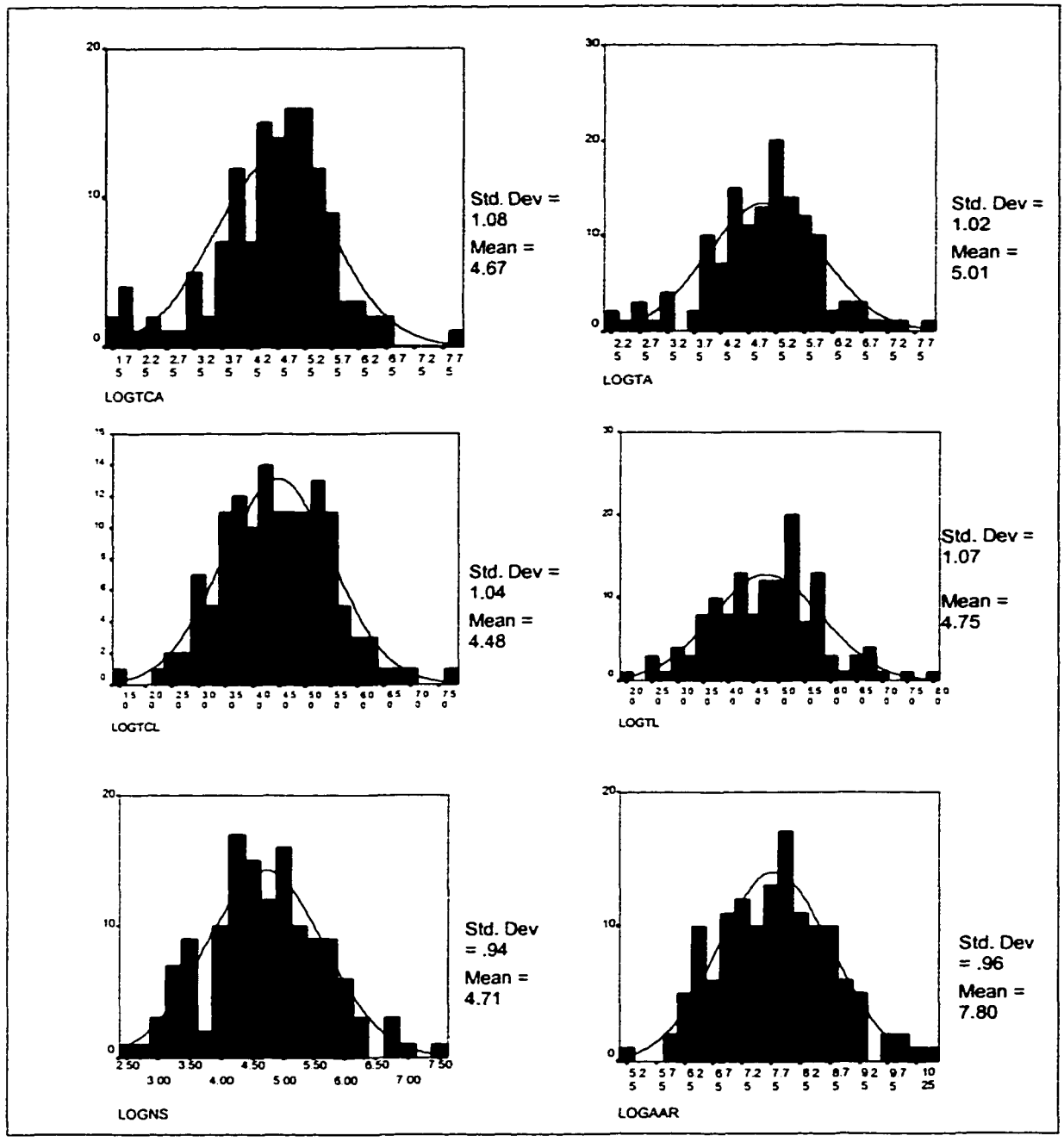
[8] Bengt and Linda Muthen are the authors of Mplus, a statistical analysis software package, and numerous articles. They are considered experts in the field of structural equation modeling using categorical variables.

for this study is considered small by structural equation modeling standards, Mardia's coefficient has less statistical value; however large numbers are clearly indicative of significant kurtosis within the data. The EQS program also lists the top five cases that contribute to multivariate kurtosis. Deleting these cases did not significantly change the parameter estimates or the model fit indices; consequently no cases were omitted from the reported analyses.

Size was measured with six variables. One of these measures was included in the survey instrument. The question asked the respondents what their company's average yearly sales or revenues from operations were. The other five measures were total current assets, total assets, total current liabilities, total liabilities and net sales. All of these measures were taken from the July 1998 Compact Disclosure database. The untransformed variables exhibited nonnormal distributions. As is common practice in the accounting literature, the size variables were scaled by taking logs. After this transformation the distributions more closely approximated normal distributions. The distributions for the size variables are presented in Table 8.

## Table 8

### Size Variables



## 5.4 Results for the Reasoned Action Model

The structural equation modeling results are unfurled as follows. First the results of the base model are presented (Burnkrant & Page model, Figure 5). This model replicates an existing reasoned action model in the present setting of fraudulently reporting on financial statements. New factors are then introduced into the model one at a time. Need for achievement is added first because this variable affects attitude and helps in the understanding of that factor before other factors affecting intention are added. Then Compensation Structure, an additional internal factor, is added. Next the external (to the individual) factor of Size is included, followed by the inclusion of a social desirability factor to investigate the effect of socially desirable response bias. Then the data is split into subgroups to test the hypotheses for self-monitoring and moral reasoning. Analysis of invariance of factorial structure, which tests if certain structural paths are equal across groups, is used to test hypotheses H10 and H14. Analysis of invariance of latent means structure, which tests whether the means of particular constructs are different across groups, is used to test H13. In all cases, predicted paths are left in the models even if they are not significant. This is consistent with the method of presentation followed in most of the studies discussed in the theory section of this paper. All of the relevant EQS programs are included in Appendix B.

Where one structural equation model is nested within another, any improvement in fit can be tested using a chi-square test. Beyond this, there is no entirely objective way to determine when a given model fits well, or when another model fits better or worse. In this context, a number of researchers have developed fit indexes of various kinds; in general, researchers do not always agree on the best way to assess model fit (Bollen &

Long 1993 p. 6). A review of various commonly encountered fit indexes is provided by Mueller (1996), and a more complete survey is given by Tanaka (1993). This dissertation follows advice given by Bollen & Long (pp. 6-8) and re-iterated by Mueller (1996), to formulate and analyze several alternative models, to rely on multiple measures of fit representing different families of measures, and to use measures of fit that take into account the degrees of freedom and depend as little as possible on sample size. For each model considered in this study, a complete set of all the fit indexes available within EQS is provided in the accompanying Tables, to enable readers to form their own views as to model fit. The discussion itself focuses on three: the chi-square (which although not always useful is widely understood), the Comparative Fit Index (CFI) developed by Bentler, the designer of EQS, according to whom this should now be the index of choice (Bentler 1990), and the standardized root mean squared residual (SRMR), which unlike the older RMSEA and RMR does not depend on the scale of the variables. Wherever possible, robust chi-square and CFI are used as the best form of protection against the possible effects of nonnormality in the data (Byrne 1994, Hoyle & Panter 1995, West et al. 1995, p. 74).

For non-nested models, there is no statistical test to determine, using any of the indexes provided, whether the improvement in fit described by a higher index value is significant; nor is there any statistical method for determining when the fit of a particular model is sufficiently good. A number of commonly used fit indexes are normed (i.e., their values are in the range 0 - 1), including CFI. This study follows Byrne (1994, p.55) and many others (e.g., Hoyle 1993, p. 7, Mueller 1996, p.90) in regarding values of normed indexes over 0.90 as indicating acceptable fit. Although

other researchers have criticized the use of this value in all circumstances (Hu & Bentler 1995, p. 95) no alternative proposal has received empirical or reasoned support (Hoyle & Panter, 1995, p. 164). More recently, Hu and Bentler (1999, p. 27) have concluded that practitioners should use a cutoff value close to 0.95 for CFI in combination with a cutoff value close to 0.09 for SRMR to evaluate model fit, although this advice is too recent for there to be wide experience of its use in practice. The characterization of acceptable models as reasonable, moderately good fit, or good fit (for CFI values 0.95 or above) in this dissertation represent the author's own view, but details of multiple fit indices are always provided so that readers can form independent opinions.

The evaluation of model fit should include consideration not just of overall measures, but also of the fit of individual parameters (Mueller, p. 92). The Tables accompanying the various models in this dissertation show all the estimated paths and correlations, together with their (robust) standard errors and standardized values, to enable readers to assess their significance. The discussion itself focuses on the parameters that specifically address the hypotheses of the study.

Evaluation of model fit should also include analysis of residuals and, where possible, comparisons to prior research (Mueller 1998).

### 5.4.1 Base Model

The EQS program analyzed 136 cases; three cases were skipped because of incomplete data. First, the Burnkrant and Page model as shown in Figure 5 was examined (Model 1). Model 1 produced a Satorra-Bentler scaled chi-square = 117.4496 with 97 degrees of freedom, a robust CFI = 0.942 and a standardized root mean squared

error (SRMR) of 0.089[9]. These fit statistics are robust estimators: they adjust for nonnormal data. The model with the standardized solution is presented in Figure 10 and the full set of fit indices and parameter estimates is presented in Table 9.

---

[9] Definitions and formulae for fit statistics:

**CFI** – the comparative fit index provides a measure of complete covariation in the data. The formula for CFI is $\left| \frac{(\chi^2 \text{null model} - \text{df null model}) - (\chi^2 \text{hypothesized model} - \text{df hypothesized model})}{(\chi^2 \text{null model} - \text{df null model})} \right|$

This formula can take a value from 0 to 1.

**Satorra-Bentler scaled chi-square statistic** – this statistic scales the ML chi-square statistic by dividing it by a factor *k* that takes into account, among other elements, the amount of multivariate kurtosis in the data. As multivariate kurtosis increases, chi-square is adjusted downwards.

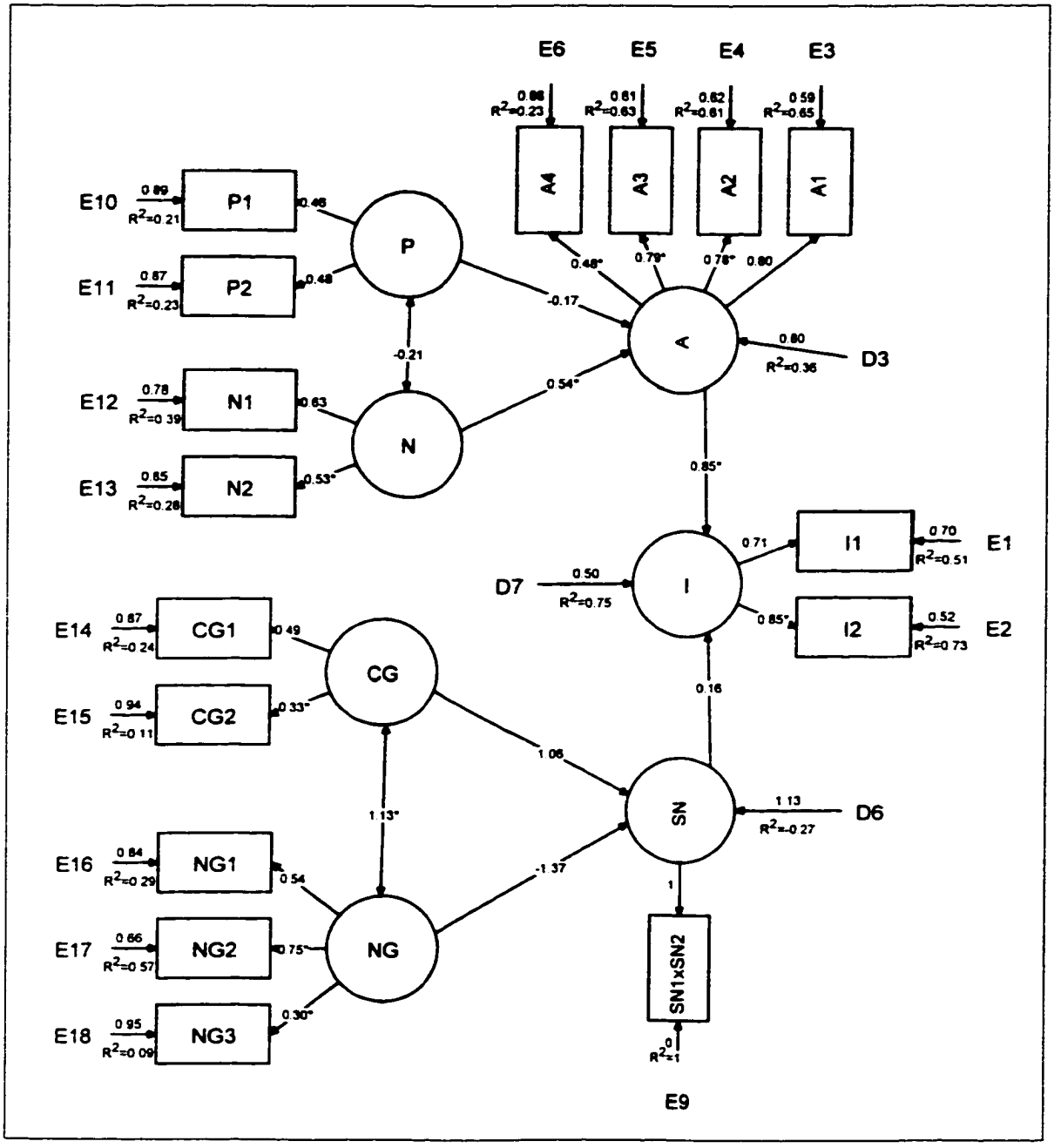
**RCFI** – robust comparative fit index uses the Satorra-Bentler scaled chi-square statistic to compute CFI instead of the ML chi-square statistic used in the CFI formula. Generally, a fit of 0.95 is considered good (Hu and Bentler 1999) and 0.9 is considered an acceptable fit (Byrne 1994). For the purposes of this study the following interpretation has been adopted for the RCFI:

| | |
|---|---|
| >0.99 – overfit | 0.85 – reasonable fit |
| 0.98 – excellent fit | 0.80 – weak fit |
| 0.95 – good fit | 0.70 – poor fit |
| 0.90 – moderately good fit | <0.70 – did not fit the data. |

**SRMR** – the standardized root mean square residual uses the square root of the standardized mean squared differences between matrix elements in the S and Σ matrices. It is used to compare the fit of two different models with the same data. According to Hu and Bentler (1999) when a single index is used to assess the model fit, that of 0.08 SRMR (or 0.06 for RMSEA) is recommended. If both the CFI and SRMR are used to evaluate model fit then cut-off values close to 0.95 for CFI and 0.09 for SRMR are recommended.

**Figure 10**

**Burnkrant and Page Model**



## Table 9

### Model 1: Burnkrant and Page

### Fit Statistics and Parameter Estimates

| Fit Indices | Value | Parameter | Estimate | Robust Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.785 | P → A | -0.061 | 0.064 | -0.165 |
| Bentler-Bonnett Nonnormed Fit Index | 0.913 | **N → A*** ** | **0.132** | 0.051 | **0.541** |
| Comparative Fit Index (CFI) | 0.929 | CG → SN | 1.865 | 4.908 | 1.063 |
| Robust Comparative Fit Index (CFI) | 0.942 | NG → SN | -1.808 | 3.945 | -1.369 |
| Bollen (IFI) Fit Index | 0.932 | **A → I*** ** | **12.306** | 2.431 | **0.851** |
| McDonald (MFI) Fit Index | 0.879 | SN → I | 0.584 | 0.423 | 0.163 |
| LISREL GFI Fit Index | 0.898 | P ↔ N | -1.658 | 1.927 | -0.214 |
| LISREL AGFI Fit Index | 0.856 | **CG ↔ NG*** ** | **5.615** | 1.793 | **1.126** |
| Root Mean Sq. Residual (RMR) | 1.976 | | | | |
| Standardized RMR | 0.081 | | | | |
| Root Mean Sq. Error of App. (RMSEA) | 0.052 | | | | |
| Chi-square | 131.965 | | | | |
| Satorra-Bentler scaled chi-square | 117.450 | *Normalized Estimate of Mardia's* | | | |
| Model degrees of freedom | 97 | *Coefficient for Multivariate Kurtosis* | | | *25.000* |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

The estimated correlation between CG and NG for this model is 1.13. This is an indication that the structural model is incorrect for this segment of the model. A model where the two CG*i* and three NG*i* measured variables crossload on the CG and NG factors was attempted but resulted in unreliable maximum likelihood statistics as a consequence of several parameters that were constrained at the lower bound and linearly dependent upon other parameters. To investigate possible causes of the estimated correlation a factor analysis was performed using SPSS with the five measured variables. The principal axis method was used to extract factors with eigenvalues greater than one. All five variables formed one common factor. Thus in EQS the two factors were combined into one factor, G, with five indicator variables (Model 2). The model with the standardized solution is presented in Figure 11 and the

full set of fit statistics and parameter estimates for Model 2 is presented in Table 10. The Satorra-Bentler scaled chi-square is 119.68 with 99 degrees of freedom, the robust CFI is 0.942, and the SRMR is 0.082 for Model 2. Thus the modified version of the B&P model is a moderately good fit for this data.

The fit statistics for Model 2 can also be compared with the fit statistics for the B&P model (Figure 5). The fit statistics reported by Burnkrant and Page (1988) for their model is chi-square = 138 with 109 degrees of freedom, GFI = 0.9, and SRMR = 0.08. Burnkrant and Page use the same type of Likert type scales for their measurement variables but did not adjust their analysis for kurtosis by using robust estimators and fit statistics. In comparison, Model 2 in this study has a chi-square = 136.622 for 99 degrees of freedom. This is an improved chi-square but not significantly better: Model 2 used 10 degrees of freedom to achieve this reduction in chi-square. Model 2 has a GFI = 0.893 that is not significantly different from the B&P model GFI of 0.9. The SRMRs for both models are also equivalent: Model 2 SRMR = 0.082, B&P SRMR = 0.08.

**Figure 11**

**Modified Burnkrant and Page Model**

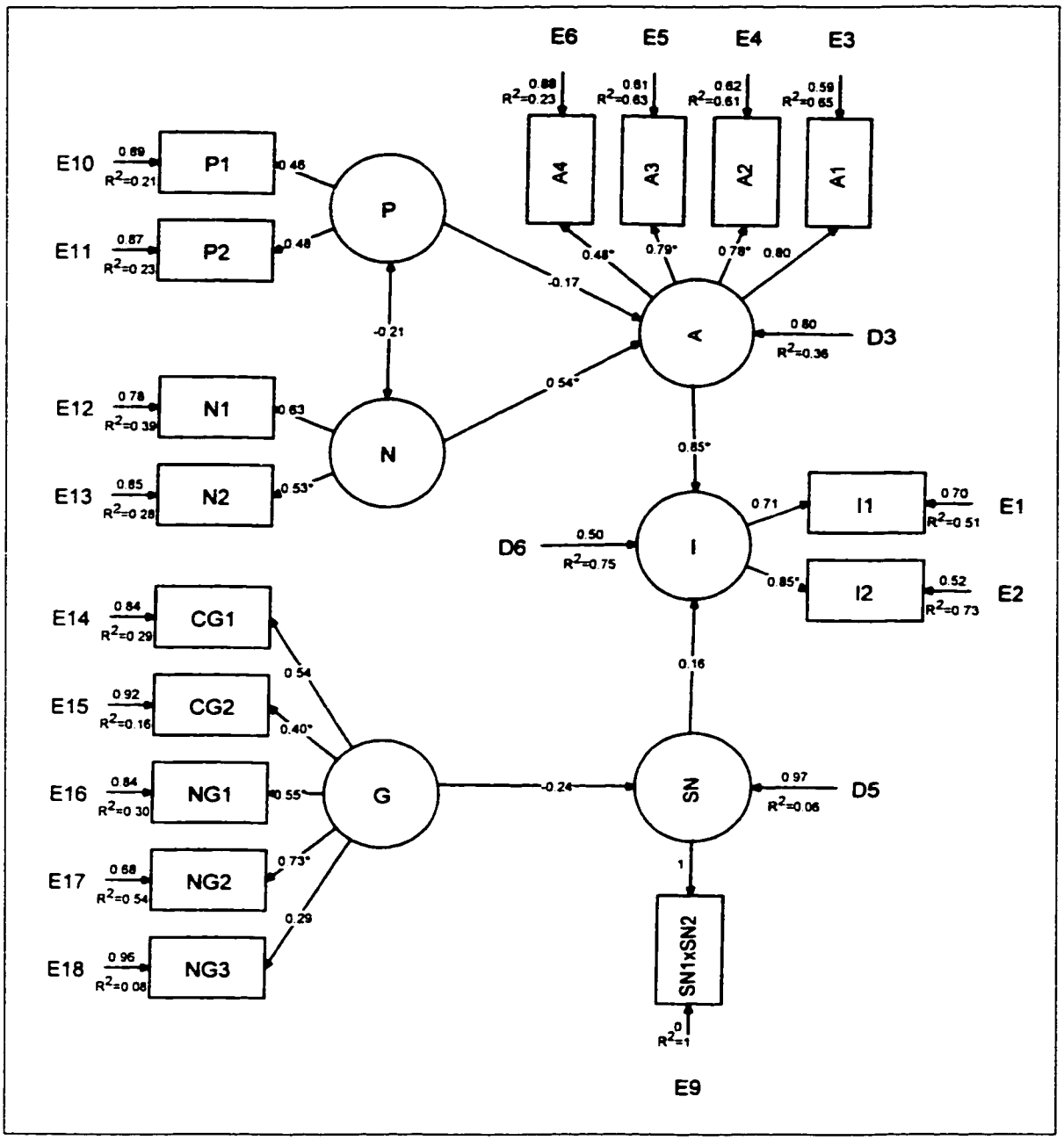


**Table 10**

**Model 2: Modified Burnkrant and Page Model**

**Fit Statistics and Parameter Estimates**

| Fit Indices | Value | Parameter | Estimate | Robust Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.778 | P → A | -0.062 | 0.064 | -0.166 |
| Bentler-Bonnett Nonnormed Fit Index | 0.908 | **N → A*** ** | **0.132** | 0.051 | **0.541** |
| Comparative Fit Index (CFI) | 0.924 | **G → SN*** | **-0.382** | 0.220 | **-0.240** |
| Robust Comparative Fit Index (CFI) | 0.942 | **A → I*** ** | **12.306** | 2.431 | **0.851** |
| Bollen (IFI) Fit Index | 0.927 | SN → I | 0.584 | 0.423 | 0.163 |
| McDonald (MFI) Fit Index | 0.871 | P ↔ N | -1.652 | 1.925 | -0.213 |
| LISREL GFI Fit Index | 0.893 | | | | |
| LISREL AGFI Fit Index | 0.854 | | | | |
| Root Mean Sq. Residual (RMR) | 1.989 | | | | |
| Standardized RMR | 0.082 | | | | |
| Root Mean Sq. Error of App. (RMSEA) | 0.054 | | | | |
| Chi-square | 136.622 | | | | |
| Satorra-Bentler scaled chi-square | 119.685 | *Normalized Estimate of Mardia's* | | | |
| Model degrees of freedom | 99 | *Coefficient for Multivariate Kurtosis* | | | *25.000* |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

The Wald Test and the Lagrange Multiplier (LM) Test were also generated for Model 2 along with the model parameter estimates. These test results are presented in Table 11. The Wald test ascertains whether sets of parameters, specified as free in the model, could in fact be simultaneously set to zero without substantial loss in model fit. The LM Test identifies certain parameters constrained to zero in the model that could lead to a better fit of the data if estimated freely (Byrne, 1994). Both tests are based solely on statistical criteria and theoretical implications must be considered before adding or freeing any constraints.

**Table 11**

**Wald Test and Lagrange Test results for Model 2**

WALD TEST (FOR DROPPING PARAMETERS)
ROBUST INFORMATION MATRIX USED IN THIS WALD TEST
MULTIVARIATE WALD TEST BY SIMULTANEOUS PROCESS

| CUMULATIVE MULTIVARIATE STATISTICS | | | | | UNIVARIATE INCREMENT | |
|---|---|---|---|---|---|---|
| STEP | PARAMETER | CHI-SQUARE | D.F. | PROBABILITY | CHI-SQUARE | PROBABILITY |
| 1 | F6,F4 | 0.144 | 1 | 0.704 | 0.144 | 0.704 |
| 2 | F6,F5 | 0.552 | 2 | 0.759 | 0.407 | 0.523 |
| 3 | F2,F1 | 1.356 | 3 | 0.716 | 0.804 | 0.370 |
| 4 | D7,D7 | 2.288 | 4 | 0.683 | 0.932 | 0.334 |
| 5 | V11,F1 | 4.154 | 5 | 0.527 | 1.866 | 0.172 |
| 6 | F4,F4 | 6.468 | 6 | 0.373 | 2.314 | 0.128 |
| 7 | F3,F1 | 8.307 | 7 | 0.306 | 1.838 | 0.175 |

LAGRANGE MULTIPLIER TEST (FOR ADDING PARAMETERS)

| CUMULATIVE MULTIVARIATE STATISTICS | | | | | UNIVARIATE INCREMENT | |
|---|---|---|---|---|---|---|
| STEP | PARAMETER | CHI-SQUARE | D.F. | PROBABILITY | CHI-SQUARE | PROBABILITY |
| 1 | V3,F7 | 13.658 | 1 | 0.000 | 13.658 | 0.000 |
| 2 | F6,F2 | 25.279 | 2 | 0.000 | 11.620 | 0.001 |
| 3 | E6,E4 | 32.568 | 3 | 0.000 | 7.289 | 0.007 |
| 4 | V15,F1 | 39.669 | 4 | 0.000 | 7.101 | 0.008 |
| 5 | V5,F5 | 44.262 | 5 | 0.000 | 4.593 | 0.032 |
| 6 | E16,E14 | 48.682 | 6 | 0.000 | 4.420 | 0.036 |
| 7 | E16,E10 | 52.682 | 7 | 0.000 | 4.000 | 0.046 |

Based on the results of these tests one parameter was added (unconstrained) to the model: the covariance between E6 and E4. E6 and E4 are error terms for variables A4 and A2. The parameters suggested for dropping by the Wald test were either implausible based on the theory or were structural paths that were left in the model even if they were not significant. Therefore no parameters were dropped. The LM Test also recommended further parameters to add that could not be supported by theory. The parameters that were added are only those that are theoretically justifiable. A second EQS run was executed and an additional parameter was added based on the results of its

Wald and LM tests: the covariance between E5 and E4. E5 and E4 are error terms for variables A3 and A2. The results for this model (Model 3) are presented in Figure 12 and Table 12. The Satorra-Bentler scaled chi-square of 104.335 for 97 degrees of freedom, the robust CFI of 0.979 and the SRMR of 0.08 for Model 3 indicate an excellent fit.

The lower half of Table 11 presents the initial LM Test results. The parameter added to the model is the third parameter on this list, relating to measurement variables for the Attitude factor. (Figure 12). These variables were measured using the same seven point scales that ranged from +3 to –3, centered at zero; therefore it is possible that their error terms may covary. The same reasoning was applied to all error covariances included in this and future models. The other parameters suggested for release by the LM Test could not be theoretically justified and were not included in the model.

Model 2 and Model 3 are nested models[10]; the difference between the chi-squares for nested models can be used to test the decrease in chi-square resulting from adding the two new parameters, since this difference is itself distributed as a chi-square. The degrees of freedom for the test is equal to the difference in the degrees of freedom between the two models. The difference in Satorra-Bentler chi-square for Model 2 and Model 3 is 15.345 with 2 degrees of freedom and is significant at $p<0.005$ level. Therefore, for these structurally identical models, the addition of the error term covariances results in a significantly better fit of the model to the data and Model 3 presents the most successful attempt to reproduce the Burnkrant and Page model using this data.

The LM Test generated for Model 3 also indicates the addition of a path from negative belief evaluations, N, to subjective norms, SN. This path was added to Model 3 but resulted in unreliable maximum likelihood estimates as a consequence of various condition codes. Thus this path cannot be supported by the data. This path is also suggested by the LM Test for subsequent models. For all models in which the path is included unreliable maximum likelihood estimates result due to various condition codes. Thus this path is not included in any models and will not be addressed again in the analysis of model results.

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[10] Model 2 is nested in Model 1 if Model 1 can be obtained by releasing constraints in Model 2. The more restricted model is nested within the less restricted model.

**Figure 12**

**Modified Burnkrant and Page Model**

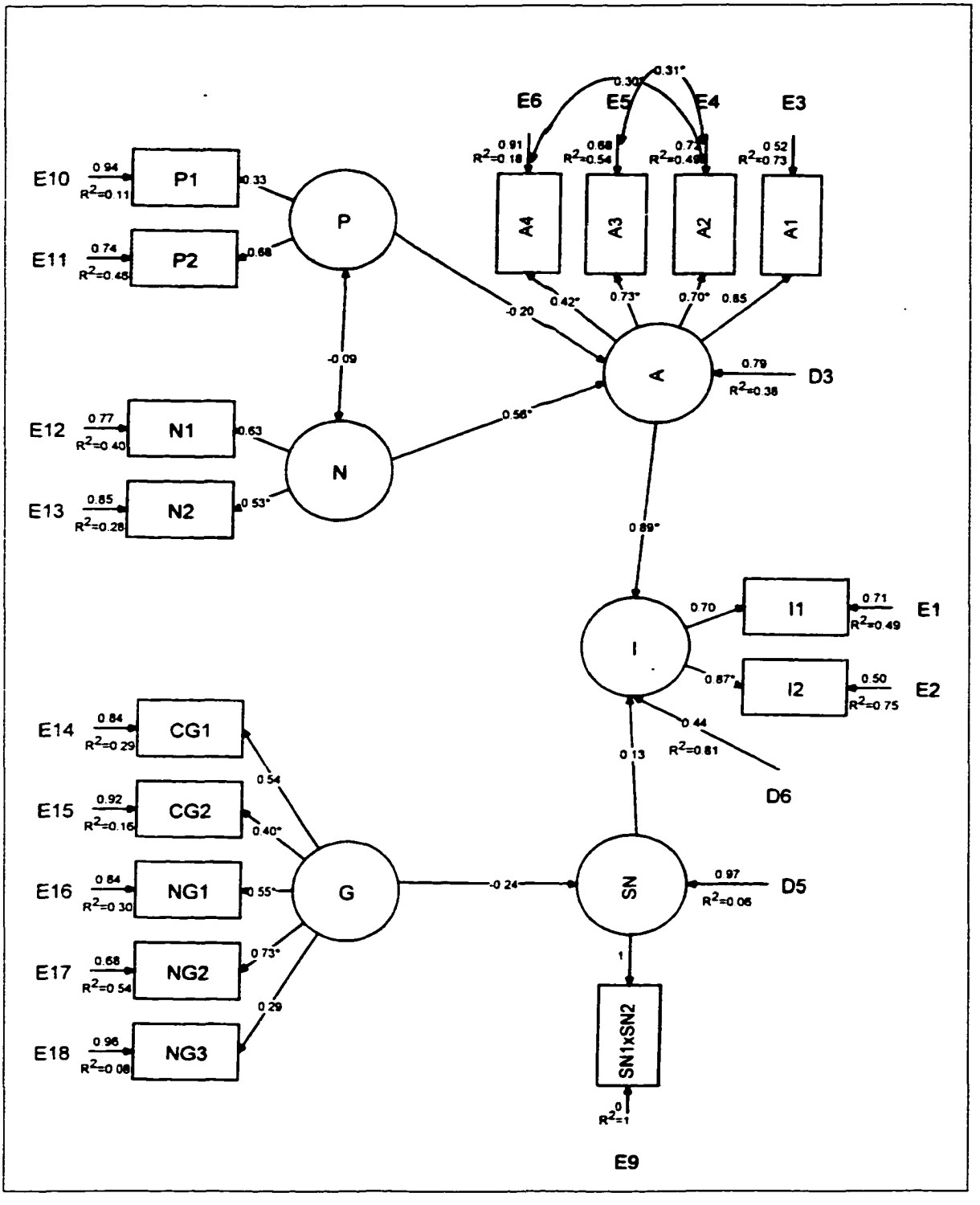


**Table 12**

**Model 3: Modified Burnkrant and Page Model**

**Fit Statistics and Parameter Estimates**

| Fit Indices | Value | Parameter | Estimate | Robust Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.809 | P → A | -0.112 | 0.084 | -0.204 |
| Bentler-Bonnett Nonnormed Fit Index | 0.949 | **N → A*** ** | **0.144** | 0.051 | **0.562** |
| Comparative Fit Index (CFI) | 0.958 | **G → SN*** | **-0.382** | 0.220 | **-0.240** |
| Robust Comparative Fit Index (CFI) | 0.979 | **A → I*** ** | **11.943** | 2.486 | **0.889** |
| Bollen (IFI) Fit Index | 0.960 | SN → I | 0.460 | 0.384 | 0.131 |
| McDonald (MFI) Fit Index | 0.927 | P ↔ N | -0.503 | 1.161 | -0.090 |
| LISREL GFI Fit Index | 0.907 | **E5 ↔ E4*** ** | **0.215** | 0.081 | **0.310** |
| LISREL AGFI Fit Index | 0.870 | **E6 ↔ E4*** ** | **0.350** | 0.159 | **0.300** |
| Root Mean Sq. Residual (RMR) | 1.954 | | | | |
| Standardized RMR | 0.080 | | | | |
| Root Mean Sq. Error of App. (RMSEA) | 0.040 | | | | |
| Chi-square | 117.578 | | | | |
| Satorra-Bentler scaled chi-square | 104.335 | *Normalized Estimate of Mardia's* | | | |
| Model degrees of freedom | 97 | *Coefficient for Multivariate Kurtosis* | | | *25.000* |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

## Interpretation of Parameter Estimates

The model has two significant structural paths: N → A and A → I. The path from referent groups, G → SN, has the expected negative sign and is significant at the p<0.1 level. The scale for the subjective norms variables measuring SN was reversed so that a negative value for the measure of SN indicates a desire to comply with referents whereas a positive value for the measures for G also indicates a desire to comply with the referent. The parameter estimate for N → A is expected to be positive. A positive attitude toward the behavior is reflected in positive scores on the semantic differential scales that measure attitude toward the behavior. The parameter estimate for P → A is expected to be positive. Attitude toward the behavior, A, is expected to be positively

correlated with intention, I. SN is expected to be negatively correlated with I because the scale for SN was reversed. This has held for all previous studies applying the reasoned action model.

The overall attitude of the respondents to the financial reporting scenarios was negative. Examination of the histograms for the attitude toward the behavior variables, A1 and A2, in Table 7 conveys that the general reaction to the scenario was negative. The variables A3 and A4 for attitude toward the behavior, A, also exhibit the same pattern. A large majority of the respondents indicated that the behavior was undesirable. Examination of the histograms for the intention variables I1 and I2 in Table 7 also indicate low intention scores. Consequently, most respondents also claim that they had no intention of acting out the behavior. Sixty-four percent of the respondents report absolutely no intention of performing the behavior, and 6 percent of the respondents report that they would probably perform the behavior (greater than 50% chance). This is corroborated by evidence gathered in KPMG's 1998 fraud survey. The respondents of that survey indicated that financial statement fraud was very low in occurrence but the second most costly type of fraud, following only medical/insurance claims fraud in cost.

The results in Table 12 indicate that the slightly modified B&P model is a very good fit to the data. The average absolute standardized residuals for this model = 0.0572, and the average off-diagonal absolute standardized residuals = 0.0644. Thus the reasoned action model describes the intention to report fraudulently on financial statements fairly well. When compared to the original B&P model the overall fit is essentially equivalent. The original Burnkrant and Page model (1988) reported a chi-square = 138 for 109

degrees of freedom, GFI = 0.9 and SRMR = 0.08; the modified B&P model (Model 3) has a chi-square = 117.578 for 97 degrees of freedom, GFI = 0.907 and SRMR = 0.08.

### 5.4.2 Need for Achievement

Need for achievement was added to the model as a one variable factor (NACH) leading to attitude towards the behavior, A (Model 4). 3 cases were skipped because of incomplete data. Need for achievement was expected to have a negative coefficient for the structural path NACH → A. This was expected because prior research has shown that individuals who were high on need for achievement were less likely to cheat. Thus in this study it is expected that respondents high on need for achievement negatively evaluate the behavior or, in other words, have negative responses to the variables that measure A, attitude towards the behavior. The model with the standardized solution is presented in Figure 13 and the full set of fit indices and parameter estimates for Model 4 is presented in Table 13.

**Figure 13**

**Model with Need for Achievement**

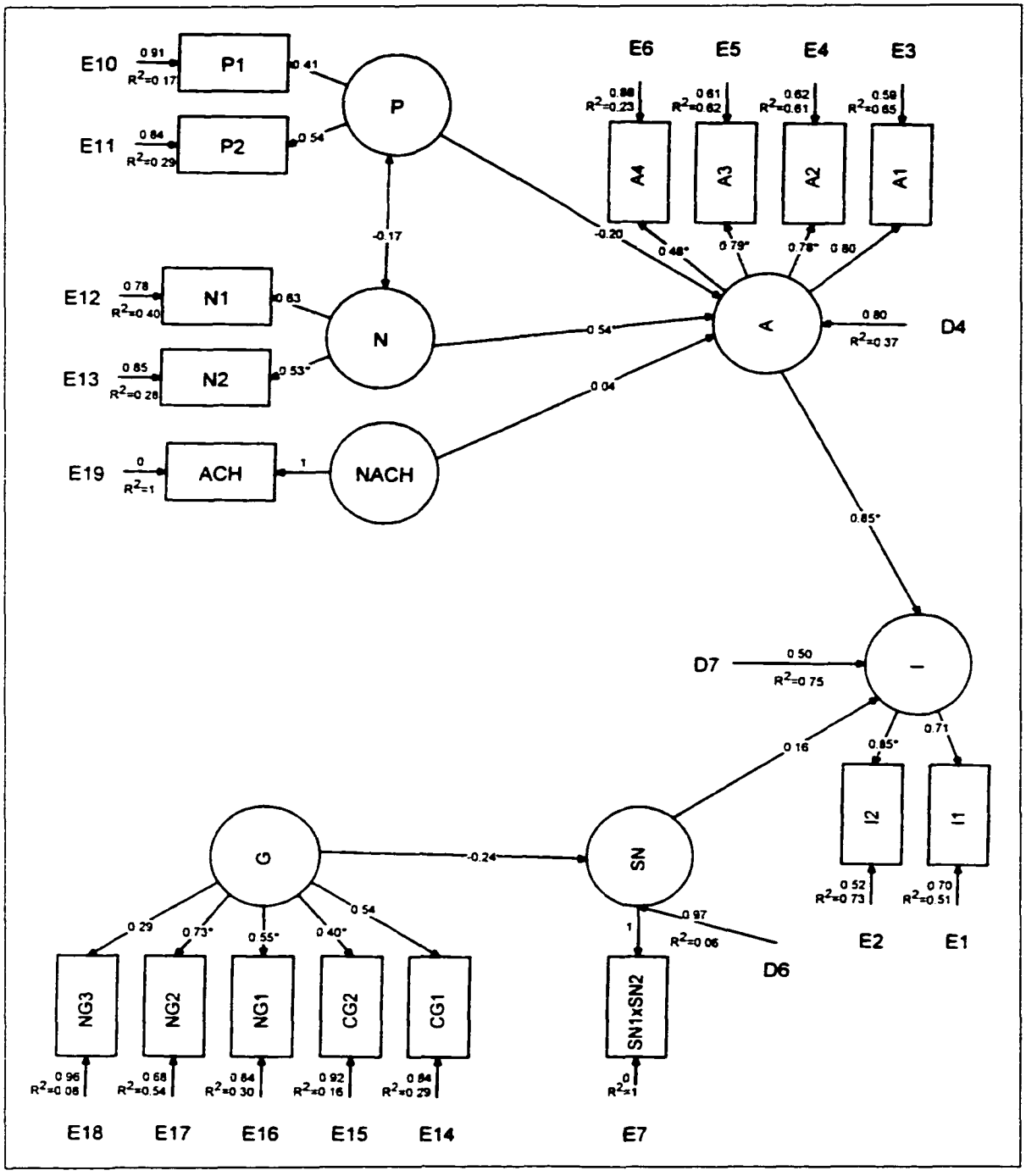


**Table 13**

**Model 4: Need for Achievement**

**Fit Statistics and Parameter Estimates**

| Fit Indices | Value | Parameter | Estimate | Robust Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.760 | P → A | -0.081 | 0.069 | -0.196 |
| Bentler-Bonnett Nonnormed Fit Index | 0.910 | **N → A*** ** | **0.131** | 0.051 | **0.538** |
| Comparative Fit Index (CFI) | 0.925 | NACH → A | 0.020 | 0.041 | 0.042 |
| Robust Comparative Fit Index (CFI) | 0.941 | **G → SN*** | **-0.382** | 0.220 | **-0.240** |
| Bollen (IFI) Fit Index | 0.928 | **A → I*** ** | **12.334** | 2.431 | **0.853** |
| McDonald (MFI) Fit Index | 0.872 | SN → I | 0.583 | 0.422 | 0.163 |
| LISREL GFI Fit Index | 0.889 | P ↔ N | -1.210 | 1.687 | -0.173 |
| LISREL AGFI Fit Index | 0.851 | | | | |
| Root Mean Sq. Residual (RMR) | 1.873 | | | | |
| Standardized RMR | 0.081 | | | | |
| Root Mean Sq.Error of App. (RMSEA) | 0.050 | | | | |
| Chi-Square | 151.238 | | | | |
| Satorra-Bentler scaled chi-square | 135.585 | *Normalized Estimate of Mardia's* | | | |
| Model degrees of freedom | 114 | *Coefficient for Multivariate Kurtosis* | | | *22.982* |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

Model 4 produced a Satorra-Bentler scaled chi-square = 135.585 with 114 degrees of freedom, a robust CFI = 0.941 and an SRMR = 0.081. This indicates that the model is a moderately good fit for this data. The sign of the path coefficient from need for achievement, NACH, to attitude towards the behavior, A, is not in the direction expected. But the coefficient is not significantly different from zero, so no conclusions are drawn regarding that parameter. Again, N → A and A → I are the only structural path coeffiecients significant at the p<0.05 or better level within this model, while G → SN is significant at the p<0.10 level. The results of the Wald test do not indicate any reasonable paths to eliminate. The LM Test results suggest the addition of two error covariances. The results of this model (Model 5) are presented in Figure 14 and Table 14. The Satorra-Bentler chi-square statistic for Model 5 is 119.32 with 112 degrees of

freedom, the robust CFI = 0.978, and the SRMR = 0.08 indicating that this model is a very good fit for this data. The average absolute standardized residuals = 0.056, and the average off- diagonal absolute standardized residuals = 0.0626 also indicating a good fit. Model 4 and Model 5 are nested models, so the improvement in fit can be empirically tested for significance by calculating the chi-square difference and degrees of freedom difference between the two models. The Satorra-Bentler chi-square difference is 16.265 with two degrees of freedom. The difference is significant at $p<0.005$ level. The addition of the error covariances significantly improves the fit of the model to the data.

**Figure 14**

**Model with Need for Achievement**

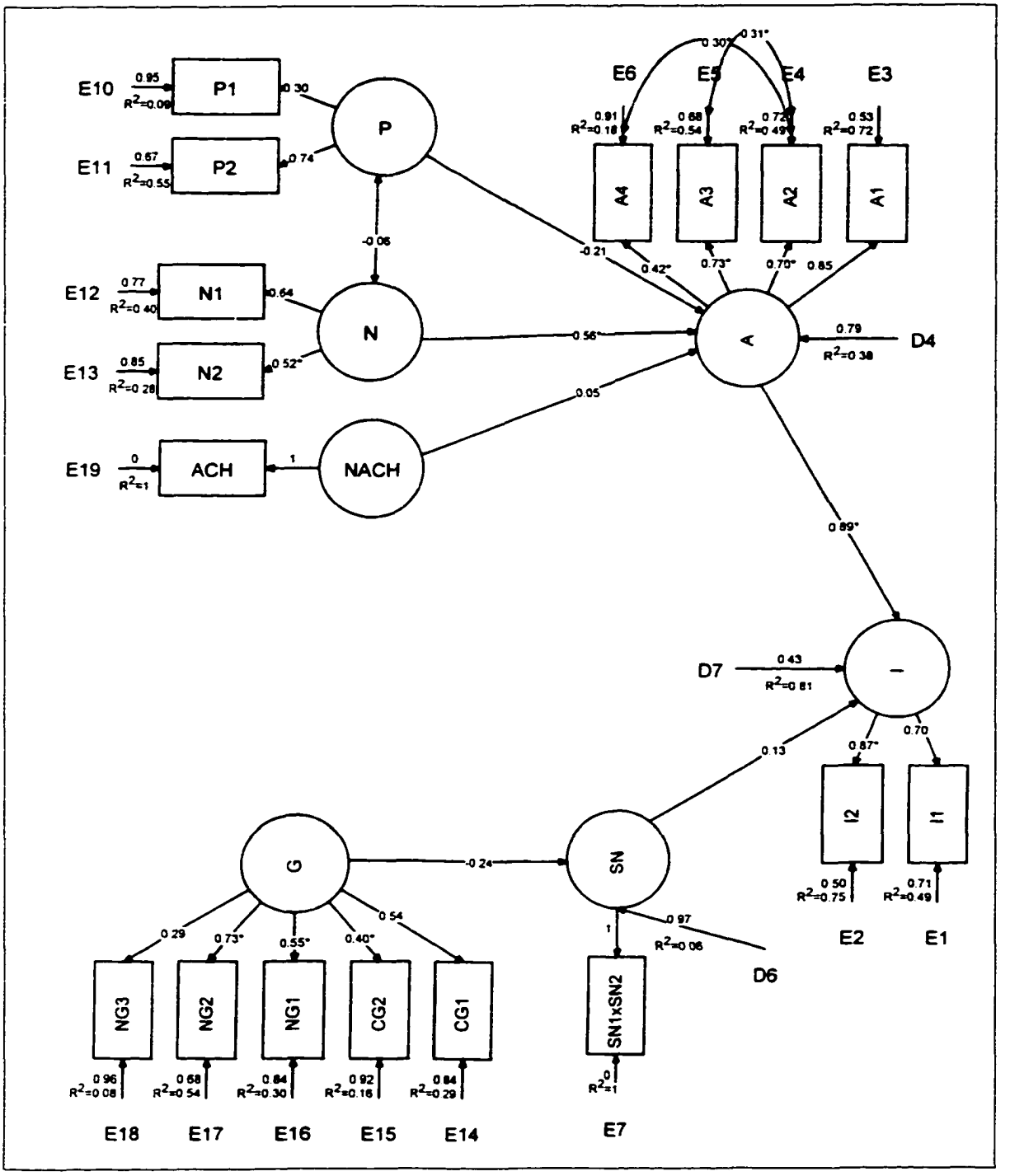


**Table 14**

**Model 5: Need for Achievement**

**Fit Statistics and Parameter Estimates**

| Fit Indices | Value | Parameter | Estimate | Robust Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.790 | P → A | -0.127 | 0.088 | -0.211 |
| Bentler-Bonnett Nonnormed Fit Index | 0.951 | **N → A*** ** | **0.143** | 0.051 | **0.562** |
| Comparative Fit Index (CFI) | 0.959 | NACH → A | 0.027 | 0.044 | 0.053 |
| Robust Comparative Fit Index (CFI) | 0.978 | **G → SN*** | **-0.382** | 0.220 | **-0.240** |
| Bollen (IFI) Fit Index | 0.961 | **A → I*** ** | **12.016** | 2.484 | **0.892** |
| McDonald (MFI) Fit Index | 0.929 | SN → I | 0.460 | 0.383 | 0.131 |
| LISREL GFI Fit Index | 0.901 | P ↔ N | -0.327 | 0.970 | -0.064 |
| LISREL AGFI Fit Index | 0.865 | **E5 ↔ E4*** ** | **0.215** | 0.080 | **0.310** |
| Root Mean Sq. Residual (RMR) | 1.856 | **E6 ↔ E4**** | **0.351** | 0.159 | **0.301** |
| Standardized RMR | 0.080 | | | | |
| Root Mean Sq.Error of App. (RMSEA) | 0.037 | | | | |
| Chi-Square | 132.048 | | | | |
| Satorra-Bentler scaled chi-square | 119.320 | *Normalized Estimate of Mardia's* | | | |
| Model degrees of freedom | 112 | *Coefficient for Multivariate Kurtosis* | | | *22.982* |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

### 5.4.3 Compensation Structure

Compensation Structure was measured with two variables. The questions that measured Compensation Structure were:

The percentage of my total personal assets represented by company assets is:_____%.

The amount of my compensation that is based on the company's reported performance is:_____ %.

For each question the respondent supplied a percentage.

The next step in the analysis of the data was to include in the model a factor for Compensation Structure that was formed from the two measured variables for Compensation Structure and linked to intention, I, as shown in Figure 9. This resulted in

unreliable maximum likelihood statistics as a consequence of several condition codes; there were many linear dependencies between various variables and factors. Analysis of the correlation between the two new variables revealed a correlation of 0.053. The small correlation between the two variables made it difficult for EQS to form one factor from the two variables. Thus Compensation Structure was split into two factors: CA, measured with one variable and CB, measured with the other variable. The correlation between the two factors was also freely estimated but not expected to be significantly different from zero. Both factors were directly linked to intention, I. The Satorra-Bentler chi-square = 180.92 with 146 degrees of freedom, the robust CFI = 0.898 and the SRMR = 0.091 for this model (Model 6), indicated a reasonable fit for this data. The model with the standardized solution is presented in Figure 15 and the full set of fit statistics and parameter estimates for Model 6 is presented in Table 15. 13 cases were skipped because of incomplete data. Both Compensation Structure factors were expected to be positively correlated with intention, I: that is, the coefficient on the path leading from each Compensation Structure factor to intention was expected to be positive in sign. Thus, respondents who recorded a large percentage for each of the Compensation Structure measures were thought likely to have a higher intention to report fraudulently on the financial statements.

**Figure 15**

**Model with Compensation Structure**

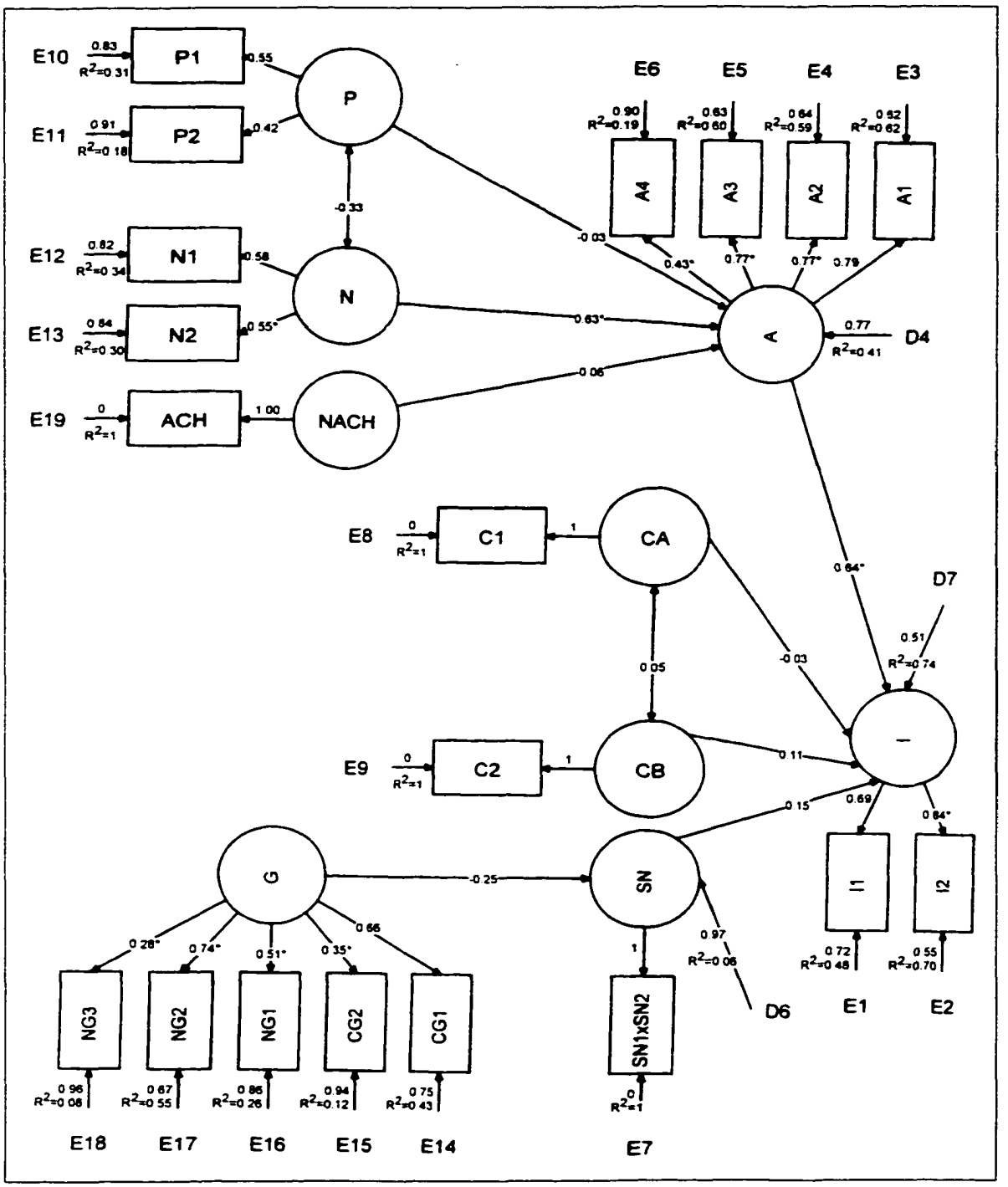


**Table 15**

**Model 6: Compensation Structure**

**Fit Statistics and Parameter Estimates**

| Fit Indices | Value | Parameter | Estimate | Robust Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.678 | P → A | -0.009 | 0.056 | -0.031 |
| Bentler-Bonnett Nonnormed Fit Index | 0.864 | **N → A**** | **0.161** | 0.065 | **0.627** |
| Comparative Fit Index (CFI) | 0.884 | NACH → A | -0.031 | 0.041 | -0.063 |
| Robust Comparative Fit Index (CFI) | 0.898 | **G → SN*** | **-0.324** | 0.187 | **-0.250** |
| Bollen (IFI) Fit Index | 0.890 | **A → I***** | **12.115** | 2.627 | **0.841** |
| McDonald (MFI) Fit Index | 0.815 | SN → I | 0.521 | 0.434 | 0.153 |
| LISREL GFI Fit Index | 0.860 | CA → I | -0.011 | 0.028 | -0.025 |
| LISREL AGFI Fit Index | 0.818 | CB → I | 0.072 | 0.047 | 0.109 |
| Root Mean Sq. Residual (RMR) | 5.617 | P ↔ N | -2.929 | 2.243 | -0.344 |
| Standardized RMR | 0.091 | CA ↔ CB | 25.073 | 46.451 | 0.051 |
| Root Mean Sq.Error of App. (RMSEA) | 0.054 | | | | |
| Chi-Square | 197.486 | | | | |
| Satorra-Bentler scaled chi-square | 180.916 | *Normalized Estimate of Mardia's* | | | |
| Model degrees of freedom | 146 | *Coefficient for Multivariate Kurtosis* | | | *17.932* |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

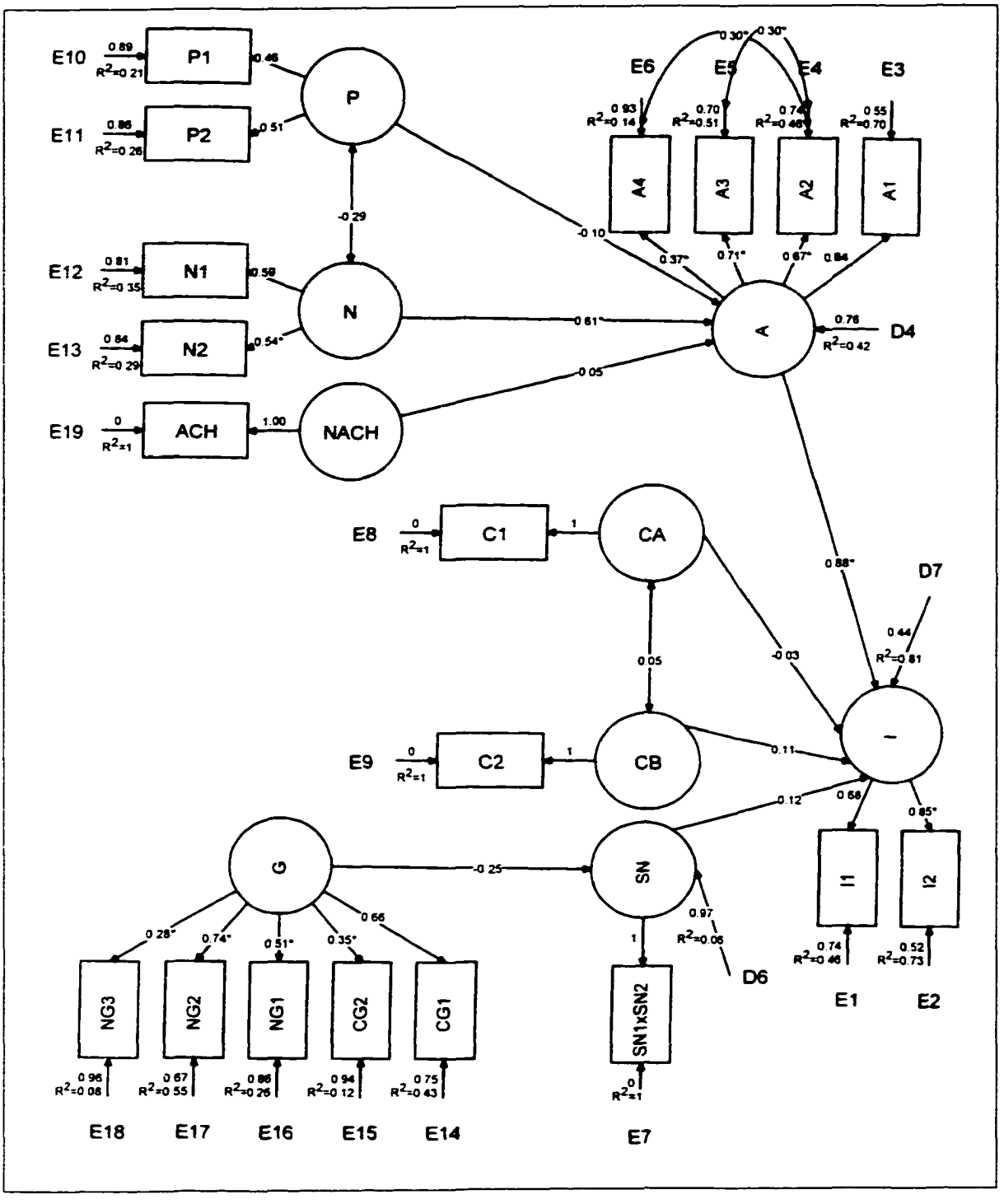
The coefficients for N → A, and A → I, have the expected sign and are significant at the p<0.05 level, and the coefficient for G → SN also has the expected sign and is significant at the p<0.10 level. In the presence of the two factors for Compensation Structure the direction for NACH → A has changed to the expected direction, but the link is still not significant. However, the sign of the coefficient for CA → I is contrary to expectations, whereas the sign of CB → I is as expected. Overall there is no significant change in the parameter estimates. Neither of the path coefficients for Compensation Structure is significant.

Wald test results do not suggest any relevant structural paths to drop. The LM test results in the inclusion of two error term covariances. The Satorra-Bentler chi-square

statistic for this model (Model 7) is 166.9 with 144 degrees of freedom, the robust CFI is 0.933, the SRMR is 0.089, the average absolute standardized residuals = 0.0648, and the average off-diagonal absolute standardized residuals = 0.0718 indicating that this model is a moderately good fit for this data. The model with the standardized solution is presented in Figure 16 and a full set of fit statistics and parameter estimates is presented in Table 16. The Satorra-Bentler chi-square difference between Model 6 and Model 7 is 14.013 with 2 degrees of freedom. This difference is significant at $p<0.005$ level. The improvement in model fit produced by adding the error covariances is significant.

**Figure 16**

**Model with Compensation Structure**



## Table 16

## Model 7: Compensation Structure

## Fit Statistics and Parameter Estimates

| Fit Indices | Value | Parameter | Estimate | Robust Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.706 | P → A | -0.040 | 0.067 | -0.104 |
| Bentler-Bonnett Nonnormed Fit Index | 0.903 | **N → A*** ** | **0.162** | 0.060 | **0.605** |
| Comparative Fit Index (CFI) | 0.918 | NACH → A | -0.280 | 0.045 | -0.053 |
| Robust Comparative Fit Index (CFI) | 0.933 | **G → SN** | **-0.324** | 0.187 | **-0.250** |
| Bollen (IFI) Fit Index | 0.923 | **A → I*** ** | **11.717** | 2.677 | **0.883** |
| McDonald (MFI) Fit Index | 0.866 | SN → I | 0.401 | 0.393 | 0.121 |
| LISREL GFI Fit Index | 0.870 | CA → I | -0.012 | 0.026 | -0.029 |
| LISREL AGFI Fit Index | 0.829 | CB → I | 0.069 | 0.043 | 0.107 |
| Root Mean Sq. Residual (RMR) | 5.531 | P ↔ N | -2.138 | 2.028 | -0.291 |
| Standardized RMR | 0.089 | CA ↔ CB | 25.073 | 46.451 | 0.051 |
| Root Mean Sq.Error of App. (RMSEA) | 0.046 | **E5 ↔ E4**** | **0.219** | 0.085 | **0.300** |
| Chi-Square | 180.307 | **E6 ↔ E4**** | **0.372** | 0.167 | **0.300** |
| Satorra-Bentler scaled chi-square | 166.903 | *Normalized Estimate of Mardia's* | | | |
| Model degrees of freedom | 144 | *Coefficient for Multivariate Kurtosis* | | | *17.932* |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

### 5.4.4 Size

Next Size was introduced into the model. It was expected that respondents of large companies would express higher intentions of fraudulently reporting on the financial statements (Hypothesis 9). Including Size as a factor directly leading to intention within the model tests this hypothesis (Model 8). Size was measured with six variables, all of which were scaled by taking their log. The histograms for these variables were presented in Table 8. 17 cases were skipped due to incomplete data. Model 8 yields a Satorra-Bentler chi-square statistic of 547.37 with 268 degrees of freedom, a robust CFI of 0.806, and SRMR of 0.111. This indicates only weak model fit for this data. The model with the standardized solution is presented in Figure 17; the full set of fit statistics and parameter estimates for Model 8 is presented in Table 17.

As discussed earlier in Section 2.4, there may be a relationship between Size and Compensation Structure but the direction of this effect is neither known nor predicted.

**Figure 17**

**Model with Company Size**

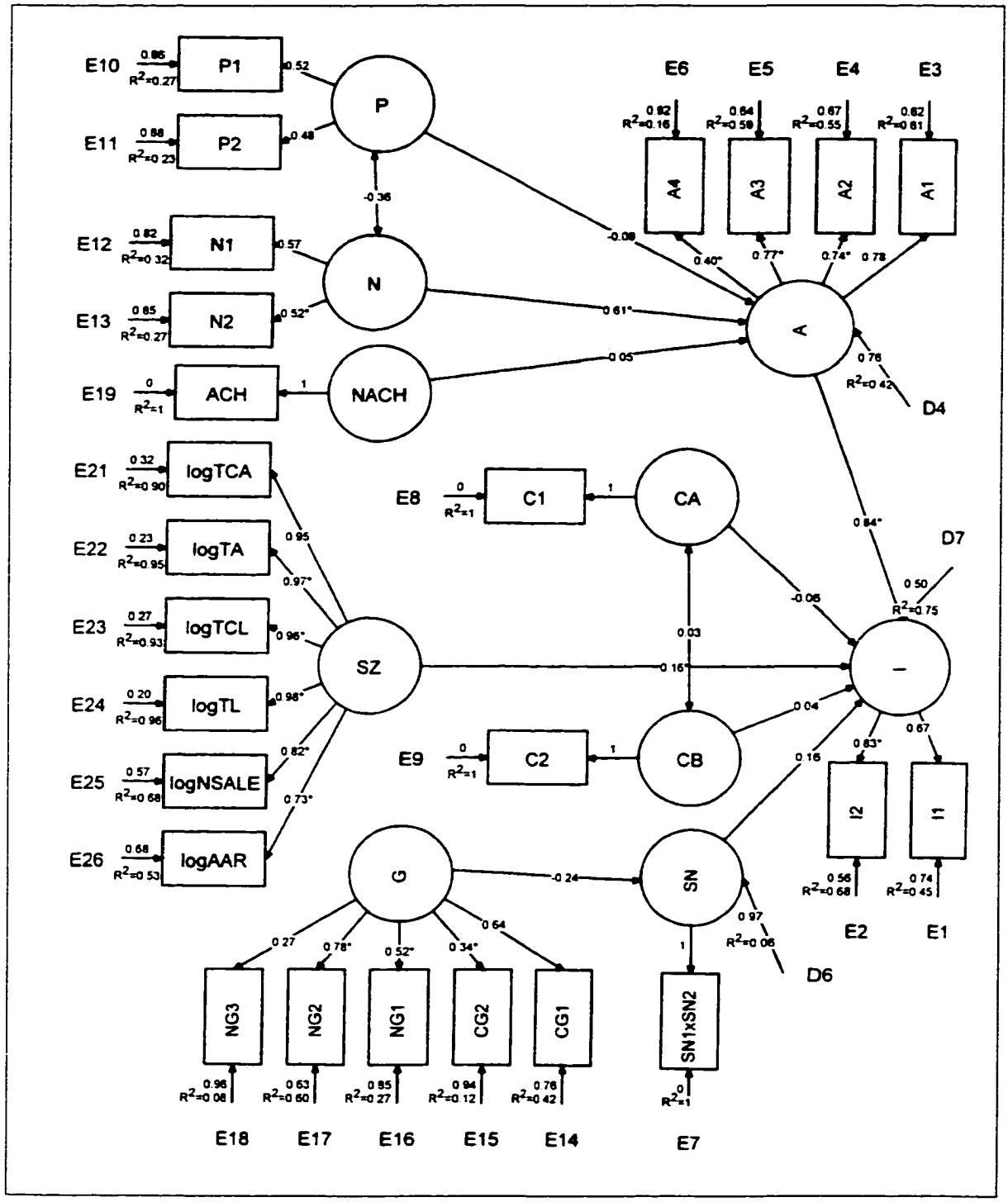


**Table 17**

**Model 8: Size**

**Fit Statistics and Parameter Estimates**

| Fit Indices | Value | Parameter | Estimate | Robust Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.717 | P → A | -0.024 | 0.060 | -0.079 |
| Bentler-Bonnett Nonnormed Fit Index | 0.803 | **N → A**** | **0.154** | 0.068 | **0.615** |
| Comparative Fit Index (CFI) | 0.824 | NACH → A | -0.022 | 0.039 | -0.046 |
| Robust Comparative Fit Index (CFI) | 0.806 | **G → SN*** | **-0.319** | 0.190 | **-0.240** |
| Bollen (IFI) Fit Index | 0.827 | **A → I***** | **12.048** | 2.752 | **0.835** |
| McDonald (MFI) Fit Index | 0.291 | SN → I | 0.515 | 0.437 | 0.159 |
| LISREL GFI Fit Index | 0.744 | CA → I | -0.024 | 0.028 | -0.060 |
| LISREL AGFI Fit Index | 0.689 | CB → I | 0.025 | 0.047 | 0.040 |
| Root Mean Sq. Residual (RMR) | 3.991 | **SZ → I**** | **1.836** | 0.907 | **0.159** |
| Standardized RMR | 0.111 | P ↔ N | -2.908 | 2.208 | -0.361 |
| Root Mean Sq.Error of App. (RMSEA) | 0.097 | CA ↔ CB | 14.529 | 46.979 | 0.030 |
| Chi-Square | 569.439 | | | | |
| Satorra-Bentler scaled chi-square | 547.366 | *Normalized Estimate of Mardia's* | | | |
| Model degrees of freedom | 268 | *Coefficient for Multivariate Kurtosis* | | | *15.280* |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

The Wald test results do not suggest any paths to drop that were theoretically justifiable. The LM test statistics suggest the inclusion of the path between Size and CA and four error covariance paths in the model. A second run was executed with these additions to the model and the LM Test for this second run indicated the inclusion of the path between Size and CB and another error covariance (Model 9). The paths between Size and CA and between Size and CB were entered as covariances because there is no theoretical basis to support a direct causal link. The covariance allows for the possibility of some confounding that may be caused by common underlying factors that affect both Size and Compensation Structure.

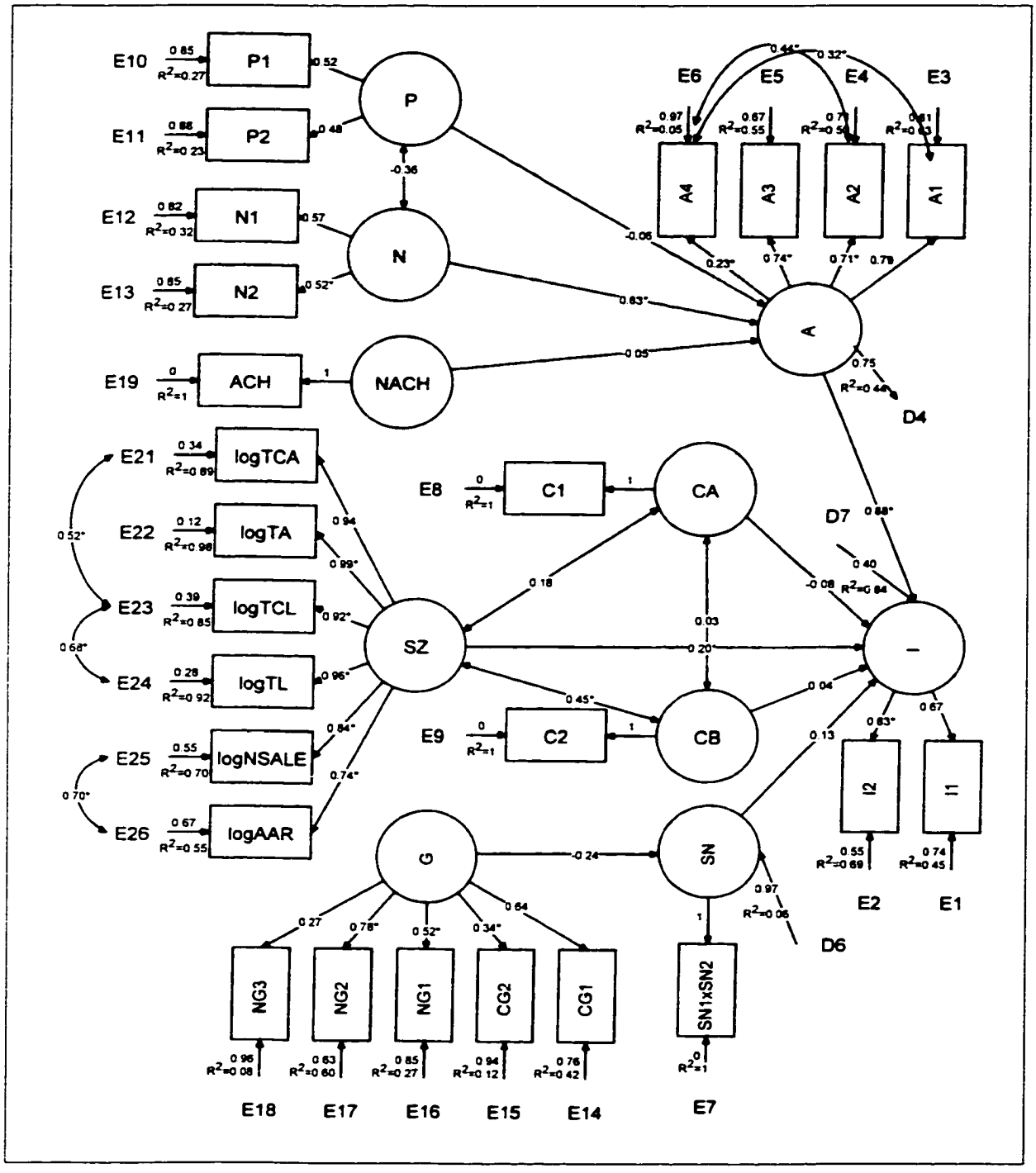
The Satorra-Bentler chi-square statistic for Model 9 is 321.679 with 261 degrees of freedom, a robust CFI = 0.958, and SRMR = 0.089 indicating a good fit of this model to

the data. The direction and significance of the parameter estimates has not changed from those of Model 7. The only addition here was Size, which was positive, as predicted, and significant. The model with the standardized solution is presented in Figure 18 and the full set of fit statistics and parameter estimates for Model 9 is presented in Table 18. The difference in chi-square between Model 8 and Model 9 is 225.69 with 7 degrees of freedom. This is significant at the $p<0.005$ level, indicating a meaningful improvement in model fit.

This model is the full model and contains all the factors that were added to the original model in this study; therefore the fit of this model is discussed in greater depth. The average absolute standardized residuals for this model = 0.0062 and the average off-diagonal absolute standardized residual = 0.0715. The off-diagonal residuals have a more important part in the effect on goodness-of-fit chi-square statistics (Byrne, 1994). The off-diagonal standardized residual for this model reflects a moderately good fit of the model to the data. EQS also lists the 20 largest standardized residuals and indicates which pairs of variables are involved. The largest off-diagonal value is 0.263; no particular measurement variable drives the results among the top 20 off-diagonal residuals. EQS also provides a frequency distribution of the standardized residuals. The distribution is centered on zero with 72.3% of the residuals falling between –0.1 and +0.1. Another 14.15% ranges from –0.1 to –0.2, and 9.85% range from +0.1 to +0.2; no residuals fall outside the –0.3 to+0.3 range.

**Figure 18**

**Model with Company Size**



## Table 18

### Model 9: Size

### Fit Statistics and Parameter Estimates

| Fit Indices | Value | Parameter | Estimate | Robust Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.836 | P → A | -0.019 | 0.060 | -0.064 |
| Bentler-Bonnett Nonnormed Fit Index | 0.954 | **N → A**** | **0.161** | 0.070 | **0.635** |
| Comparative Fit Index (CFI) | 0.960 | NACH → A | -0.023 | 0.041 | -0.047 |
| Robust Comparative Fit Index (CFI) | 0.958 | **G → SN*** | **-0.319** | 0.190 | **-0.240** |
| Bollen (IFI) Fit Index | 0.961 | **A → I***** | **12.577** | 2.673 | **0.879** |
| McDonald (MFI) Fit Index | 0.756 | SN → I | 0.440 | 0.391 | 0.135 |
| LISREL GFI Fit Index | 0.832 | CA → I | -0.033 | 0.027 | -0.081 |
| LISREL AGFI Fit Index | 0.791 | CB → I | 0.026 | 0.049 | 0.041 |
| Root Mean Sq. Residual (RMR) | 3.947 | **SZ → I**** | **2.284** | 0.944 | **0.196** |
| Standardized RMR | 0.089 | P ↔ N | -2.947 | 2.224 | -0.363 |
| Root Mean Sq.Error of App. (RMSEA) | 0.047 | CA ↔ CB | 14.529 | 46.979 | 0.030 |
| Chi-Square | 329.381 | **SZ ↔ CA*** | **4.716** | 2.819 | **0.175** |
| Satorra-Bentler scaled chi-square | 321.679 | **SZ ↔ CB***** | **7.622** | 1.527 | **0.449** |
| Model degrees of freedom | 261 | **E6 ↔ E3***** | **0.281** | 0.085 | **0.316** |
| | | **E6 ↔ E4***** | **0.550** | 0.178 | **0.439** |
| | | **E23 ↔ E21***** | **0.073** | 0.013 | **0.515** |
| *Normalized Estimate of Mardia's* | | **E24 ↔ E23***** | **0.084** | 0.019 | **0.684** |
| *Coefficient for Multivariate Kurtosis* | *15.280* | **E26 ↔ E25***** | **0.232** | 0.031 | **0.696** |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

This full model contains all of the factors that were added to the original Burnkrant and Page model. The model includes new factors, Need for Achievement, Compensation Structure, and Size. H1 predicted that P → A would be positive but significant. This hypothesis is not supported: the structural path coefficient is negative but insignificant. H2, for the structural path of N → A, is supported; the coefficient is positive and significant. H3 predicted a positive coefficient for the structural path for need for achievement; however the coefficient of NACH → A, is negative and insignificant.

Hypotheses H4 and H5 were combined when the referent groups were combined into one factor. The new hypothesis H4/5 predicts that the coefficient on the structural

path for G → SN is negative. In Model 9 this path is in the expected direction and is significant at the $p<0.01$ level. H6 predicted the path coeffeicient A → I would be positive. This path is positive and significant for all models tested in this study. This has held true for all past studies that have tested the reasoned action model. The structural paths of the two compensation factors (H7), CA → I and CB → I, are both insignificant in this model, and of opposite signs. These factors apparently do not have any effect on intention. H8 predicted a negative coefficient for the structural path SN → I. This path is not in the expected direction but is insignificant in this model. The result for this path replicates previous research; most prior studies have found this path to be insignificant.

The path coefficient for Size is positive and significant. This result supports hypothesis H9: Size has a significant positive effect on an individual's intention to report fraudulently on the financial statements.

The full model (Model 9) can be compared with the original B&P model and the modified B&P model (Model 3) as follows:

| | Chi-square | df | GFI | RCFI | SRMR |
|---|---|---|---|---|---|
| B&P Model | 138 | 109 | 0.900 | no report | 0.080 |
| Model 3 | 104 | 97 | 0.907 | 0.979 | 0.080 |
| Model 9 | 322 | 261 | 0.832 | 0.958 | 0.089 |

There is a decrease in both the RCFI and SRMR and a very large increase in chi-square and degrees of freedom. It is difficult to reasonably evaluate the change in fit statistics because of the large difference in degrees of freedom. Model 9 is not quite as good a fit as the B&P model but it is a more complex model and still a good fit to the

data. Model 9 offers more explanatory power than the original model and is, as a result, more useful for auditors in the context of assessing the likelihood of financial statement fraud.

### 5.4.5 Social Desirability Response Bias

The path coefficient results reported above may be biased if subjects responded to the survey questions with a socially desirable bias. The social desirability scale was included in the survey instrument as a control variable to check for response bias caused by the respondents answering questions in a manner that reflects broad social norms. To investigate the effect, if any, that socially biased responding has on the data, an extended model was examined where all variables measured via the survey instrument were treated as a product of two factors: the factors they originally measured and an additional factor representing social desirability (Model 10). Thus, the social desirability factor was measured with the social desirability scale and all other measured variables, 20 in all, were allowed to load on the SD (social desirability) factor. Only one Size measure was measured with a survey question, AAR; it was also allowed to load on SD. The other five measures for Size were not based on subject responses but collected from other sources. 17 cases were skipped because of missing data. The coefficients on these measurement paths were expected to be significant only if the responses were biased by social norms. Model 10 yields a Satorra-Bentler chi-square statistic of 538.715 with 290 degrees of freedom, a robust CFI = 0.83, and a SRMR = 0.088. This indicates a weak fit of this model to the data. The model with the

standardized solution is presented in Figure 19 and the full set of fit statistics and parameter estimates for Model 10 is presented in Table 19.

**Figure 19**

**Model with Social Desirability**

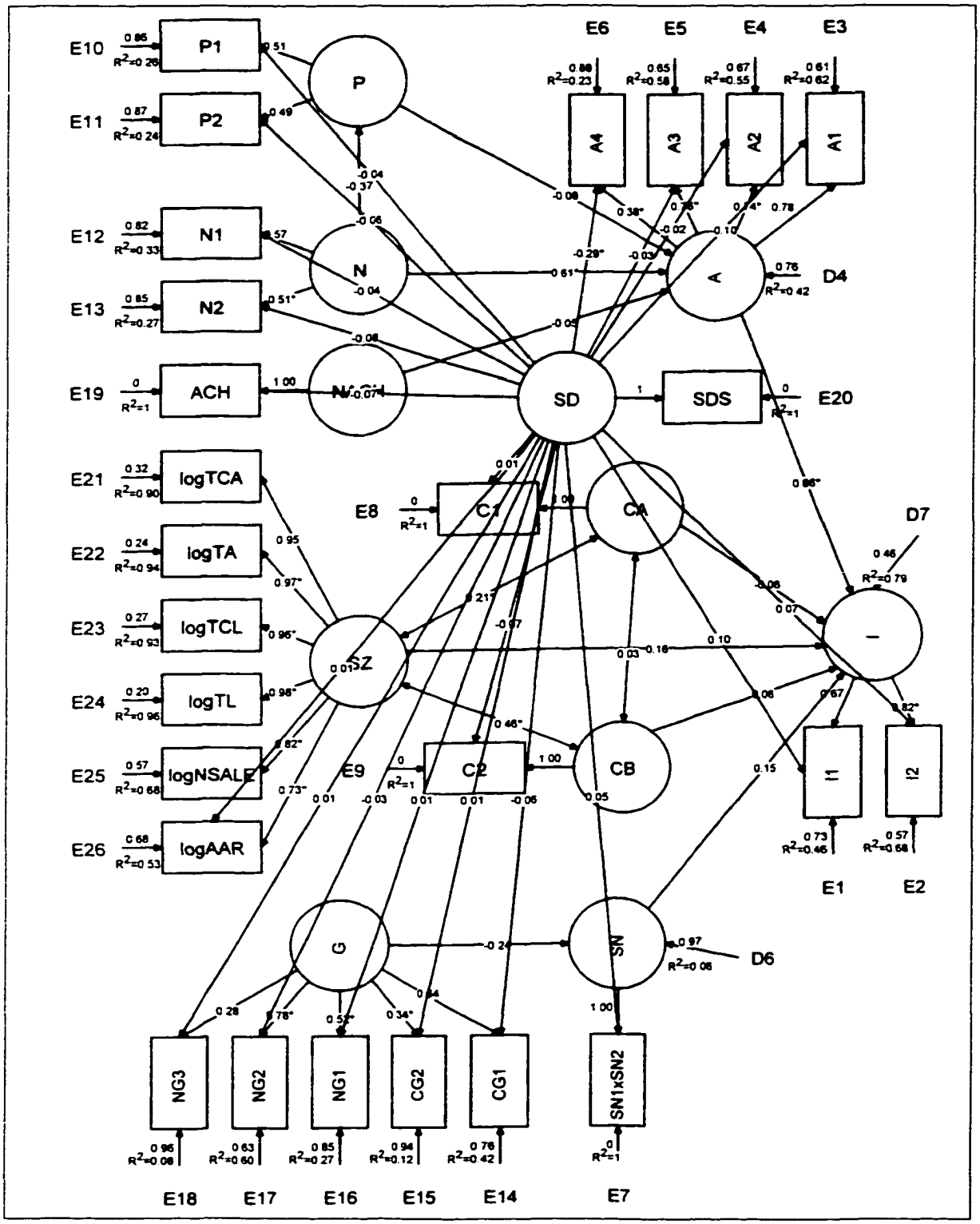


**Table 19**

**Model 10: Social Desirability**

**Fit Statistics and Parameter Estimates**

| Fit Indices | Value | Parameter | Estimate | Robust Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.735 | P → A | -0.025 | 0.062 | -0.083 |
| Bentler-Bonnett Nonnormed Fit Index | 0.812 | **N → A**** | **0.153** | 0.067 | **0.610** |
| Comparative Fit Index (CFI) | 0.843 | NACH → A | -0.023 | 0.040 | -0.047 |
| Robust Comparative Fit Index (CFI) | 0.828 | **G → SN*** | **-0.317** | 0.189 | **-0.239** |
| Bollen (IFI) Fit Index | 0.848 | **A → I***** | **12.363** | 2.749 | **0.855** |
| McDonald (MFI) Fit Index | 0.334 | SN → I | 0.473 | 0.407 | 0.145 |
| LISREL GFI Fit Index | 0.762 | CA → I | -0.025 | 0.028 | -0.062 |
| LISREL AGFI Fit Index | 0.691 | CB → I | 0.036 | 0.055 | 0.056 |
| Root Mean Sq. Residual (RMR) | 3.975 | **SZ → I*** | **1.885** | 0.981 | **0.163** |
| Standardized RMR | 0.088 | P ↔ N | -2.945 | 2.206 | -0.372 |
| Root Mean Sq.Error of App. (RMSEA) | 0.091 | CA ↔ CB | 14.563 | 46.091 | 0.030 |
| Chi-square | 538.715 | **SZ ↔ CA**** | **5.786** | 2.827 | **0.214** |
| Satorra-Bentler scaled chi-square | 520.202 | **SZ ↔ CB***** | **7.743** | 1.531 | **0.456** |
| Model degrees of freedom | 271 | | | | |
| *Normalized Estimate of Mardia's Coefficient for Multivariate Kurtosis* | *14.529* | | | | |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

Figure 19 shows that all of the measurement paths from the 20 measurement variables to SD are insignificant, except for variable A4. A4 is one of four measurement variables for A. The robust t-statistics for the 19 other measurement paths indicate that they are all insignificant; the Wald test generated for Model 10 also indicate that these measurement paths are not significant ($p<0.05$) and recommends dropping all 19 of them. The LM Test for Model 10 recommends the addition of three error term covariances. All 19 measurement paths recommended for dropping by the Wald test were dropped and the three error covariances recommended by the LM Test were added to the model and run in EQS. The LM Test for this model recommended the addition of a fourth error term covariance, which was added to the model (Model 11). Model 11 is

presented in Figure 20 along with the standardized solution. The fit statistics and parameter estimates for Model 11 are presented in Table 11. The Satorra-Bentler chi-square statistic for Model 11 is 335.957, the robust chi-square is 0.965, and the SRMR = 0.087 indicating a good of this model to the data.

**Figure 20**

**Model with Social Desirability**

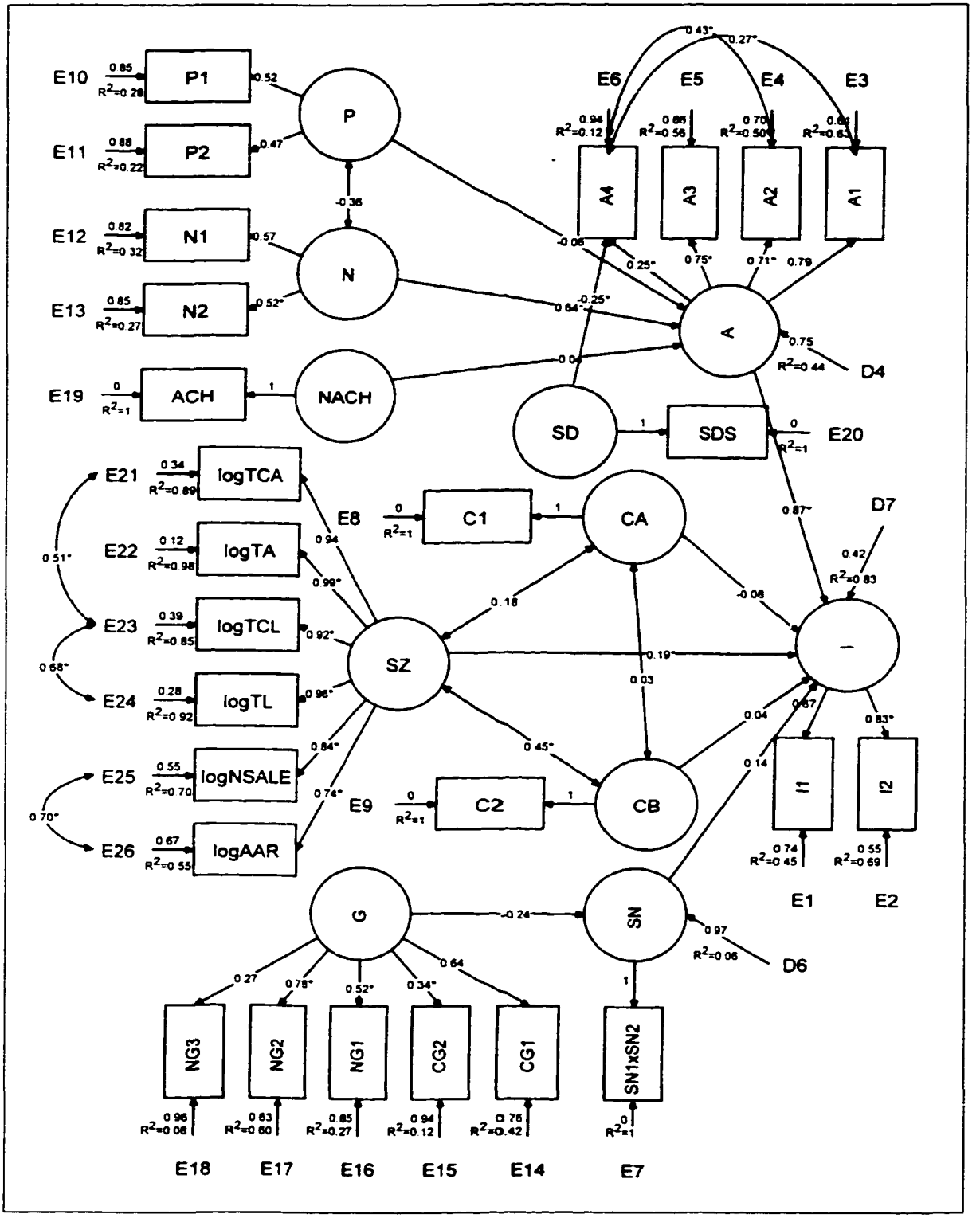


**Table 20**

**Model 11: Social Desirability**

**Fit Statistics and Parameter Estimates**

| Fit Indices | Value | Parameter | Estimate | Robust Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.831 | P → A | -0.018 | 0.060 | -0.060 |
| Bentler-Bonnett Nonnormed Fit Index | 0.961 | **N → A**** | **0.162** | 0.070 | **0.639** |
| Comparative Fit Index (CFI) | 0.966 | NACH → A | -0.021 | 0.041 | -0.044 |
| Robust Comparative Fit Index (CFI) | 0.965 | **G → SN*** | **-0.319** | 0.190 | **-0.240** |
| Bollen (IFI) Fit Index | 0.967 | **A → I***** | **12.474** | 2.266 | **0.872** |
| McDonald (MFI) Fit Index | 0.787 | SN → I | 0.456 | 0.400 | 0.140 |
| LISREL GFI Fit Index | 0.832 | CA → I | -0.032 | 0.027 | -0.078 |
| LISREL AGFI Fit Index | 0.794 | CB → I | 0.023 | 0.049 | 0.036 |
| Root Mean Sq. Residual (RMR) | 3.813 | **SZ → I**** | **2.251** | 0.953 | **0.143** |
| Standardized RMR | 0.087 | P ↔ N | -2.970 | 2.228 | -0.364 |
| Root Mean Sq.Error of App. (RMSEA) | 0..042 | CA ↔ CB | 14.529 | 46.979 | 0.030 |
| Chi-square | 343.327 | **SZ ↔ CA*** | **4.716** | 2.819 | **0.175** |
| Satorra-Bentler scaled chi-square | 335.958 | **SZ ↔ CB***** | **7.622** | 1.527 | **0.449** |
| Model degrees of freedom | 285 | **E6 ↔ E3***** | **0.227** | 0.087 | **0.267** |
| | | **E6 ↔ E4***** | **0.513** | 0.176 | **0.433** |
| | | **E23 ↔ E21***** | **0.073** | 0.013 | **0.515** |
| *Normalized Estimate of Mardia's* | | **E24 ↔ E23***** | **0.084** | 0.019 | **0.684** |
| *Coefficient for Multivariate Kurtosis* | *14.529* | **E25 ↔ E26***** | **0.232** | 0.013 | **0.696** |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

Comparing the results of this model, Model 11, with Model 9, the model without SD, highlights the fact that none of the path coefficients have changed direction or significance. The only variable that is significantly effected by SD is A4. As mentioned earlier, A4 is one of four measures for the factor A. To measure the effect the SD factor has on the A factor, a model where the path SD → A was allowed to be freely estimated was run in EQS. The path coefficient for SD → A was very close to zero (unstandardized parameter estimate = -0.02, robust t-statistic = -0.411) and insignificant; the Wald test results also recommend dropping this path. Thus socially desirable responding apparently does not significantly affect A, even though SD

significantly effects one of its measures. This is to be expected since A4 is only one of four measures for A.

Thus, it can be concluded that, the above analysis provides no evidence of socially desirable responding[11]. All further analyses are based on the structural model in Model 8. Social desirability is not included in any further analyses.

### 5.4.6 Self-Monitoring

The data set was split into two groups by dividing at the median self-monitoring scale score of 13. The high self-monitor group has scores greater than 13. The low self-monitoring group has scores less than or equal to 13. A test of invariant factorial structure was executed with EQS and the split data. A model was fit to each half of the data. The model that was analyzed for the low self-monitor group is presented in Figure 21. The model fit for the high self-monitor data is presented in Figure 22. This model has one factor, PN, combining both positive and negative evaluations. All other forms of the model did not converge successfully; the models produced various condition codes for linear dependencies and variances constrained to zero. A factor analysis was performed within SPSS with the variables for P and N; the principal axis method was used to extract factors with eigenvalues greater than one. All five variables formed one common factor; thus the two factors were combined in EQS. These models do not contain the factors for Compensation Structure or Size. Including any

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[11] Additional analyses were also performed with SDS. The data was split at the median score for SDS and analysis of variance was executed within SPSS with (1) all of the variables and (2) all the factors. No variable or factor was significant. An EQS model was also run in which the SD factor directly effected every other factor in the model. The coefficients for all the paths from SD were insignificant.

combination of these factors results in unreliable maximum likelihood estimates due to various linear dependencies and variances that are constrained to zero by the program to arrive at a solution. It was not possible to make the structural model in Model 8 fit this split data set.

Originally unconstrained variables and paths that were identical in both models were constrained equal for both high and low groups and simultaneously estimated. EQS does not provide robust statistics for this method of analysis; as a result, no robust statistics are reported. Instead the maximum likelihood estimates for chi-square and CFI are reported for these models. The full set of fit statistics and parameter estimates for Model 12 is presented in Table 21.

**Figure 21**

**Low Self-Monitors Model**

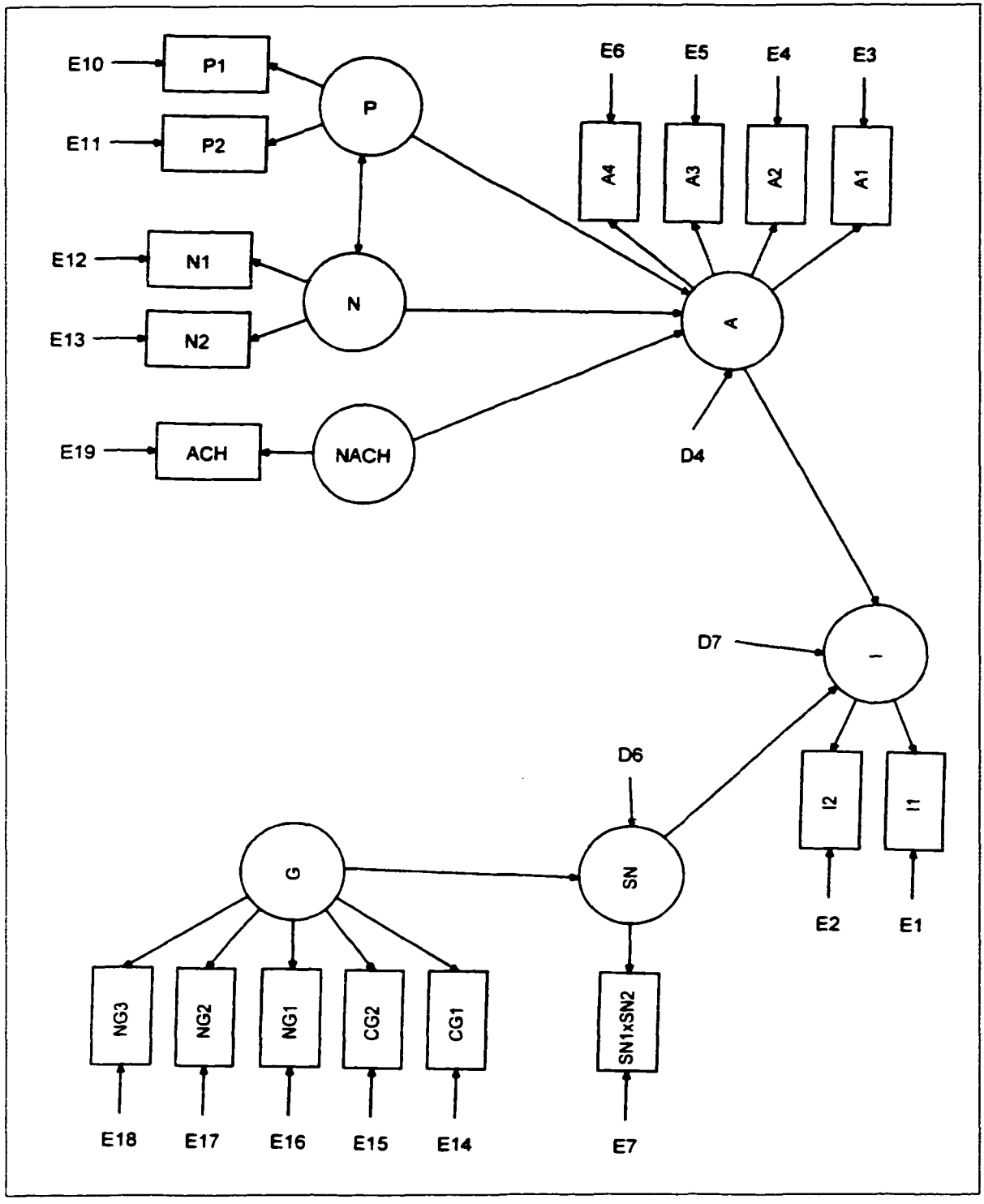
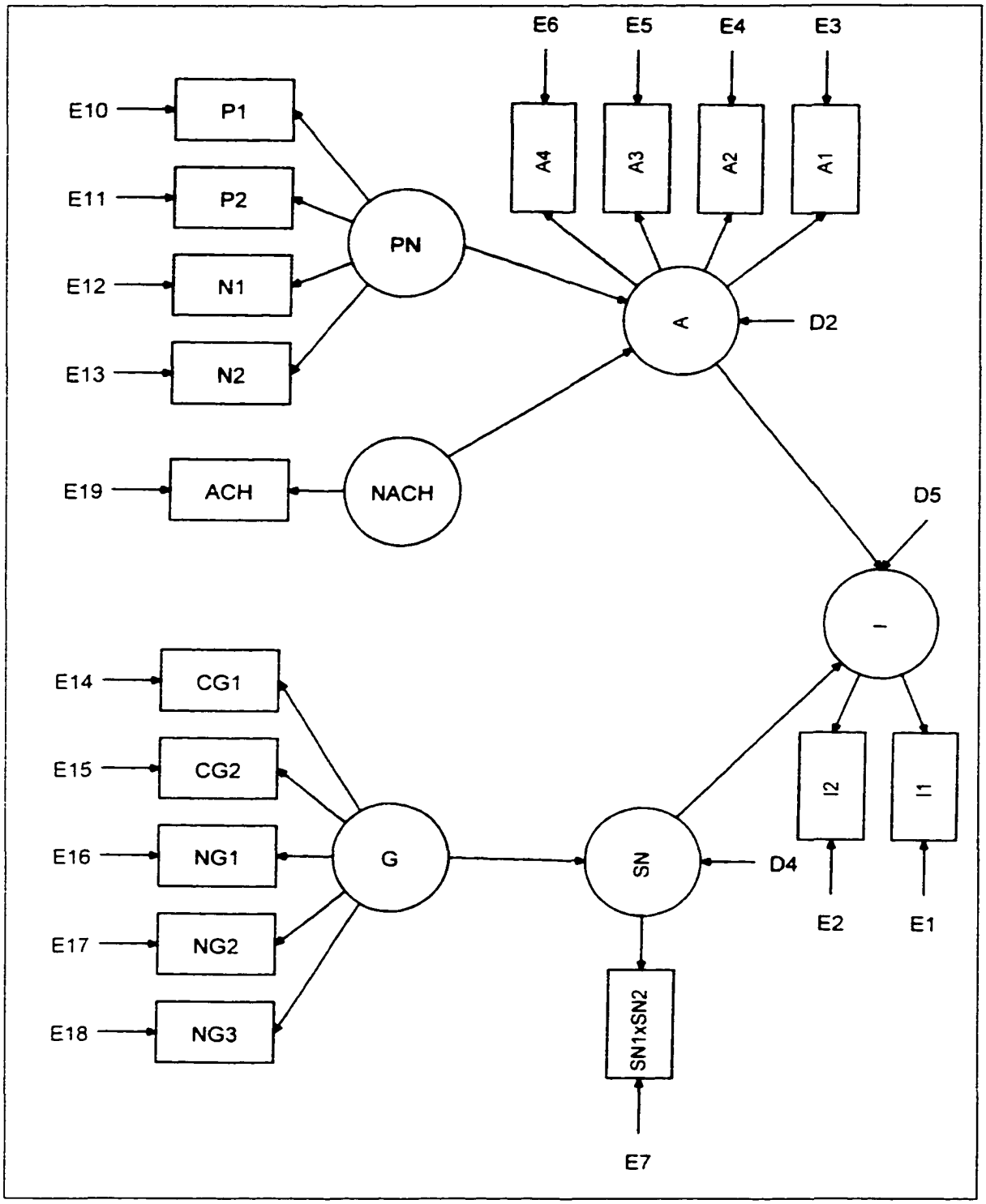


**Figure 22**

**High Self-Monitors Model**



## Table 21

### Model 12: Self-Monitoring and Invariance of Factorial Structure

| Fit Indices | Value | Parameter | Estimate | Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.617 | P → A (LO) | 0.147 | 0.254 | 0.447 |
| Bentler-Bonnett Nonnormed Fit Index | 0.845 | N → A (LO) | 0.303 | 0.258 | 0.952 |
| Comparative Fit Index (CFI) | 0.861 | PN → A (HI) | 3.337 | 22.381 | 0.507 |
| Bollen (IFI) Fit Index | 0.867 | NACH → A (LO) | -0.014 | 0.042 | -0.027 |
| McDonald (MFI) Fit Index | 0.596 | NACH → A (HI) | -0.014 | 0.042 | -0.031 |
| LISREL GFI Fit Index | 0.791 | **G → SN (LO)**** | **-0.366** | 0.177 | **-0.236** |
| LISREL AGFI Fit Index | 0.737 | **G → SN (HI)**** | **-0.366** | 0.177 | **-0.207** |
| Root Mean Sq. Residual (RMR) | 3.601 | **A → I (LO)***** | **11.062** | 1.338 | **0.819** |
| Standardized RMR | 0.127 | **A → I (HI)***** | **11.062** | 1.338 | **0.992** |
| Root Mean Sq.Error of App. (RMSEA) | 0.050 | SN → I (LO) | 0.151 | 0.186 | 0.038 |
| Chi-square | 323.703 | SN → I (HI) | 0.151 | 0.186 | 0.060 |
| Model degrees of freedom | 244 | **P ↔ N (LO)**** | **-6.008** | 2.631 | **-0.722** |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

EQS tests for invariance of factorial structure using the LM Test. The LM Test tests the null hypothesis that the model paths are equal across groups. The LM Test presents result for both univariate and multivariate tests of the null hypothesis. The results of the LM Test are presented in Table 22. Constraints with a univariate increment probability ≤0.05 are significantly different between the two groups. This study only hypothesizes about the structural paths; therefore only structural paths are considered in the analysis of the LM Test results. The LM Test indicates that the structural path of subjective norms to intention, SN → I, (constraint 12) is significantly different across groups.

**Table 22**

**LM Test Results for Self-Monitoring and Invariance of Factorial Structure**

| CUMULATIVE MULTIVARIATE STATISTICS | | | | | UNIVARIATE INCREMENT | |
|---|---|---|---|---|---|---|
| STEP | PARAMETER | CHI-SQUARE | D.F. | PROBABILITY | CHI-SQUARE | PROBABILITY |
| 1 | CONSTR: 14 | 7.512 | 1 | 0.006 | 7.512 | 0.006 |
| 2 | CONSTR: 11 | 11.081 | 2 | 0.004 | 3.570 | 0.059 |
| 3 | CONSTR: 1 | 14.276 | 3 | 0.003 | 3.195 | 0.074 |
| 4 | CONSTR: 4 | 16.566 | 4 | 0.002 | 2.290 | 0.130 |
| 5 | CONSTR: 6 | 18.822 | 5 | 0.002 | 2.255 | 0.133 |
| 6 | CONSTR: 9 | 20.873 | 6 | 0.002 | 2.051 | 0.152 |
| 7 | CONSTR: 7 | 22.639 | 7 | 0.002 | 1.766 | 0.184 |
| 8 | CONSTR: 10 | 24.746 | 8 | 0.002 | 2.106 | 0.147 |
| 9 | CONSTR: 2 | 25.313 | 9 | 0.003 | 0.567 | 0.451 |
| 10 | CONSTR: 8 | 25.790 | 10 | 0.004 | 0.477 | 0.490 |
| 11 | CONSTR: 13 | 25.962 | 11 | 0.007 | 0.172 | 0.678 |
| 12 | CONSTR: 5 | 26.112 | 12 | 0.010 | 0.150 | 0.699 |

CONSTRAINTS FROM GROUP 2

CONSTR: 1 (1,V2,F7)-(2,V2,F7)=0;
CONSTR: 2 (1,V4,F4)-(2,V4,F4)=0;
CONSTR: 3 (1,V5,F4)-(2,V5,F4)=0;
CONSTR: 4 (1,V6,F4)-(2,V6,F4)=0;
CONSTR: 5 (1,V15,F5)-(2,V15,F5)=0;
CONSTR: 6 (1,V16,F5)-(2,V16,F5)=0;
CONSTR: 7 (1,V17,F5)-(2,V17,F5)=0;
CONSTR: 8 (1,V18,F5)-(2,V18,F5)=0;
CONSTR: 9 (1,F3,F3)-(2,F3,F3)=0;
CONSTR: 10 (1,F5,F5)-(2,F5,F5)=0;
CONSTR: 11 (1,F4,F3)-(2,F4,F3)=0;
CONSTR: 12 (1,F6,F5)-(2,F6,F5)=0;
CONSTR: 13 (1,F7,F4)-(2,F7,F4)=0;
CONSTR: 14 (1,F7,F6)-(2,F7,F6)=0;

This study expected the structural paths from A → I and from SN → I to be significantly different between the two groups. Both of these constraints were released and the model was re-estimated (Model 13). The full set of fit statistics and parameter estimates for Model 13 is presented in Table 23. Coefficients for the structural paths A → I and SN → I, are reported separately for the high and low groups. The improvement in model fit achieved by releasing the two constraints can be tested for significance by taking the difference of the chi-square for Model 12 and Model 13. The

chi-square difference is 10.762 with 2 degrees of freedom; this difference is significant at $p<0.005$.

**Table 23**

**Model 13: Self-Monitoring and Invariance of Factorial Structure**

**Fit Statistics and Parameter Estimates**

| Fit Indices | Value | Parameter | Estimate | Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.628 | P → A (LO) | 0.136 | 0.237 | 0.433 |
| Bentler-Bonnett Nonnormed Fit Index | 0.858 | N → A (LO) | 0.282 | 0.242 | 0.925 |
| Comparative Fit Index (CFI) | 0.874 | PN → A (HI) | 3.204 | 20.430 | 0.509 |
| Bollen (IFI) Fit Index | 0.880 | NACH → A (LO) | -0.010 | 0.041 | -0.019 |
| McDonald (MFI) Fit Index | 0.626 | NACH → A (HI) | -0.010 | 0.041 | -0.020 |
| LISREL GFI Fit Index | 0.798 | **G → SN (LO)**** | **-0.366** | -0.366 | **-0.236** |
| LISREL AGFI Fit Index | 0.745 | **G → SN (HI)**** | **-0.366** | -0.366 | **-0.207** |
| Root Mean Sq. Residual (RMR) | 3.288 | **A → I (LO)***** | **12.444** | 2.046 | **0.836** |
| Standardized RMR | 0.123 | **A → I (HI)***** | **11.110** | 1.358 | **0.990** |
| Root Mean Sq.Error of App. (RMSEA) | 0.048 | **SN → I (LO)***** | **1.053** | 0.358 | **0.253** |
| Chi-square | 314.245 | SN → I (HI) | -0.240 | 0.234 | -0.094 |
| Model degrees of freedom | 242 | **P ↔ N (LO)**** | **-5.997** | 2.633 | **-0.723** |

Figures in bold are significant: *** at $p<0.001$ level, ** at $p<0.05$ level, * at $p<0.1$ level.

Hypotheses H11a and H11b state that for each group, high and low, the parameter estimate for attitude towards the act to intention, A → I, is greater than the parameter estimate of subjective norms to intention, SN → I. To test these hypotheses the difference between the coefficients for A and SN was taken for each group and divided by the respective standard error for SN. This statistic should be approximately normally distributed. For the high group, this statistic equals 48.50, $p<0.000$; and for the low group this statistic equals 31.81, $p<0.000$. Thus both differences are significant and Hypotheses H11a and H11b are supported by the data.

Hypothesis H11c stated that subjective norms have more influence on intention for high self-monitors than for low self-monitors. To test this hypothesis the parameter

estimate for the structural path from subjective norms to intention, SN → I, was compared for high and low self-monitors (Table 23). If the hypothesis is supported the parameter estimates for high self-monitors should be higher than the parameter estimate for low self-monitors. The results in Table 23 indicate that the parameter estimate for high self-monitors is lower than the parameter estimate for high self-monitors. The hypothesis is not supported. Review of the LM Test results for the fully constrained model, Model 12, indicates that this structural path was significant. Thus the structural paths SN → I for low and high self-monitors are significantly different at the $p<0.05$ level, but not in the expected direction.

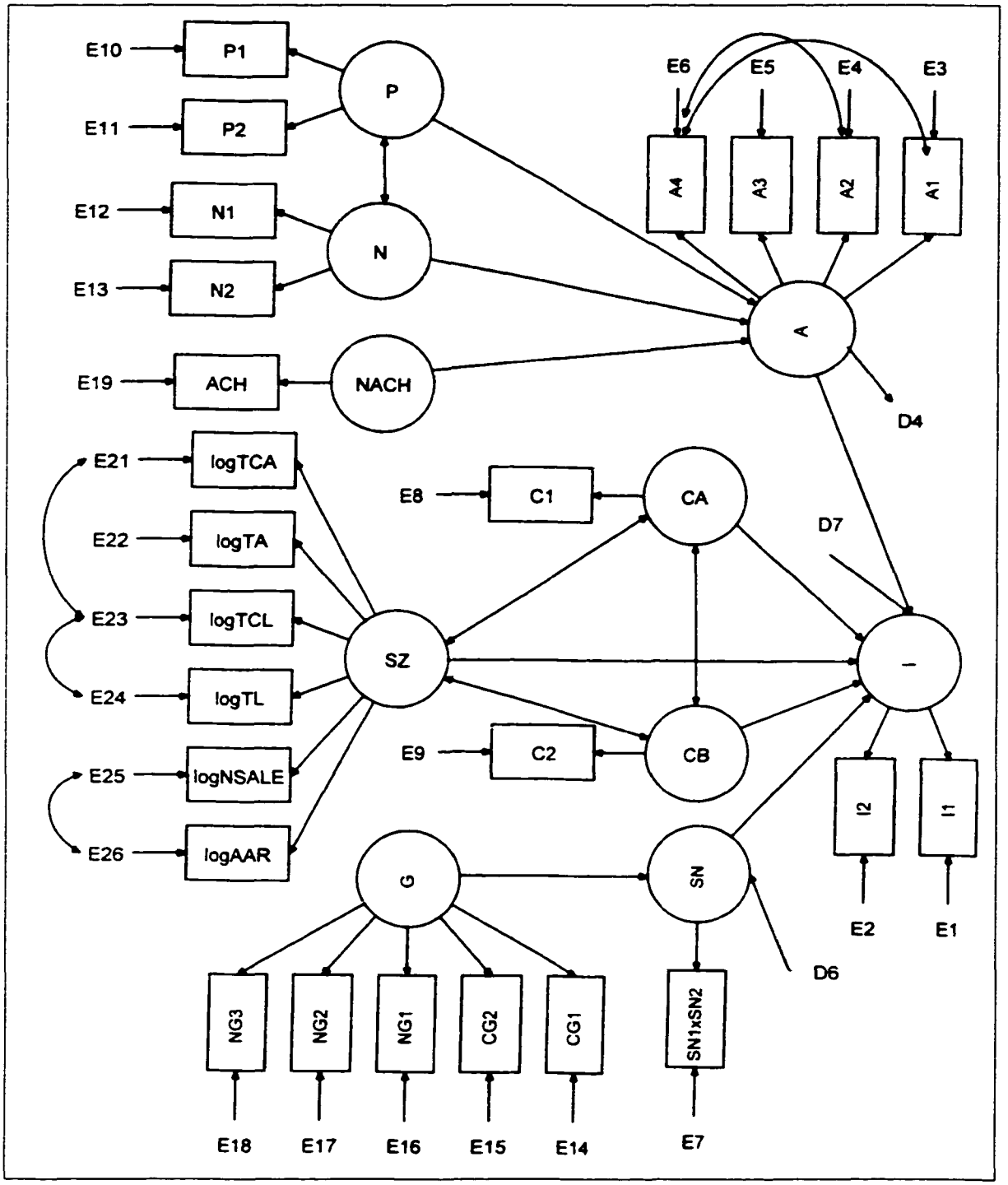
Hypothesis H11d stated that the attitude towards the behavior has more influence on intention for low self-monitors than for high self-monitors. Comparing the structural path estimates A → I for low and high self-monitors from Table 23 reveals that the structural path estimate for low self-monitors is greater than the structural path estimate for high self-monitors. But this path was not significant in the LM Test output for Model 12; therefore this difference is not significant and the hypothesis is not supported. Recall however that the tests of the hypotheses are based on a model that did not include Size or the factors for Compensation Structure. The results might change if these variables could be included in the model.

### 5.4.7 Moral Reasoning

The data set was split into two groups by dividing at the median DIT P-score of 40. The high moral reasoning group has 56 cases with DIT P-scores > 40 (HI), the low moral reasoning group has 83 cases with DIT P-scores ≤ 40 (LO). A test of invariant factorial structure was executed with EQS and the split data. The model analyzed for each group is presented in Figure 23.

**Figure 23**

**Moral Reasoners Model**



The model contains the full set of factors and variables investigated in this study. Originally unconstrained paths were constrained equal for both high and low groups and simultaneously estimated. EQS does not provide robust statistics for this method of analysis; as a result, no robust statistics are reported. The full set of fit statistics and parameter estimates for Model 14 is presented in Table 24.

**Table 24**

**Model 14: Moral Reasoning and Invariance of Factorial Structure**

**Fit Statistics and Parameter Estimates**

| Fit Indices | Value | Parameter | Estimate | Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.677 | P → A (LO) | -0.114 | 0.081 | -0.228 |
| Bentler-Bonnett Nonnormed Fit Index | 0.847 | P → A (HI) | -0.114 | 0.081 | -0.246 |
| Comparative Fit Index (CFI) | 0.858 | **N → A (LO)*** ** | **0.137** | 0.044 | **0.542** |
| Bollen (IFI) Fit Index | 0.861 | **N → A (HI)*** ** | **0.137** | 0.044 | **0.583** |
| McDonald (MFI) Fit Index | 0.179 | NACH → A (LO) | 0.003 | 0.042 | 0.006 |
| LISREL GFI Fit Index | 0.700 | NACH → A (HI) | 0.003 | 0.042 | 0.007 |
| LISREL AGFI Fit Index | 0.650 | **G → SN (LO)**** | **-0.353** | 0.173 | **-0.235** |
| Root Mean Sq. Residual (RMR) | 7.778 | **G → SN (HI)**** | **-0.353** | 0.173 | **-0.242** |
| Standardized RMR | 0.134 | **A → I (LO)*** ** | **10.854** | 1.591 | **0.912** |
| Root Mean Sq.Error of App. (RMSEA) | 0.062 | **A → I (HI)*** ** | **10.854** | 1.591 | **0.735** |
| Chi-square | 843.043 | **SN → I (LO)**** | **0.506** | 0.212 | **0.165** |
| Model degrees of freedom | 557 | **SN → I (HI)**** | **0.506** | 0.212 | **0.139** |
| | | CA → I (LO) | -0.019 | 0.026 | -0.049 |
| | | CA → I (HI) | -0.019 | 0.026 | -0.043 |
| | | CB → I (LO) | 0.038 | 0.043 | 0.063 |
| | | CB → I (HI) | 0.038 | 0.043 | 0.054 |
| | | **SZ → I (LO)*** | **1.512** | 0.670 | **0.150** |
| | | **SZ → I (HI)*** | **1.512** | 0.670 | **0.130** |
| | | P ↔ N | -0.816 | 1.273 | -0.132 |
| | | CA ↔ CB | 50.551 | 40.825 | 0.105 |
| | | **SZ ↔ CA*** | **5.118** | 2.800 | **0.156*** |
| | | **SZ ↔ CB*** ** | **9.120** | 2.208 | **0.437** |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

EQS tests for invariance of factorial structure using the LM Test. The LM Test tests the null hypothesis that each specified constraint is true in the population. The results of the LM test are presented in Table 25; statistics are shown only for the top ten constraints. The omitted statistics are not significant.

## Table 25

## LM Test Statistics: Moral Reasoning and Invariance of Factorial Structure

| | CUMULATIVE MULTIVARIATE STATISTICS | | | | UNIVARIATE INCREMENT | |
|---|---|---|---|---|---|---|
| STEP | PARAMETER | CHI-SQUARE | D.F. | PROBABILITY | CHI-SQUARE | PROBABILITY |
| 1 | CONSTR: 14 | 15.416 | 1 | 0.000 | 15.416 | 0.000 |
| 2 | CONSTR: 31 | 25.708 | 2 | 0.000 | 10.292 | 0.001 |
| 3 | CONSTR: 15 | 32.597 | 3 | 0.000 | 6.888 | 0.009 |
| 4 | CONSTR: 11 | 38.323 | 4 | 0.000 | 5.726 | 0.017 |
| 5 | CONSTR: 10 | 43.081 | 5 | 0.000 | 4.758 | 0.029 |
| 6 | CONSTR: 19 | 47.024 | 6 | 0.000 | 3.943 | 0.047 |
| 7 | CONSTR: 3 | 50.675 | 7 | 0.000 | 3.650 | 0.056 |
| 8 | CONSTR: 4 | 54.682 | 8 | 0.000 | 4.007 | 0.045 |
| 9 | CONSTR: 8 | 57.266 | 9 | 0.000 | 2.584 | 0.108 |
| 10 | CONSTR: 28 | 59.329 | 10 | 0.000 | 2.063 | 0.151 |

CONSTRAINTS FROM GROUP 2

CONSTR: 1 (1,V2,F7)-(2,V2,F7)=0;
CONSTR: 2 (1,V4,F4)-(2,V4,F4)=0;
CONSTR: 3 (1,V5,F4)-(2,V5,F4)=0;
CONSTR: 4 (1,V6,F4)-(2,V6,F4)=0;
CONSTR: 5 (1,V11,F1)-(2,V11,F1)=0;
CONSTR: 6 (1,V13,F2)-(2,V13,F2)=0;
CONSTR: 7 (1,V15,F5)-(2,V15,F5)=0;
CONSTR: 8 (1,V16,F5)-(2,V16,F5)=0;
CONSTR: 9 (1,V17,F5)-(2,V17,F5)=0;
CONSTR: 10 (1,V18,F5)-(2,V18,F5)=0;
CONSTR: 11 (1,V22,F10)-(2,V22,F10)=0;
CONSTR: 12 (1,V23,F10)-(2,V23,F10)=0;
CONSTR: 13 (1,V24,F10)-(2,V24,F10)=0;
CONSTR: 14 (1,V25,F10)-(2,V25,F10)=0;
CONSTR: 15 (1,V26,F10)-(2,V26,F10)=0;
CONSTR: 16 (1,F1,F1)-(2,F1,F1)=0;
CONSTR: 17 (1,F2,F2)-(2,F2,F2)=0;
CONSTR: 18 (1,F3,F3)-(2,F3,F3)=0;
CONSTR: 19 (1,F5,F5)-(2,F5,F5)=0;
CONSTR: 20 (1,F8,F8)-(2,F8,F8)=0;
CONSTR: 21 (1,F9,F9)-(2,F9,F9)=0;
CONSTR: 22 (1,F10,F10)-(2,F10,F10)=0;
CONSTR: 23 (1,F2,F1)-(2,F2,F1)=0;
CONSTR: 24 (1,F9,F8)-(2,F9,F8)=0;
CONSTR: 25 (1,F10,F8)-(2,F10,F8)=0;
CONSTR: 26 (1,F10,F8)-(2,F10,F8)=0;
CONSTR: 27 (1,F4,F1)-(2,F4,F1)=0;
CONSTR: 28 (1,F4,F2)-(2,F4,F2)=0;
CONSTR: 29 (1,F4,F3)-(2,F4,F3)=0;
CONSTR: 30 (1,F6,F5)-(2,F6,F5)=0;
CONSTR: 31 (1,F7,F4)-(2,F7,F4)=0;
CONSTR: 32 (1,F7,F6)-(2,F7,F6)=0;
CONSTR: 33 (1,F7,F8)-(2,F7,F8)=0;
CONSTR: 34 (1,F7,F9)-(2,F7,F9)=0;
CONSTR: 35 (1,F7,F10)-(2,F7,F10)=0;

The LM Test indicates that the structural path of attitude towards the behavior to intention, A → I, is not equivalent for the two groups. This study expects the structural paths A → I and SN → I to be significantly different between the two groups. Both of these constraints were released and the model was re-estimated (Model 15). The full set of fit statistics and parameter estimates for Model 15 is presented in Table 26. There are two sets of coefficients for the structural paths A → I and SN → I, one for each group (high and low). The difference in chi-square between Model 14 and Model 15 is 11.968 with two degrees of freedom and is significant at $p<0.005$.

Hypotheses H14a and H14b state that for each group, high and low, the parameter estimate for attitude towards the act to intention, A → I, is greater than the parameter estimate of subjective norms to intention, SN → I. To test the hypotheses the difference between the coefficients for A and SN was taken for each group and divided by the respective standard error for SN. This statistic should be approximately normally distributed. For the high group, this statistic equals 43.12, $p<0.000$; and for the low group this statistic equals 32, $p<0.000$. Thus both differences are significant and Hypotheses H14a and H14b are supported by the data.

## Table 26

### Model 15: Moral Reasoning and Invariance of Factorial Structure

### Fit Statistics and Parameter Estimates

| Fit Indices | Value | Parameter | Estimate | Standard Error | Standardized Estimate |
|---|---|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.682 | **P → A (LO)*** | **-0.146** | 0.087 | **-0.257** |
| Bentler-Bonnett Nonnormed Fit Index | 0.852 | **P → A (HI)*** | **-0.146** | 0.087 | **-0.306** |
| Comparative Fit Index (CFI) | 0.863 | **N → A (LO)***** | **0.123** | **0.041** | **0.503** |
| Bollen (IFI) Fit Index | 0.866 | **N → A (HI)***** | **0.123** | **0.041** | **0.599** |
| McDonald (MFI) Fit Index | 0.190 | NACH → A (LO) | 0.016 | 0.040 | 0.030 |
| LISREL GFI Fit Index | 0.702 | NACH → A (HI) | 0.016 | 0.040 | 0.036 |
| LISREL AGFI Fit Index | 0.651 | **G → SN (LO)**** | **-0.353** | **0.158** | **-0.235** |
| Root Mean Sq. Residual (RMR) | 6.939 | **G → SN (HI)**** | **-0.353** | **0.158** | **-0.242** |
| Standardized RMR | 0.130 | **A → I (LO)***** | **9.052** | **1.428** | **0.887** |
| Root Mean Sq.Error of App. (RMSEA) | 0.061 | **A → I (HI)***** | **16.916** | **2.800** | **0.916** |
| Chi-square | 831.075 | SN → I (LO) | 0.413 | 0.270 | 0.118 |
| Model degrees of freedom | 555 | SN → I (HI) | 0.616 | 0.378 | 0.147 |
| | | CA → I (LO) | -0.018 | 0.027 | -0.066 |
| | | CA → I (HI) | -0.018 | 0.027 | -0.035 |
| | | CB → I (LO) | 0.027 | 0.044 | 0.069 |
| | | CB → I (HI) | 0.027 | 0.044 | 0.034 |
| | | SZ → I (LO) | 1.071 | 0.666 | 0.162 |
| | | SZ → I (HI) | 1.071 | 0.666 | 0.091 |
| | | P ↔ N | -0.524 | 1.066 | -0.090 |
| | | CA ↔ CB | 50.560 | 40.825 | 0.105 |
| | | **SZ ↔ CA*** | **5.115** | 2.800 | **0.156** |
| | | **SZ ↔ CB***** | **9.127** | **2.208** | **0.437** |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

Hypothesis 14c stated that subjective norms has more influence on intention for low moral reasoners than for high moral reasoners. To test this hypothesis the parameter estimate for the structural path from subjective norms to intention, SN → I, was compared for high and low moral reasoners, Table 26. If the hypothesis is supported the parameter estimate for low moral reasoners should be higher than the parameter estimate for high moral reasoners. The results in Table 26 show that the parameter estimate for low moral reasoners is lower than the parameter estimate for high moral reasoners, but the difference is not significant. Therefore, H14c is not supported.

Hypothesis H14d stated that attitude towards the behavior has more influence on intention for high moral reasoners than for low moral reasoners. To test this hypothesis the parameter estimate for the structural path from attitude towards the behavior to intention, A → I, was compared for high and low moral reasoners. If the hypothesis is supported the parameter estimate for high moral reasoners should be greater than the parameter estimate for low moral reasoners. The results in Table 26 demonstrate that the parameter estimate for high moral reasoners is greater than the parameter estimate for low moral reasoners. Review of the LM Test results for the fully constrained model, Model 14, indicates that this structural path was recommended for release. Thus the difference is significant at the $p<0.05$ level and H14d is supported.

### 5.4.8 Invariance of Latent Means

Invariant latent mean structure analysis with EQS was attempted to test hypotheses H10 and H13. This method is very sensitive to start values. It proved impossible to obtain reliable estimates for self-monitors because the program converges with various condition codes for linear dependencies and variances constrained at the lower bound. Alternative methods of analysis are presented in Section 5.4.10 to address these hypotheses.

The invariant latent mean structure analysis for the moral reasoning split data converged successfully and the results are included below. Hypothesis H13 was concerned with whether the unobserved latent mean for the intention factor differed between high and low moral reasoners. The results for this analysis are presented in Table 27.

Table 27 presents the means and fit indices for the latent factors. Hypothesis H13 is concerned only with intention; therefore if the mean for intention, I, is significant then it is unequal between groups. The results in Table 27 indicate that the estimate of the latent mean for intention, I, is not significant and therefore can be regarded as invariant between groups. Hypothesis H13 is not supported by the data.

**Table 27**

**Moral Reasoning: Latent Means Analysis**

| Fit Indices | Value | Factor | Estimated Mean |
|---|---|---|---|
| Bentler-Bonnett Normed Fit Index | 0.341 | P | 0.833 |
| Bentler-Bonnett Nonnormed Fit Index | 0.803 | N | -0.432 |
| Comparative Fit Index (CFI) | 0.814 | **NACH**** | **0.725** |
| Bollen (IFI) Fit Index | 0.818 | G | -0.642 |
| McDonald (MFI) Fit Index | 0.106 | **A*** | **0.313** |
| LISREL GFI Fit Index | 0.671 | SN | -0.168 |
| LISREL AGFI Fit Index | 0.591 | CA | 1.001 |
| Root Mean Sq. Residual (RMR) | 4.817 | **CB*** | **5.910** |
| Standardized RMR | 0.124 | SZ | 0.048 |
| Root Mean Sq.Error of App. (RMSEA) | 0.070 | I | 0.618 |
| Chi-square | 938.219 | | |
| Model degrees of freedom | 565 | | |

Figures in bold are significant: *** at p<0.001 level, ** at p<0.05 level, * at p<0.1 level.

### 5.4.9 Equivalent Models

As discussed earlier in Section 5.3, structural equation modeling is a confirmatory technique that tests the fit of a theoretical model to a set of data. There may be other equivalent models that fit the data as well as or better than the researcher's hypothesized model. Models are equivalent when they reproduce the same set of covariance matrices. "Equal fit is a necessary result of model equivalence. However, equal fit is not proof of model equivalence because fit measures from two models may only appear identical due to rounding error. Identifying equivalent models will yield support for a given

model if the equivalent models are ruled out or can reveal previously unrecognized plausible alternative models." (Lee and Hershberger 1990). Using Lee and Hershberger's (1990) replacement rule for identifying equivalent models results in thousands of models that are equivalent to the model proposed in this study (Model 9). Figure 24 is an example of one such model (Model 16). The total number of equivalent models is not itself of great importance; what is important is whether any of these equivalent models provide plausible alternatives to the model that forms the basis for this study. In particular, structural equation modeling techniques cannot be expected to decide between competing equivalent models postulated on differing causal relationships, since they will necessarily fit any set of data equally well. Such concerns can only be settled by considering whether alternative structural paths can be supported by substantive theory and our understanding of causality. "If one generates equivalent models by the application of a priori rules, the following two conditions can be used to determine a better model among equivalent models: time precedence and mediating mechanisms." (Lee and Hershberger 1990). To the extent that present theory cannot falsify alternative models, they should be retained until better evidence or investigative techniques are available. Essentially, this approach recognizes inherent limitations in the techniques of analysis used.

Structural paths between two variables X and Y take one of three forms: direct casual paths $X \rightarrow Y$, $X \leftarrow Y$, or a covariance $X \leftrightarrow Y$. For each of the paths in Model 9, certain changes that could be made in applying Lee and Hershberger's (1990) replacement rule would result in equivalent models. Each of these possible changes is examined in turn in the paragraphs that follow.

A → I: this path results from the reasoned action theory stating that attitudes towards the behavior directly affect intentions to perform the behavior. A correlation between A and I is difficult to refute. A correlation indicates that there are factors not included in the model that effect both A and I. In the context of financial statement fraud it is difficult to envisage the manager forming intentions without evaluating the outcomes of his actions and forming attitudes towards the behavior. Neither the theory nor the data can provide means to test for excluded factors.

SN → I: subjective norms (SN) represent the perceived expectations of others and the motivation to comply with these expectations. The theory of reasoned action states that these subjective norms affect the intention to perform the behavior. A correlation between SN and I is difficult to refute. A correlation indicates that there are factors not included in the model that effect both SN and I. Neither the theory nor the data can provide means to test for excluded factors. In the context of financial statement fraud it is difficult to imagine the manager forming intentions without first considering the expectations of relevant referent groups.

P → A and N → A: positive evaluations of the outcome and negative evaluations of the outcome lead to attitudes towards the behavior. Evaluations of the outcome are modeled with a causal link to attitude towards the act; but it is possible that attitudes towards the behavior can effect an individual's evaluations of the outcomes of the behavior. Thus a reverse arrow is possible. A covariance between evaluations of the outcome and attitudes cannot be rejected either.

There may be factors external to the hypothesized model that affect both constructs.

NACH → A: need for achievement is an internal, individual factor that affects attitudes towards the behavior. It is difficult to speculate on an attitude toward a behavior causing need for achievement. It is equally improbable that there are factors that affect both need for achievement and attitudes. Need for achievement is a personality characteristic that is usually stable over time whereas attitudes towards the behavior of reporting fraudulently on the financial statements, or any specific behavior can change over time. Any other path than the one hypothesized is implausible.

P ↔ N: the correlation between positive and negative belief evaluations of the possible outcomes of the behavior can be changed into a unidirectional path in an equivalent model, implying that one either causes or precedes the other. The evaluations of the possible outcome is probably formed simultaneously in the individual's mind or if one type of outcome preceded the other it is difficult to distinguish which would occur first. Thus a covariance is the most plausible path.

G → SN: the perceived expectations of various groups and the motivation to comply with each group are modeled with a causal link to general subjective norms; it is possible that general subjective norms can affect the perceived expectations of each referent group. Thus a reverse arrow is possible. A covariance between these factors cannot be rejected either; there may be factors external to the purported model that affect both constructs.

CA/CB → I: Compensation Structure affects intention to perform the behavior. Compensation Structure is, in part, determined by events outside of the individual's control. The individual's intention to perform a behavior cannot effect these external authorities. An external factor that affects both Compensation Structure and intentions is modeled in this study: Company Size. Thus a covariance that captures the effects is also plausible.

CA/CB ↔ SIZE: the Size of the firm and Compensation Structure are correlated. There may be other factors not included in this model that effect both Compensation Structure and Size, such as general economic conditions, industry, etc. A covariance is the best form of structural path to model these effects. A unidirectional path from CA/CB → Size is the least plausible path, the amount of compensation a company gives its CFO does not determine the size of the company.

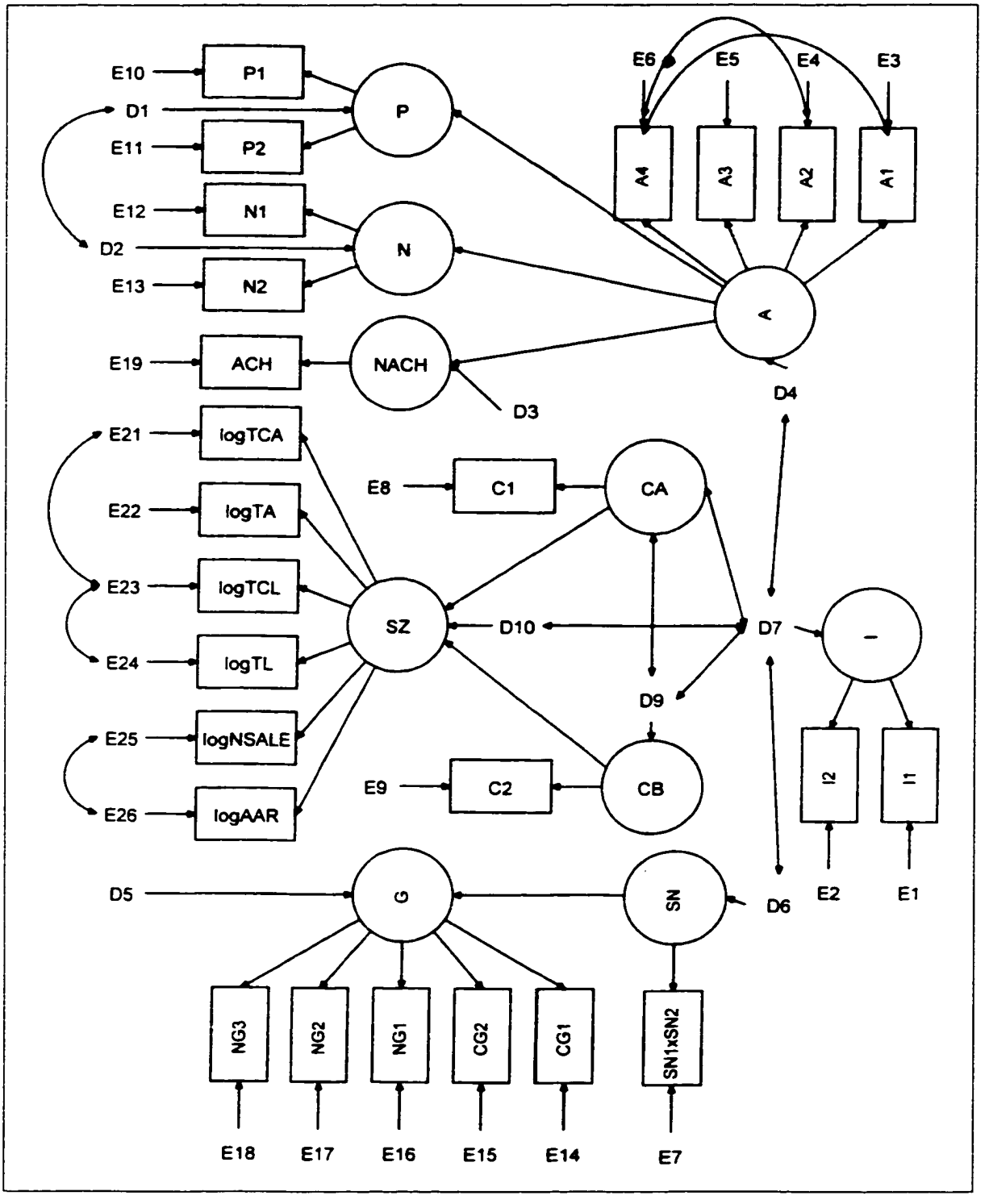
SIZE → I: present theory asserts that company size affects intention to perform the behavior. Company size is determined by many global and local economic factors. An individual's intentions can have no effect on company size. A covariance would indicate that factors not included in this model affect both company size and intentions. It is difficult to identify factors that affect a construct as macro and long-term as company size also affecting a construct as micro as an individual's intentions.

CA ↔ CB: a covariance is the most likely relationship between the two factors that represent Compensation Structure. A CFO is compensated by the company in many forms all of which are probably determined by the same overall factors.

The direction of most of the direct causal paths cannot be reversed but the possibility of replacing some of the direct paths with covariances cannot be invalidated. There may exist many factors unaccounted for in this model that simultaneously affect two or more modeled factors. The current state of the theory and the data collected for this study does not allow the investigation of all of these alternative models. Consequently, there are some equivalent models that still remain as plausible alternatives to the theorized model.

**Figure 24**

**Equivalent Model**



### 5.4.10 Supplementary Analysis

This section analyzes hypotheses that could not be tested with structural equation modeling, specifically hypotheses H10, H12a and H12b.

Using common factor analysis in SPSS a factor was formed for intention from the variables I1 and I2. The principal axis method was used to extract factors with eigenvalues greater than one. Factors were also formed for Attitude from the variables A1, A2, A3, and A4, and for Size from the six variables used to measure Size. Subjective norm was measured in the usual way by multiplying SN1 by SN2. A dummy variable was coded for Self-Monitoring by dividing the data at the median and coding 0 as high and 1 as low. The following regression was estimated:

$$\text{Intention} = a_1 + b_1\text{Attitude} + b_2\ \text{Subjective norms} + b_3\,C1 + b_4\,C2 + b_5\ \text{Size} + b_6\ \text{SDS} + b_7\ \text{SMdummy} + b_8\ \text{SMdummy*A} + b_9\ \text{SMdummy*SN} + b_{10}\ \text{SMdummy*C1} + b_{11}\ \text{SMdummy*C2} + b_{12}\ \text{SMdummy*Size} + b_{13}\ \text{SMdummy*SDS} + e.$$

The results for this regression are presented in Table 28.

**Table 28**

**Results for Compensation Structure and Self-Monitoring Regression**

| Variable | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|---|
| | B | Std. Error | Beta | | |
| Constant | 0.130 | 0.223 | | 0.583 | 0.561 |
| Attitude | 0.477 | 0.096 | 0.493 | 4.967 | 0.000 |
| SN | -5.550E-02 | 0.072 | -0.067 | -0.772 | 0.442 |
| C1 | -4.263E-02 | 0.080 | -0.051 | -0.530 | 0.597 |
| C2 | -8.250E-02 | 0.086 | -0.098 | -0.963 | 0.338 |
| Size | 0.272 | 0.104 | 0.329 | 2.615 | 0.010 |
| SDS | -5.210E-02 | 0.058 | -0.091 | -0.897 | 0.372 |
| SMdummy | -0.746 | 0.345 | -0.443 | -2.165 | 0.033 |
| AxSMdummy | 0.220 | 0.132 | 0.165 | 1.670 | 0.098 |
| SNxSMdummy | 0.353 | 0.107 | 0.292 | 3.297 | 0.001 |
| C1xSMdummy | -5.436E.03 | 0.004 | -0.143 | -1.326 | 0.188 |
| C2xSMdummy | 1.518E-02 | 0.007 | 0.285 | 2.191 | 0.031 |
| SizexSMdummy | -0.202 | 0.129 | -0.202 | -1.566 | 0.120 |
| SDSxSMdummy | 0.231 | 0.076 | 0.523 | 30.38 | 0.003 |

a. Dependent Variable: Intention

The regression has an F statistic = 12.251 and is significant at the $p<0.000$ level. The R-square is 0.596 and the adjusted R-square is 0.547. The coefficients on C1 and C2 estimate the effect of Compensation Structure for high self-monitors and address H12b. Neither coefficient is significant, supporting H12b, which states that high self-monitors are not influenced by Compensation Structure. The coefficients for C1xSMdummy and C2xSMdummy measure the differential effect of Compensation Structure for high and low self-monitors. C2xSMdummy is positive and significant, supporting H12a. This hypothesis stated that low self-monitors have higher intentions to report fraudulently on the financial statements in the presence of high performance-

related Compensation Structure. However, C1xSMdummy is not significant; therefore results for H12a are inconclusive.

To test hypothesis H10 analysis of variance was run with the factor for intention and with the SMdummy. The results are presented in Table 29.

**Table 29**

**ANOVA for Self-Monitoring**

| | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|
| Regression | 0.984 | 1 | 0.984 | 1.290 | 0.258 |
| Residual | 102.189 | 134 | 0.763 | | |
| Total | 103.173 | 135 | | | |

The ANOVA result for self-monitoring estimate a mean of –9.4E-02 for high self-monitors and a mean of 7.67E-02 for low self-monitors. Thus the mean for high self-monitors is lower than the mean for low self-monitors, although the difference is not significant. The ANOVA used the split self-monitoring data to test the difference in the means for the two groups; the discretization of the self-monitoring data into two halves causes some loss in measurement precision. A regression was executed with the original, unsplit self-monitoring data and the intention factor. The result for this regression is presented in Table 30.

**Table 30**

**Regression Results for Intention and Self-Monitoring**

| | Unstandardized B | Standard Error | Standardized B | t | Sig. |
|---|---|---|---|---|---|
| Constant | 0.749 | 0.459 | | 1.632 | 0.105 |
| SM | -5.69E-02 | .034 | -0.141 | -1.654 | 0.101 |

a Predictors: (Constant), SM
b Dependent Variable: Intention

The regression result indicates the coefficient for self-monitoring is negative. This indicates that low self-monitors are more likely to have higher intentions to commit fraud[12]. This is contrary to the stated hypothesis. The reported significance for the regression is $p<0.101$, but this reported significance results from a two-tailed test. The stated hypothesis H10 requires a one-tailed test. Thus the one-tailed significance for this regression is $p<0.051$, and the coefficient for self-monitors is very close to significant. Hypothesis H10 stated high self-monitors would express higher intentions of fraudulent financial statement reporting than low self-monitors.

The regression for Table 28 was rerun as a two-block regression. The previous regression looked only at the effect of self-monitoring on intention. The expanded regression looks at the total effect of self-monitoring after taking into account the effect of all other variables on intention. The first block regressed the variables attitude, subjective norms, C1, C2, Size, and SDS on intention. The second block added the variables SMdummy, SMdummy*A, SMdummy*SN, SMdummy*C1, SMdummy*C2, SMdummy*Size and SMdummy*SDS as independent variables to the regression. Block

[12] This is consistent with the ANOVA results because low self-monitors were coded as 1 and high self-monitors were coded as 0 for the self-monitoring split.

1 had an R-square of 0.457 and an adjusted R-square of 0.429; addition of the second block of variables resulted in an R-square of 0.596 and an adjusted R-square of 0.547. The change in R-square is significant, $F = 5.304$, $p<0.000$. Self-monitoring significantly improves model fit and has a significant effect on intention. Also the coefficient for SMdummy is negative and significant. Thus the direction of H10 is not as expected. Overall evidence regarding significance is mixed. Hypothesis H10 is not supported by the data.

# 6. CONCLUSIONS

**Table 31**

**Summary of Hypotheses Results**

| Hypothesis | Result |
|---|---|
| H1: P→A > 0 | Not significant. |
| H2: N →A > 0 | Expected sign, significant for all the unsplit models. |
| H3: NACH → A < 0 | Expected sign, not significant. |
| H4/5: G → SN < 0 | Expected sign, significant at p<0.10. |
| H6: A → I > 0 | Expected sign, significant for all models. |
| H7a: CA → I > 0 | Not significant. |
| H7b: CB → I > 0 | Expected sign, not significant. |
| H8: SN → I > 0 | Not significant. |
| H9: SZ → I > 0 | Expected sign, significant. |
| H10: High self-monitors will express higher intentions of fraudulent reporting | Mixed significance, not supported. |
| H11a: For high self-monitors A→I>SN→I | Significant. |
| H11b: For low self-monitors A→I>SN→I | Significant. |
| H11c: SN→I is greater for high self-monitors than low self-monitors | Rejected, significantly lower. |
| H11d: A→I is greater for low self-monitors than high self-monitors | Expected sign, not significant. |
| H12a: Low self-monitors express higher intentions when compensation is high | Inconclusive, not supported. |
| H12b: Compensation does not influence high self-monitors | Accepted, not significant. |
| H13: Low moral reasoners will express higher intentions of fraudulent reporting | Not significant. |
| H14a: For high moral reasoners A→I>SN→I | Significant. |
| H14b: For low moral reasoners A→I>SN→I | Significant. |
| H14c: SN→I is greater for low moral reasoners than high moral reasoners | Not significant. |
| H14d: A→I is greater for high moral reasoners than low moral reasoners | Expected sign, significant. |

Table 31 summarizes the results of the hypothesis testing.

The results of this study present an important first step in explaining CFO intention to report fraudulently in the financial statements. By evaluating individual and socio-environmental factors we can assess the basis for CFO intention. Johnson et al. (1993) conclude that it is important to understand the intentions of management before attempting to develop strategies to identify the deception of financial statement fraud.

The present study attempts to identify additional factors that can help auditors assess fraud risk and detect management financial statement fraud. The ultimate goal of this project is to provide auditors with information that will help them predict who will commit financial statement fraud under what circumstances. Improved fraud risk assessment and detection may help reduce some of the litigation costs that have been plaguing the accounting profession in recent years and may also help remove any blemish on the profession's reputation. A recent survey indicates that litigation costs account for 5 percent of net income of public accounting firms (Pincus 1994). A reduction in litigation costs can make the accounting firms more efficient and competitive.

The study also attempts to validate certain red flags (see Footnote 1) for fraud, specifically those that relate to compensation. The results indicate that Compensation Structure does not affect intentions to report fraudulently on financial statements, contrary to hypothesis and prior research. No research had previously been performed on Compensation Structure and its ability to signal fraud, but it has been treated in many studies as a valid red flag. More research is required on the measurement of Compensation Structure and on the effect of Compensation Structure on willingness to

commit financial statement fraud. It is possible that the measures of Compensation Structure used in this study did not accurately capture Compensation Structure. Some of the scenarios used in the study relate directly to Compensation Structure while others do not. Also the compensation data was collected in the demographics section of the questionnaire. The CFOs may not have related their actual compensation structure to the role they assumed in the scenarios.

The lack of results for Compensation Structure may also be due to lack of variability in the compensation data. Compensation Structure was measured with two variables C1 and C2; both measures were collected as percentages and as a result could range from 0 to 100. Table 32 presents descriptive statistics for the variables C1 and C2.

**Table 32**

**Descriptive Statistics for C1 and C2**

| | C1 | C2 |
|---|---|---|
| **Minimum** | 0 | 0 |
| **Maximum** | 100 | 60 |
| **1st Quartile** | 1 | 0 |
| **Median** | 10 | 20 |
| **3rd Quartile** | 37.5 | 30 |
| **Mean** | 21.76 | 19.26 |
| **Standard Deviation** | 27.69 | 17.51 |
| **Coefficient of Variation** | 1.27 | 0.908 |
| **Skewness** | 1.257 | 0.541 |
| **Kurtosis** | 0.33 | -0.764 |

It is difficult to assess variability without something to compare it with. The Coefficient of Variation[13] was computed for all the measured variables in order to compare the variability of the variables within the study. The mean value for the calculated Coefficient of Variation for all the variables was 3.49, but this value is severely influenced by outliers. Variables with a mean very close to zero result in very large values for the Coefficient of Variation. The median value for the Coefficient of Variation was 0.68. The individual values for C1 and C2 are 1.27 and 0.908 respectively. When the frequency distribution for all the Coefficient of Variation values for the variables in the study is examined the value for C1 is at the $57^{th}$ percentile and the value for C2 is at the $54^{th}$ percentile.

An alternative method for comparing variability is to compare to a standard normal distribution using kurtosis. A positive kurtosis indicates that the variable's distribution is wider and the tails are thinner than that of a standard normal distribution. A negative kurtosis indicates that the variable's distribution is narrower and the tails are thicker than a standard normal distribution. The kurtosis for C1 = 0.33 and for C2 = -0.764. Thus, the distributions for both C1 and C2 are different from a normal standard distribution, but they differ in opposite directions. Neither difference is significant at the $p<0.01$ level (Snedecor and Cochran 1989).

Perhaps the most relevant method of measuring whether there is enough variability is to compare the sample variability to the (unknown) population variability. Both C1

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[13] The Coefficient of Variation = (standard deviation * 100%)/mean. This is the standard deviation with the scale removed.

and C2 were reported as percentages, so their possible range is 0 to 100. The range of reported values for C1 in the sample spans the entire possible population range of 0 to 100. The range of reported values for C2 in the sample is also substantial; it ranges from 0 to 60, and spans 60 percent of the possible population range. Comparing the sample variability of C1 and C2 with the other variables, with a standard normal distribution, or with the possible population range, does not appear to justify concerns that lack of a significant relationship in the EQS model between Compensation Structure and intention is caused by insufficient variability in these two measures.

Size has emerged as a potentially important red flag for detecting financial statement fraud. Larger companies were theorized to harbor environments more tolerant of deviant behavior because they are more decentralized (Blau 1970), have more influence over regulatory agencies (Quirk 1989), and have the economic ability to afford fines and penalties (Yeager 1986). More research is required into the nature of company size and its effect on the individual. Size has shown a strong positive relationship to CFO intention to report fraudulently on financial statements.

The reasoned action model has performed well in this setting. This is the first study to apply the reasoned action model to the area of financial reporting. The results are similar to those obtained in prior research, a strong A → I link and a weaker SN → I link. The model should now be extended to more areas of accounting and auditing research. The structural path N → A proved robust for all models. Since A → I is also a very robust path, making management fully aware of the negative effects of fraudulently reporting on the financial statements may help reduce the occurrence of fraudulent financial statements. Given that subjects in this study are already high-level

executives, strong training and public awareness intiatives by auditors, audit committees, regulators, and legislators may be necessary to create significant change in management perceptions.

The results for self-monitors are contrary to expectations and prior research. Hypothesis 11, regarding the effect of Compensation Structure on low moral reasoners, is not supported. This could be because there is no effect, which is contradictory to prior research, or this could be a consequence of poor measures for Compensation Structure. Results for Hypothesis 10c are also counter-intuitive. The results indicate that subjective norms have more influence for low self-monitors. This can be interpreted as meaning low self-monitors are more influenced by what others think than high self-monitors in the setting of forming intentions to report fraudulently on financial statements. This is contradictory to theory for self-monitoring. More research needs to be carried out in this setting to see if these results can be replicated under more controlled circumstances or with a different population.

The results for moral reasoners are as expected. High self-monitors are more influenced by attitude towards the behavior or internal personal principles, instead of societal or subjective norms.

## Limitations

One disadvantage of survey research is the potential for non-response bias. Whether or not on-respondents are in some way significantly different from respondents cannot be answered with any certainty.

The use of scenarios also imposes certain limitations on the results. Scenarios can only examine hypothetical situations, but this is the recommended method for researching ethical dilemmas because it reduces socially desirable responding (Brief et al. 1996). Future research that directly observes CFO behavior would offer more definitive results.

Another limitation of the present study is small sample size (by structural equation modeling standards). The possible reasons for the low response rate were discussed in Section 5.1 and include the length and sensitive nature of the questionnaire.

Nonnormality of the data resulting from the use of categorical variables is another limiting factor for this study and was discussed in detail in Section 5.3.

Negative evaluation of attitudes towards the behavior and the low value of intention to report fraudulently on the financial statements also limit the study and were discussed in Section 5.4.1.

## Future Research

Future research should include an in-depth investigation for more precise measures of Compensation Structure. It should also include investigation of the counter-intuitive results for self-monitoring by running a similar study in a more controlled environment such as a laboratory experiment setting. There is also a need for further research into the relationship of company size and CFO intention to report fraudulently on the financial statements, rigorous study of the individual red flags and their relationship to fraudulent reporting and investigation of fraudulent reporting behavior.

Data gathered in the demographics portion of this study can be used to further enhance the present model and increase our understanding of circumstances in which financial statement fraud occurs. Some of the firm level data that is yet to be incorporated into future versions of the model are Big 5 versus non-Big 5 auditor, type of business, and whether the financial reporting decision is made within a group or by the individual. Some of the individual level data that has yet to be incorporated are years of managerial experience, education level, professional certification and years worked for the present company.

In conclusion, this study is a first step in examining CFO intention to report fraudulently on financial statements. It raises the question of the legitimacy of compensation structure as a red flag for assessing fraud risk, and introduces a potential new indicator of financial statement fraud: company size. The ultimate goal of this project was to provide auditors information that will help them predict who will commit financial statement fraud and under what circumstances. The identification of a new potential fraud indicator and the examination of the effectiveness of existing indicators should both help auditors to assess fraud risk better, and therefore to increase the probability of detecting financial statement fraud when it occurs.

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# APPENDIX A

Date: April 26, 1999

Nancy Uddin
Graduate School of Management
Department of Accounting and Information Systems

Mel Gibson
Chief Financial Officer
Blue Eyes, Inc.
One Rugged Drive
Unforgettable, NY 10097

Dear Mel Gibson:

As part of my doctoral thesis, I am conducting research into the attitudes and decision-making processes of senior practicing financial managers, and the effects on financial reporting decisions. This study is designed to help us improve the quality of financial reporting and auditing throughout the country, as well as develop more effective teaching materials. Naturally, there can be no better source of data then financial managers themselves, and I am writing to ask for your assistance in completing the attached questionnaire.

The questionnaire has been carefully developed with the assistance of both practicing financial managers and prominent academics. The questions are all based on the best current research on behavioral and judgment processes. In order for our analysis and conclusions to be reliable, it is important that you respond to all questions in the order that they appear so as to give us a complete picture.

So that you can feel completely free to answer all the questions, the survey will be carried out anonymously, and the identity of respondents will not be known to researchers or revealed in published research findings. Please do not include your name anywhere on the questionnaire that you return; you should keep this cover letter, which does contain your name, as part of your own records.

The questionnaire requires your response and reaction to various situations. The task requires you to choose the appropriate response from a range of possible answers. Generally speaking, your initial response to a question is what the survey is seeking to ascertain, and you need not agonize unduly over your answers. Pre-testing has shown that it should be possible to provide complete and unbiased responses to the questionnaire in no more than forty minutes.

Our findings and conclusions will be available in August 1999. If you would like a copy of the results, which will be based on aggregates rather than individual answers, please send a separate email message to me at the address below. You may also contact me through email, regular mail at the address above, or by telephone, if you have any questions regarding the questionnaire or the research in general.

This study, which has significant implications for our financial reporting processes, cannot succeed without the assistance of financial managers such as you. If you are not in a position that is responsible for the issuance of your company's financial statements, please pass this questionnaire on to an individual who is responsible for making the reporting decisions of the company. Thank you in advance for your valuable time: the contributions of your experience and judgment will be greatly appreciated.

Sincerely,

Nancy Uddin
Email: nuddin@pegasus.rutgers.edu
Telephone: (973)790-6264

THE STATE UNIVERSITY OF NEW JERSEY

RUTGERS

# FINANCIAL STATEMENT REPORTING: ATTITUDES AND DECISION-MAKING PROCESSES

Nancy Uddin
Graduate School of Management
Department of Accounting and Information Systems

This booklet comprises the questionnaire. The second item is an interoffice memo followed by statements relating to the memo. While responding to those statements, please imagine that you have encountered the situation described in the memo in your day-to-day duties as an individual responsible for the financial reporting decisions of your company.

Thank you for your participation.

The statements on the following pages concern your personal reactions to a number of different situations. No two statements are exactly alike, so consider each statement carefully before answering. For those statements that require a true or false response, if a statement is TRUE or MOSTLY TRUE as applied to you choose True as your response, if a statement is FALSE or NOT USUALLY TRUE as applied to you choose False as your response.

***Please answer all the questions frankly and honestly: your answers will be kept in the strictest confidence. Please check the box for the appropriate answer.***

| | | | |
|---|---|---|---|
| 1. | I find it hard to imitate the behavior of other people. | ☐ True | ☐ False |
| 2. | I rarely need the advice of my friends to choose movies, books, or music. | ☐ True | ☐ False |
| 3. | My behavior is usually an expression of my true inner feelings, attitudes, and beliefs. | ☐ True | ☐ False |
| 4. | I have never intensely disliked anyone. | ☐ True | ☐ False |
| 5. | I have trouble changing my behavior to suit different people and different situations. | ☐ True | ☐ False |
| 6 | I sometimes feel resentful when I don't get my way. | ☐ True | ☐ False |
| 7. | At a party I let others keep the jokes and stories going. | ☐ True | ☐ False |
| 8. | I can only argue for ideas which I already believe. | ☐ True | ☐ False |
| 9. | I can make impromptu speeches even on topics about which I have almost no information. | ☐ True | ☐ False |
| 10. | On a few occasions, I have given up doing something because I thought too little of my ability. | ☐ True | ☐ False |
| 11. | I guess I put on a show to impress or entertain people. | ☐ True | ☐ False |
| 12. | When I am uncertain how to act in a social situation, I look to the behavior of others for cues. | ☐ True | ☐ False |
| 13. | I would probably make a good actor. | ☐ True | ☐ False |
| 14. | I sometimes appear to others to be experiencing deeper emotions than I actually am. | ☐ True | ☐ False |
| 15. | There have been times when I felt like rebelling against people in authority even though I knew they were right. | ☐ True | ☐ False |
| 16. | I laugh more when I watch a comedy with others than when alone. | ☐ True | ☐ False |
| 17. | In a group of people I am rarely the center of attention. | ☐ True | ☐ False |
| 18. | In different situations and with different people, I often act like very different persons. | ☐ True | ☐ False |
| 19. | I feel a bit awkward in company and do not show up quite so well as I should. | ☐ True | ☐ False |

| | | | |
|---|---|---|---|
| 20. | I am not particularly good at making other people like me. | ☐ True | ☐ False |
| 21. | Even if I am not enjoying myself, I often pretend to be having a good time. | ☐ True | ☐ False |
| 22. | I am sometimes irritated by people who ask favors of me. | ☐ True | ☐ False |
| 23. | I'm not always the person I appear to be. | ☐ True | ☐ False |
| 24. | I would not change my opinions (or the way I do things) in order to please someone else or win their favor. | ☐ True | ☐ False |
| 25. | I can look anyone in the eye and tell a lie with a straight face (if for a right end). | ☐ True | ☐ False |
| 26. | I have considered being an entertainer. | ☐ True | ☐ False |
| 27. | I am always courteous, even to people who are disagreeable. | ☐ True | ☐ False |
| 28. | I may deceive people by being friendly when I really dislike them. | ☐ True | ☐ False |
| 29. | In order to get along and be liked, I tend to be what people expect me to be rather than anything else. | ☐ True | ☐ False |
| 30. | I have never been good at games like charades or improvisational acting. | ☐ True | ☐ False |
| 31. | There have been times when I was quite jealous of the good fortune of others. | ☐ True | ☐ False |

| | | | |
|---|---|---|---|
| 32. | I would enjoy a party at which people played: | ☐ Roulette | ☐ Shuffleboard or horseshoes |
| 33. | If I were a relief pitcher, I would like to be called into the game when: | ☐ My team was losing 6 to 2 | ☐ The score was tied |
| 34. | I like working on a problem when: | ☐ I have a fifty-fifty chance of solving it | ☐ I have a small chance of solving it |
| 35. | When I am playing a game or participating in a sport, I am: | ☐ More concerned with having fun than winning | ☐ Very intent on winning |
| 36. | Once I am sure I can do a task: | ☐ I become bored with it | ☐ I enjoy it most |
| 37. | When I am reading a magazine and come across puzzles or quizzes: | ☐ I often stop to try them | ☐ I rarely stop to try them |
| 38. | When I participate in sport or game, I enjoy it: | ☐ More if a money bet is made | ☐ Less if a money bet is made |
| 39. | Among three competitors: | ☐ I would like to be the best player | ☐ I would not like to be the poorest player |
| 40. | If I were a pinch hitter, I'd like to come to bat when: | ☐ My team was losing 5 to 2 | ☐ The score was tied |
| 41. | I enjoy sports when I compete against: | ☐ One other individual | ☐ Several other individual players |

Assume that in conjunction with your present position as primary decision-maker for financial reporting issues you have received a memorandum that states the following:

The revenues for the company have fallen due to the shrinkage in global demand of goods and services caused by the Asian economic crisis. Certain key financial ratios are very close to debt covenant thresholds and the release of these figures would damage the company's position. It appears that the decline in revenues is temporary: the company is recouping losses by expanding its European markets. The projections for Europe look promising.

It occurs to you that prebilling shipments that will occur in the first three weeks of the next quarter can offset this large dip in revenues.

*Please respond to the following statements relating to the above memo. Please answer **all** the questions by providing your initial response. Check the appropriate number to indicate your answer.*

For example:

| | | | | |
|---|---|---|---|---|
| I usually have lunch with my coworkers | .Disagree | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |

| | | | | |
|---|---|---|---|---|
| 1. | Prebilling the next quarter's shipments to increase this quarter's revenue is: | Unrewarding: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Rewarding |
| 2. | Prebilling the next quarter's shipments to increase this quarter's revenue is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 3. | Prebilling the next quarter's shipments will increase the risk of a qualified audit report. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 4. | I usually do what the shareholders think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 5. | If I prebill the next quarter's shipments, most people who are important to the company will: | Disapprove: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Approve |
| 6. | Prebilling the next quarter's shipments will result in lower revenues in the next quarter. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 7. | I usually do what the Directors think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 8. | Reporting lower revenues in the next quarter is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 9. | Prebilling the next quarter's shipments to increase this quarter's revenue is: | Harmful: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Beneficial |
| 10. | Increasing the net income of the company is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 11. | Prebilling the next quarter's shipments to increase this quarter's revenue is: | Foolish: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Wise |

| | | | | |
|---|---|---|---|---|
| 12. | Avoiding debt renegotiations is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 13. | I intend to prebill the next quarter's shipments. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 14. | I usually do what the creditors think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 15. | My job is threatened by poor company performance. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 16. | If asked whether I should prebill the next quarter's shipments, most of the Directors would think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 17. | If asked whether I should prebill the next quarter's shipments, most of my colleagues would think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 18. | Prebilling the next quarter's shipments will increase this period's net income. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 19. | I usually do what my coworkers think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 20. | If asked whether I should prebill the next quarter's shipments, most of the creditors would think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 21. | An increased risk of a qualified audit report is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 22. | Prebilling the next quarter's shipments will avoid debt renegotiations. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 23. | I usually do what others think I should do. | Usually: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Not at all |
| 24. | If asked whether I should prebill the next quarter's shipments, most of the shareholders would say: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 25. | If asked whether I should prebill the next quarter's shipments, most of my family would say: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 26. | I usually do what my family thinks I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |

27. The likelihood that I will prebill the next quarter's shipments is:_____ %.

*In this section of the questionnaire you will be asked to give your opinions on several stories. Here is a story as an example:*

Frank Jones has been thinking about buying a car. He is married, has two small children, and earns an average income. The car he buys will be his family's only car. It will be used mostly to get to work and drive around town, but also sometimes for vacation trips. In trying to decide what car to buy, Frank Jones realized that there were a lot of questions to consider. Below there is a list of some of these questions.

If you were Frank Jones, how important would each of these questions be in deciding what car to buy?

Instruction for Part A:

On the left-hand side check one of the spaces by each statement of a consideration. (For instance, if you think that Statement no. 1 is not important in making a decision about buying a car, check the space on the right.)

IMPORTANCE:

| | | | | | |
|---|---|---|---|---|---|
| Great | Much | Some — | Little | No | 1. Whether the car dealer was in the same block as where Frank lives. |
| Great | Much | Some | Little | No | 2. Would a *used* car be more economical in the long run then a *new* car? |
| Great | Much | Some — | Little | No | 3. Whether the color was green, Frank's favorite color. |
| Great | Much | Some | Little | No | 4. Whether the cubic inch displacement was at least 200. (Note that if you are unsure about what something means, then mark it "no importance.") |
| Great | Much — | Some | Little | No | 5. Would a large roomy car be better than a compact? |
| Great | Much | Some | Little | No | 6. Whether the front connibilies were differential. (Note that if the statement sounds like gibberish of nonsense to you, mark it "no importance".) |

Instructions for Part B:

From the list of questions above, select the most important one of the whole group. Put the number of the most important question on the top line below. Do likewise for your second, third, and fourth most important choices. (Note that the top choices in this case will come from the statements that were checked on the far left-hand side – statements no. 2 and no. 5 were thought to be of much importance. In deciding what is *most* important, a person would re-read no. 2 and no. 5, pick one of them as the *most* important, and then put the other as "second most important," and so on.)

From the list of questions above, select the four most important:

Most important _____

Second most important _____

Third most important _____

Fourth most important _____

**Heinz and the Drug**

In Europe, a woman was near death from a rare kind of cancer. There was one drug that the doctors thought might save her. It was a form of radium that the druggist in the same town had recently discovered. The drug was expensive to make, and the druggist was charging ten times what the drug cost to make. He paid $2,000 for the radium and charged $20,000 for a small dose of the drug. The sick woman's husband, Heinz, went to everyone he knew to borrow the money, but he could get together only about $10,000, which is half of what it cost. He told the druggist that his wife was dying, and asked him to sell it cheaper or let him pay later. But the druggist said, "No, I discovered the drug and I'm going to make money from it." So Heinz became desperate and began to think about breaking into the man's store to steal the drug for his wife.

Should Heinz steal the drug? (Check one)

_____ Should steal it_____ Can't decide _____ Should not steal it

| IMPORTANCE: | | | | | | |
|---|---|---|---|---|---|---|
| Great | Much | Some | Little | No | 1. | Whether a community's laws are going to be upheld. |
| Great | Much | Some | Little | No | 2. | Isn't it only natural for a loving husband to care so much for his wife that he'd steal? |
| Great | Much | Some | Little | No | 3. | Is Heinz willing to risk getting shot as a burglar or going to jail for the chance that stealing the drug might help? |
| Great | Much | Some | Little | No | 4. | Whether Heinz is a professional wrestler, or has considerable influence with professional wrestlers. |
| Great | Much | Some | Little | No | 5. | Whether Heinz is stealing for himself or doing this solely to help someone else. |
| Great | Much | Some | Little | No | 6. | Whether the druggist's rights to his invention have to be respected. |
| Great | Much | Some | Little | No | 7. | Whether the essence of living is more encompassing than the termination of dying, socially and individually. |
| Great | Much | Some | Little | No | 8. | What values are going to be the basis for governing how people act toward each other. |
| Great | Much | Some | Little | No | 9. | Whether the druggist is going to be allowed to hide behind a worthless law that only protects the rich anyway. |
| Great | Much | Some | Little | No | 10. | Whether the law in this case is getting in the way of the most basic claim of any member of society. |
| Great | Much | Some | Little | No | 11. | Whether the druggist deserves to be robbed for being so greedy and cruel. |
| Great | Much | Some | Little | No | 12. | Would stealing in such a case bring about more of a total good for the whole society or not. |

From the list of questions above, select the four most important:

Most important _____
Second most important _____
Third most important _____
Fourth most important _____

**Escaped Prisoner**

A man has been sentenced to prison for 10 years. After one year, however, he escaped from prison, moved to a new area of the country, and took the name of Thompson. For eight years he worked hard, and gradually he saved enough money to buy his own business. He was fair to his customers, gave his employees top wages, and gave most of his own profits to charity. Then one day, Mrs. Jones, an old neighbor, recognized him as the man who had escaped from prison eight years before, and whom the police had been looking for.

Should Mrs. Jones report Mr. Thompson to the police and have him sent back to prison? (Check one)

_____ Should report him _____ Can't decide _____ Should not report him

IMPORTANCE:

| | | | | | | |
|---|---|---|---|---|---|---|
| Great | Much | Some | Little | None | 1. | Hasn't Mr. Thompson been good enough for such a long time to prove he isn't a bad person? |
| Great | Much | Some | Little | None | 2. | Every time someone escapes punishment for a crime, doesn't that just encourage more crime? |
| Great | Much | Some | Little | None | 3. | Wouldn't we be better off without prisons and the oppression of our legal system? |
| Great | Much | Some | Little | None | 4. | Has Mr. Thompson really paid his debt to society? |
| Great | Much | Some | Little | None | 5. | Would society be failing what Mr. Thompson should fairly expect? |
| Great | Much | Some | Little | None | 6. | What benefits would prisons be apart from society, especially for a charitable man? |
| Great | Much | Some | Little | None | 7. | How could anyone be so cruel and heartless as to send Mr. Thompson to prison? |
| Great | Much | Some | Little | None | 8. | Would it be fair to all the prisoners who had to serve out their full sentences if Mr. Thompson were let off? |
| Great | Much | Some | Little | None | 9. | Was Mrs. Jones a good friend of Mr. Thompson? |
| Great | Much | Some | Little | None | 10. | Wouldn't it be a citizen's duty to report an escaped criminal, regardless of the circumstances? |
| Great | Much | Some | Little | None | 11. | How would the will of the people and public good best be served? |
| Great | Much | Some | Little | None | 12. | Would going to prison do any good for Mr. Thompson or protect anybody? |

From the list of questions above, select the four most important:

Most important _____

Second most important _____

Third most important _____

Fourth most important _____

**The Doctor's Dilemma**

A woman was dying of cancer, which could not be cured, and she had only about six months to live. She was in terrible pain, but was so weak that a good dose of painkiller like morphine would make her die sooner. She was delirious and almost crazy with pain, and in her calm periods, she would ask the doctor to give her enough morphine to kill her. She said she couldn't stand the pain and that she was going to die in a few months anyway.

What should the doctor do? (Check one)

_____ He should give the woman an overdose that will make her die _____ Can't decide _____ Should not give the overdose

IMPORTANCE:

| | | | | | | |
|---|---|---|---|---|---|---|
| Great | Much | Some | Little | No | 1. | Whether the woman's family is in favor of giving her the overdose or not. |
| Great | Much | Some | Little | No | 2. | Is the doctor obligated by the same law as everybody else if giving her an overdose would be the same as killing her? |
| Great | Much | Some | Little | No | 3. | Whether people would be much better off without society regimenting their lives and even their deaths. |
| Great | Much | Some | Little | No | 4. | Whether the doctor could make it appear like an accident. |
| Great | Much | Some | Little | No | 5. | Does the state have the right to force continued existence on those who don't want to live? |
| Great | Much | Some | Little | No | 6. | What is the value of death prior to society's perspective on personal values? |
| Great | Much | Some | Little | No | 7. | Whether the doctor has sympathy for the woman's suffering or cares more about what society might think. |
| Great | Much | Some | Little | No | 8. | Is helping to end another's life ever a responsible act of cooperation? |
| Great | Much | Some | Little | No | 9. | Whether only God should decide when a person's life should end. |
| Great | Much | Some | Little | No | 10. | What values the doctor has set for himself in his own personal code of behavior. |
| Great | Much | Some | Little | No | 11. | Can society afford to let everybody end their lives when they want to? |
| Great | Much | Some | Little | No | 12. | Can society allow suicides or mercy killing and still protect the lives of individuals who want to live? |

From the list of questions above, select the four most important:

Most important _____

Second most important _____

Third most important _____

Fourth most important _____

Demographic Questions

*Please answer the questions as accurately as possible. Check off the box next to the best answer or write your response on the line provided, as appropriate.*

1. The primary business of the firm in which you are employed is:
   - ☐ a. Manufacturing
   - ☐ b. Retail
   - ☐ c. Banking
   - ☐ d. Other Service
   - ☐ e. Other

2. How many years have you worked for this company or a division of this company?

   _____ years

3. How much formal education have you received?
   - ☐ a. no college
   - ☐ b. some college
   - ☐ c. professional degree
   - ☐ d. earned a Bachelor's degree
   - ☐ e. earned a Master's degree
   - ☐ f. earned other post graduate degree

4. Are you
   - ☐ a. Female
   - ☐ b. Male

5. How many years have you held your present position in the company?

   _____ years

6. Your age is
   - ☐ a. under 30
   - ☐ b. 30 to 39
   - ☐ c. 40 to 49
   - ☐ d. 50 to 59
   - ☐ e. 60 and over

7. The percentage of my total personal assets represented by company assets is:

   _____ %.

8. Does a Big 5 accounting firm audit your company?
   - ☐ a. Yes
   - ☐ b. No

9. Do you make the financial accounting and reporting decisions of the company?
   - ☐ a. Yes, I make most of the financial accounting and reporting decisions
   - ☐ b. Yes, but as a member of a group of decision-makers.
   - ☐ c. No, I do not make any of the financial accounting or reporting decisions.

10. Have you ever intentionally misstated an account balance on the financial statements?
    - ☐ a. Yes
    - ☐ b. No.

11. How many years of managerial experience do you have?

    _____ years

12. Your compensation for 1998 was (compensation includes salary, bonus, stock options, fringe benefits, etc.)
    - ☐ a. less than $100,000
    - ☐ b. between $100,000 and $299,999
    - ☐ c. between $300,000 and $599,999
    - ☐ d. between $600,000 and $999,999
    - ☐ e. $1,000,000 and above

13. The company's average yearly sales or revenues from operations are:

    $_____

14. Does your company have an internal auditing department?
    - ☐ a. Yes
    - ☐ b. No

15. The amount of my compensation that is based on the company's reported performance is:

    _____ %.

16. What types of professional certifications do you have, if any? For example, CPA, CMA, CEE, etc.

    _____

Please place the completed questionnaire in the postage paid, pre-addressed, return envelope and mail at your earliest convenience. Please do not put your name or mailing address on the return envelope.

Thank you for your time and cooperation.

Assume that in conjunction with your present position as primary decision-maker for financial reporting issues you have received a memorandum that calls attention to the following:

Profits have been moderate this year and the net income figure is just below the point where you and other managers can receive a significant bonus.

Other managers have suggested including ten percent of the consigned goods in ending inventory figures. This will substantially increase net income and result in a considerable bonus for you and the other officers.

*Please respond to the following statements relating to the above memo. Please answer **all** the questions by providing your initial response. Check the appropriate number to indicate your answer.*

For example:

I usually have lunch with my coworkers. Disagree (-3) (-2) (-1) (0) (+1) (+2) (+3) Agree

| | | | | |
|---|---|---|---|---|
| 1. | Including ten percent of the consigned goods in ending inventory figures is: | Unrewarding: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Rewarding |
| 2. | Including ten percent of the consigned goods in ending inventory figures is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 3. | Including consigned goods in ending inventory figures will increase the risk of a qualified audit report. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 4. | I usually do what the shareholders think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 5. | If I include consigned goods in ending inventory figures, most people who are important to the company will: | Disapprove: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Approve |
| 6. | Including consigned goods in ending inventory figures will result in lower net income for the next quarter. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 7. | I usually do what the Directors thinks I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 8. | Reporting lower net income for the next quarter is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 9. | Including consigned goods in ending inventory figures to increase this quarter's net income is: | Harmful: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Beneficial |
| 10. | Increasing net income of the company is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 11. | Including ten percent of the consigned goods in ending inventory figures is: | Foolish: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Wise |
| 12. | Receiving a bonus is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |

| | | | | |
|---|---|---|---|---|
| 13. | I intend to include consigned goods in ending inventory figures. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 14. | I usually do what the creditors think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 15. | My job is threatened by poor company performance. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 16. | If asked whether I should include consigned goods in ending inventory figures, most of the Directors would think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 17. | If asked whether I should include consigned goods in ending inventory figures, most of my colleagues would think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 18. | Including consigned goods in ending inventory figures will increase the net income of the company. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 19. | I usually do what my coworkers think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 20. | If asked whether I should include consigned goods in ending inventory figures, most of the creditors would say: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 21. | An increased risk of a qualified audit report is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 22. | Including consigned goods in ending inventory figures will result in bonuses for the officers. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 23. | I usually do what others think I should do. | Usually: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Not at all |
| 24. | If asked whether I should include consigned goods in ending inventory figures, most of the shareholders would think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 25. | If asked whether I include consigned goods in ending inventory figures, most of my family would say: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 26. | I usually do what my family thinks I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |

27. The likelihood that I will include consigned goods in ending inventory figures is:_____ %.

Assume that in conjunction with your present position as primary decision-maker for financial reporting issues you have received a memorandum that calls attention to the following:

The legal department is concerned that several outstanding lawsuits are pending and some may need to be settled within the next year. The company's legal staff has determined that a number of legal issues may lead to material losses for the company. Disclosing this information will increase perceived firm risk and may cause a substantial negative stock market reaction.

Other managers have suggested not reporting most or all of this contingent liability to moderate or prevent the negative market reaction.

*Please respond to the following statements relating to the above memo. Please answer **all** the questions by providing your initial response. Check the appropriate number to indicate your answer.*

For example:

I usually have lunch with my coworkers. Disagree (-3) (-2) (-1) (0) (+1) (x2) (+3) :Agree

| | | | | |
|---|---|---|---|---|
| 1. | Not reporting the contingent liability is: | Unrewarding: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Rewarding |
| 2. | Not reporting the contingent liability is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 3. | Not reporting the contingent liability will increase losses later. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 4. | I usually do what the shareholders think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 5. | If I do not report the contingent liability, most people who are important to the company will: | Disapprove: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Approve |
| 6. | Not reporting the contingent liability will result in investors losing money when losses are eventually reported. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 7. | I usually do what the Directors think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 8. | Investors losing money when losses are reported is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 9. | Not reporting the contingent liability is: | Harmful: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Beneficial |
| 10. | Avoiding a negative market reaction is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 11. | Not reporting most or all of this contingent liability is: | Foolish: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Wise |
| 12. | Controlling firm risk is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |

| | | | | |
|---|---|---|---|---|
| 13. | I do not intend to report this contingent liability. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 14. | I usually do what the creditors think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 15. | My job is threatened by poor company performance. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 16. | If asked whether I should under-report the contingent liability, most of the Directors think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 17. | If asked whether I should under-report this contingent liability, most of my colleagues would think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 18. | Under-reporting this contingent liability will avoid a negative market reaction. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 19. | I usually do what my coworkers think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 20. | If asked whether I should under-report this contingent liability, most of the creditors think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 21. | Increased losses later are: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 22. | Under-reporting this contingent liability will control firm risk. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 23. | I usually do what others think I should do. | Usually: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Not at all |
| 24. | If asked whether I should under-report contingent liabilities, most of the shareholders would say: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 25. | If asked whether I should under-report this contingent liability, most of my family would say: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 26. | I usually do what my family thinks I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |

27. The likelihood that I will under-report this contingent liability is:_____ %.

Assume that in conjunction with your present position as primary decision-maker for financial reporting issues you have received a memorandum that states the following:

It appears the revenues of the company will fall below analyst predictions and company projections. Release of these numbers is likely to cause a significant drop in the company's stock price.

It occurs to you that you can moderate the effect of this large dip in revenues by recording in December a small amount of revenue on account that the company will earn in January. The contracts for these jobs have already been signed and the work will be completed in January.

*Please respond to the following statements relating to the above memo. Please answer **all** the questions by providing your initial response. Check the appropriate number to indicate your answer.*

For example:

| | | | | |
|---|---|---|---|---|
| I usually have lunch with my coworkers. | | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 1. | Pre-recording accounts receivable to increase this quarter's revenue is: | Unrewarding: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Rewarding |
| 2. | Pre-recording accounts receivable to increase this quarter's revenue is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 3. | Pre-recording accounts receivable will increase the risk of a qualified audit report. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 4. | I usually do what the shareholders think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 5. | If I pre-record accounts receivable, most people who are important to the company will: | Disapprove: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Approve |
| 6. | Pre-recording accounts receivable will result in lower revenues the next quarter. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 7. | I usually do what the Directors think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 8. | Reporting lower revenues the next quarter is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 9. | Pre-recording accounts receivable to increase this quarter's revenue is: | Harmful: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Beneficial |
| 10. | Maintaining the current stock price is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 11. | Pre-recording accounts receivable to increase this quarter's revenue is: | Foolish: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Wise |
| 12. | Maintaining analysts ratings is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |

| | | | | |
|---|---|---|---|---|
| 13. | I intend to pre-record accounts receivable. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 14. | I usually do what the creditors think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 15. | My job is threatened by poor company performance. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 16. | If asked whether I should pre-record accounts receivable, most of the Directors would think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 17. | If asked whether I should pre-record accounts receivable, most of my colleagues would think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 18. | Pre-recording accounts receivable will maintain the company's analysts' ratings. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 19. | I usually do what my coworkers think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 20. | If asked whether I should pre-record accounts receivable, most of the creditors would think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 21. | An increased risk of a qualified audit report is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 22. | Pre-recording accounts receivable will keep the company's stock prices steady. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 23. | I usually do what others think I should do. | Usually: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Not at all |
| 24. | If asked whether I should pre-record accounts receivable, most of the shareholders would say: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 25. | If asked whether I should pre-record accounts receivable, most of my family would say: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 26. | I usually do what my family thinks I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |

27. The likelihood that I will pre-record accounts receivable is:_____ %.

Assume that in conjunction with your present position as primary decision-maker for financial reporting issues you have received a memorandum that states the following:

Changes in market demand have made it difficult for the company to attract new customers and as a result the current ratio has changed unfavorably. As things stand the company has broken some debt covenants because of the unfavorable change in the current ratio.

Other managers have suggested maintaining a favorable current ratio by reclassifying some long-term marketable securities as short-term assets even though the company has no intention of converting the assets into cash within the next year.

*Please respond to the following statements relating to the above memo. Please answer **all** the questions by providing your initial response. Check the appropriate number to indicate your answer.*

For example:
I usually have lunch with my coworkers. Disagree (-3) (-2) (-1) (0) (+1) (X2) (+3) :Agree

| | | | | |
|---|---|---|---|---|
| 1. | Reclassifying long-term assets to maintain the current ratio is: | Unrewarding: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Rewarding |
| 2. | Reclassifying long-term assets to maintain the current ratio is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 3. | Reclassifying long-term assets will mislead the creditors. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 4. | I usually do what the shareholders think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 5. | If I reclassify long-term assets, most people who are important to the company will: | Disapprove: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Approve |
| 6. | Reclassifying long-term assets will mislead the investors/stockholders. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 7. | I usually do what the Directors think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 8. | Misleading the creditors is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 9. | Reclassifying long-term assets to maintain the current ratio is: | Harmful: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Beneficial |
| 10. | Circumventing debt covenants is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 11. | Reclassifying long-term assets to maintain the current ratio is: | Foolish: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Wise |
| 12. | Avoiding debt renegotiations is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 13. | I intend to reclassify long-term assets. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |

| | | | | |
|---|---|---|---|---|
| 14. | I usually do what the creditors think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 15. | My job is threatened by poor company performance. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 16. | If asked whether I should reclassify long-term assets, most of the Directors would think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 17. | If asked whether I should reclassify long-term assets, most of my colleagues would think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 18. | Reclassifying long-term assets will circumvent debt covenant violations. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 19. | I usually do what my coworkers think I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 20. | If asked whether I should I reclassify long-term assets, most of the creditors would think: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 21. | Misleading investors/stockholders is: | Bad: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Good |
| 22. | Reclassifying long-term assets will avoid debt renegotiations. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |
| 23. | I usually do what others think I should do. | Usually: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Not at all |
| 24. | If asked whether I should reclassify long-term assets, most of the shareholders would say: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 25. | If asked whether I should reclassify long-term assets, most of my family would say: | I should not: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :I should |
| 26. | I usually do what my family thinks I should do. | Disagree: | (-3) (-2) (-1) (0) (+1) (+2) (+3) | :Agree |

27. The likelihood that I will reclassify long-term assets is:_____ %.

**Front of Postcard**

THE STATE UNIVERSITY OF NEW JERSEY
RUTGERS

Nancy Uddin
Graduate School of Management
Department of Accounting and Information Systems

Mel Gibson, CFO
Blue Eyes, Inc.
One Rugged Drive
Unforgettable, NY 10097

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**Back of Postcard**

I recently requested your participation in an important research study examining the attitudes and decision-making processes of senior practicing financial managers. The request was accompanied by a questionnaire and a self-addressed, postage paid return envelope. I am writing today to emphasize once more the importance to the study of your valuable participation, and to request you to take the time to complete the survey and mail it back as soon as possible. Your experience and knowledge will be of great value in completing the study.

If you have already responded, I thank you for your participation. The anonymity of the survey prevents my knowing who has returned the survey: please disregard this reminder.

If you have mislaid the original survey documents but would still like to participate in the study, you may obtain a new copy be sending email to nuddin@pegasus.rutgers.edu. Your response will still be anonymous.

Thank you for your time.

Sincerely,

Nancy Uddin

# APPENDIX B

```
/TITLE
MODEL 1: BURNKRANT AND PAGE MODEL
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\UNSPLIT\BPMODEL\UNSPLIT.ESS';
 VARIABLES= 19; CASES=  139;
 METHODS=ML,ROBUST;
 MATRIX=RAW;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=C1; V8=C2; V9=SN1xSN2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH;
/EQUATIONS
V1 =   + 1F7  + 1E1;
V2 =   + *F7  + 1E2;
V3 =   + 1F3  + 1E3;
V4 =   + *F3  + 1E4;
V5 =   + *F3  + 1E5;
V6 =   + *F3  + 1E6;
V9 =   + 1F6  + 1E9;
V10 =   + 1F1  + 1E10;
V11 =   + *F1  + 1E11;
V12 =   + 1F2  + 1E12;
V13 =   + *F2  + 1E13;
V14 =   + 1F4  + 1E14;
V15 =   + *F4  + 1E15;
V16 =   + 1F5  + 1E16;
V17 =   + *F5  + 1E17;
V18 =   + *F5  + 1E18;
F3 =   + *F1  + *F2  + 1D3;
F6 =   + *F4  + *F5  + 1D6;
F7 =   + *F3  + *F6  + 1D7;
/VARIANCES
F1 = *;
F2 = *;
F4 = *;
F5 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
D3 = *;
D6 = *;
D7 = *;
/COVARIANCES
```

```
F2 , F1 = *;
F5 , F4 = *;
/LMTEST
 PROCESS=SIMULTANEOUS;
 SET=PFF,PEE,GVF,GFF,BVF,BFF;
/WTEST
 PVAL=0.05;
 PRIORITY=ZERO;
/TECHNICAL
 iteration= 300;
/PRINT
 digit=3;
 linesize =80;
 fit=all;
/OUTPUT
 parameters;
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

```
/TITLE
Model 2: Modified Burnkrant and Page Model
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\UNSPLIT\GROUP\UNSPLIT.ESS';
 VARIABLES= 19; CASES=  139;
 METHODS=ML,ROBUST;
 MATRIX=RAW;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=C1; V8=C2; V9=SN1xSN2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH;
/EQUATIONS
V1 =   + 1F6   + 1E1;
V2 =   + *F6   + 1E2;
V3 =   + 1F3   + 1E3;
V4 =   + *F3   + 1E4;
V5 =   + *F3   + 1E5;
V6 =   + *F3   + 1E6;
V9 =   + 1F5   + 1E9;
V10 =   + 1F1   + 1E10;
V11 =   + *F1   + 1E11;
V12 =   + 1F2   + 1E12;
V13 =   + *F2   + 1E13;
V14 =   + 1F4   + 1E14;
V15 =   + *F4   + 1E15;
V16 =   + *F4   + 1E16;
V17 =   + *F4   + 1E17;
V18 =   + *F4   + 1E18;
F3 =   + *F1   + *F2   + 1D3;
F5 =   + *F4   + 1D5;
F6 =   + *F3   + *F5   + 1D6;
/VARIANCES
F1 = *;
F2 = *;
F4 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
D3 = *;
D5 = *;
D6 = *;
/COVARIANCES
F2 , F1 = *;
```

```
/LMTEST
 PROCESS=SIMULTANEOUS;
 SET=PFF,PEE,GVF,GFF,BVF,BFF;
/WTEST
 PVAL=0.05;
 PRIORITY=ZERO;
/TECHNICAL
 iteration= 300;
/PRINT
 digit=3;
 linesize =80;
 fit=all;
/OUTPUT
 parameters;
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

```
/TITLE
Model 3: Modified Burnkrant and Page with e's
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\UNSPLIT\GROUP\UNSPLIT.ESS';
 VARIABLES= 19; CASES=  139;
 METHODS=ML,ROBUST;
 MATRIX=RAW;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=C1; V8=C2; V9=SN1xSN2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH;
/EQUATIONS
V1 =   + 1F6  + 1E1;
V2 =   + *F6  + 1E2;
V3 =   + 1F3  + 1E3;
V4 =   + *F3  + 1E4;
V5 =   + *F3  + 1E5;
V6 =   + *F3  + 1E6;
V9 =   + 1F5  + 1E9;
V10 =   + 1F1  + 1E10;
V11 =   + *F1  + 1E11;
V12 =   + 1F2  + 1E12;
V13 =   + *F2  + 1E13;
V14 =   + 1F4  + 1E14;
V15 =   + *F4  + 1E15;
V16 =   + *F4  + 1E16;
V17 =   + *F4  + 1E17;
V18 =   + *F4  + 1E18;
F3 =   + *F1  + *F2  + 1D3;
F5 =   + *F4  + 1D5;
F6 =   + *F3  + *F5  + 1D6;
/VARIANCES
F1 = *;
F2 = *;
F4 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
D3 = *;
D5 = *;
D6 = *;
/COVARIANCES
F2 , F1 = *;
```

```
E5 , E4 = *;
E6 , E4 = *;
/LMTEST
 PROCESS=SIMULTANEOUS;
 SET=PFF,PEE,GVF,GFF,BVF,BFF;
/WTEST
 PVAL=0.05;
 PRIORITY=ZERO;
/TECHNICAL
 iteration= 300;
/PRINT
 digit=3;
 linesize =80;
 fit=all;
/OUTPUT
 parameters;
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

```
/TITLE
Model 4: Need for achievement
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\UNSPLIT\ACHMODEL\UNSPLIT.ESS';
 VARIABLES= 19; CASES=  139;
 METHODS=ML,ROBUST;
 MATRIX=RAW;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=C1; V8=C2; V9=SN1xSN2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH;
/EQUATIONS
V1 =   + 1F6  + 1E1;
V2 =   + *F6  + 1E2;
V3 =   + 1F3  + 1E3;
V4 =   + *F3  + 1E4;
V5 =   + *F3  + 1E5;
V6 =   + *F3  + 1E6;
V9 =   + 1F5  + 1E9;
V10 =   + 1F1  + 1E10;
V11 =   + *F1  + 1E11;
V12 =   + 1F2  + 1E12;
V13 =   + *F2  + 1E13;
V14 =   + 1F4  + 1E14;
V15 =   + *F4  + 1E15;
V16 =   + *F4  + 1E16;
V17 =   + *F4  + 1E17;
V18 =   + *F4  + 1E18;
V19 =   + 1F7  + 1E19;
F3 =   + *F1  + *F2  + *F7  + 1D3;
F5 =   + *F4  + 1D5;
F6 =   + *F3  + *F5  + 1D6;
/VARIANCES
F1 = *;
F2 = *;
F4 = *;
F7 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
D3 = *;
D5 = *;
```

```
D6 = *;
/COVARIANCES
F2 , F1 = *;
/LMTEST
 PROCESS=SIMULTANEOUS;
 SET=PFF,PEE,GVF,GFF,BVF,BFF;
/WTEST
 PVAL=0.05;
 PRIORITY=ZERO;
/PRINT
 digit=3;
 linesize =80;
 fit=all;
/TECHNICAL
 iteration= 300;
/OUTPUT
 parameters;
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

```
/TITLE
Model 4: Need for Achievement with Error Term Covariances
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\UNSPLIT\ACHMODEL\UNSPLIT.ESS';
 VARIABLES= 19; CASES=  139;
 METHODS=ML,ROBUST;
 MATRIX=RAW;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=C1; V8=C2; V9=SN1xSN2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH;
/EQUATIONS
V1 =   + 1F6  + 1E1;
V2 =   + *F6  + 1E2;
V3 =   + 1F3  + 1E3;
V4 =   + *F3  + 1E4;
V5 =   + *F3  + 1E5;
V6 =   + *F3  + 1E6;
V9 =   + 1F5  + 1E9;
V10 =   + 1F1  + 1E10;
V11 =   + *F1  + 1E11;
V12 =   + 1F2  + 1E12;
V13 =   + *F2  + 1E13;
V14 =   + 1F4  + 1E14;
V15 =   + *F4  + 1E15;
V16 =   + *F4  + 1E16;
V17 =   + *F4  + 1E17;
V18 =   + *F4  + 1E18;
V19 =   + 1F7  + 1E19;
F3 =   + *F1  + *F2  + *F7  + 1D3;
F5 =   + *F4  + 1D5;
F6 =   + *F3  + *F5  + 1D6;
/VARIANCES
F1 = *;
F2 = *;
F4 = *;
F7 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
D3 = *;
D5 = *;
```

```
D6 = *;
/COVARIANCES
F2 , F1 = *;
E5 , E4 = *;
E6 , E4 = *;
/LMTEST
 PROCESS=SIMULTANEOUS;
 SET=PFF,PEE,GVF,GFF,BVF,BFF;
/WTEST
 PVAL=0.05;
 PRIORITY=ZERO;
/PRINT
 digit=3;
 linesize =80;
 fit=all;
/TECHNICAL
 iteration= 300;
/OUTPUT
 parameters;
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

```
/TITLE
Model 6: Need for Achievement and Two Factor Compensation Structure
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\ALLDATA\ALLDATA.ESS';
 VARIABLES= 26; CASES=  139;
 METHODS=ML,ROBUST;
 MATRIX=RAW;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1xSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=logTCA; V22=logTA; V23=logTCL; V24=logTL; V25=logNSALE;
V26=logAAR;
/EQUATIONS
V1 =   + 1F7  + 1E1;
V2 =   + *F7  + 1E2;
V3 =   + 1F4  + 1E3;
V4 =   + *F4  + 1E4;
V5 =   + *F4  + 1E5;
V6 =   + *F4  + 1E6;
V7 =   + 1F6  + 1E7;
V8 =   + 1F8  + 1E8;
V9 =   + 1F9  + 1E9;
V10 =   + 1F1  + 1E10;
V11 =   + *F1  + 1E11;
V12 =   + 1F2  + 1E12;
V13 =   + *F2  + 1E13;
V14 =   + 1F5  + 1E14;
V15 =   + *F5  + 1E15;
V16 =   + *F5  + 1E16;
V17 =   + *F5  + 1E17;
V18 =   + *F5  + 1E18;
V19 =   + 1F3  + 1E19;
F4 =   + *F1  + *F2  + *F3  + 1D4;
F6 =   + *F5  + 1D6;
F7 =   + *F4  + *F6  + *F8  + *F9  + 1D7;
/VARIANCES
F1 = *;
F2 = *;
F3 = *;
F5 = *;
F8 = *;
F9 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E7 = 0.00;
E8 = 0.00;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
```

```
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
D4 = *;
D6 = *;
D7 = *;
/COVARIANCES
F2 , F1 = *;
F9 , F8 = *;
/LMTEST
 PROCESS=SIMULTANEOUS;
 SET=PFF,PEE,GVF,GFF,BVF,BFF;
/WTEST
 PVAL=0.05;
 PRIORITY=ZERO;
/PRINT
 digit=3;
 linesize =80;
 fit=all;
/TECHNICAL
 iteration= 300;
/OUTPUT
 parameters;
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

```
/TITLE
Model 7: Need for Achievement, Two Factor Compensation Structure and
Error Term Covariances
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\ALLDATA\ALLDATA.ESS';
 VARIABLES= 26; CASES=  139;
 METHODS=ML,ROBUST;
 MATRIX=RAW;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1xSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=logTCA; V22=logTA; V23=logTCL; V24=logTL; V25=logNSALE;
V26=logAAR;
/EQUATIONS
V1 =   + 1F7  + 1E1;
V2 =   + *F7  + 1E2;
V3 =   + 1F4  + 1E3;
V4 =   + *F4  + 1E4;
V5 =   + *F4  + 1E5;
V6 =   + *F4  + 1E6;
V7 =   + 1F6  + 1E7;
V8 =   + 1F8  + 1E8;
V9 =   + 1F9  + 1E9;
V10 =   + 1F1  + 1E10;
V11 =   + *F1  + 1E11;
V12 =   + 1F2  + 1E12;
V13 =   + *F2  + 1E13;
V14 =   + 1F5  + 1E14;
V15 =   + *F5  + 1E15;
V16 =   + *F5  + 1E16;
V17 =   + *F5  + 1E17;
V18 =   + *F5  + 1E18;
V19 =   + 1F3  + 1E19;
F4 =   + *F1  + *F2  + *F3  + 1D4;
F6 =   + *F5  + 1D6;
F7 =   + *F4  + *F6  + 0*F8  + 0*F9  + 1D7;
/VARIANCES
F1 = *;
F2 = *;
F3 = *;
F5 = *;
F8 = *;
F9 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E7 = 0.00;
E8 = 0.00;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
```

```
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
D4 = *;
D6 = *;
D7 = *;
/COVARIANCES
F2 , F1 = *;
F9 , F8 = *;
E5 , E4 = *;
E6 , E4 = *;
/LMTEST
 PROCESS=SIMULTANEOUS;
 SET=PFF,PEE,GVF,GFF,BVF,BFF;
/WTEST
 PVAL=0.05;
 PRIORITY=ZERO;
/PRINT
 digit=3;
 linesize =80;
 fit=all;
/TECHNICAL
 iteration= 300;
/OUTPUT
 parameters;
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

```
/TITLE

Model 8: Full Model: Need for Achievement, Compensation Structure and
Size

/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\ALLDATA\ALLDATA.ESS';
 VARIABLES= 26; CASES=  139;
 METHODS=ML,ROBUST;
 MATRIX=RAW;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1xSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=logTCA; V22=logTA; V23=logTCL; V24=logTL; V25=logNSALE;
V26=logAAR;
/EQUATIONS
V1 =   + 1F7   + 1E1;
V2 =   + *F7   + 1E2;
V3 =   + 1F4   + 1E3;
V4 =   + *F4   + 1E4;
V5 =   + *F4   + 1E5;
V6 =   + *F4   + 1E6;
V7 =   + 1F6   + 1E7;
V8 =   + 1F8   + 1E8;
V9 =   + 1F9   + 1E9;
V10 =   + 1F1   + 1E10;
V11 =   + *F1   + 1E11;
V12 =   + 1F2   + 1E12;
V13 =   + *F2   + 1E13;
V14 =   + 1F5   + 1E14;
V15 =   + *F5   + 1E15;
V16 =   + *F5   + 1E16;
V17 =   + *F5   + 1E17;
V18 =   + *F5   + 1E18;
V19 =   + 1F3   + 1E19;
V21 =   + 1F10   + 1E21;
V22 =   + *F10   + 1E22;
V23 =   + *F10   + 1E23;
V24 =   + *F10   + 1E24;
V25 =   + *F10   + 1E25;
V26 =   + *F10   + 1E26;
F4 =   + *F1   + *F2   + *F3   + 1D4;
F6 =   + *F5   + 1D6;
F7 =   + *F4   + *F6   + 0*F8   + 0*F9   + *F10   + 1D7;
/VARIANCES
F1 = *;
F2 = *;
F3 = *;
F5 = *;
F8 = *;
F9 = *;
F10 = *;
E1 = *;
E2 = *;
E3 = *;
```

```
E4 = *;
E5 = *;
E6 = *;
E7 = 0.00;
E8 = 0.00;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
E21 = *;
E22 = *;
E23 = *;
E24 = *;
E25 = *;
E26 = *;
D4 = *;
D6 = *;
D7 = *;
/COVARIANCES
F2 , F1 = *;
F9 , F8 = *;
/LMTEST
 PROCESS=SIMULTANEOUS;
 SET=PFF,PEE,GVF,GFF,BVF,BFF;
/WTEST
 PVAL=0.05;
 PRIORITY=ZERO;
/PRINT
 digit=3;
 linesize =80;
 fit=all;
/TECHNICAL
 iteration= 300;
/OUTPUT
 parameters;
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

```
/TITLE
Model 9: Full Model with Error Term Covariances

/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\ALLDATA.ess';
 VARIABLES= 26; CASES=  139;
 METHODS=ML,ROBUST;
 MATRIX=RAW;
/EQUATIONS
V1 =   + 1F7   + 1E1;
V2 =   + *F7   + 1E2;
V3 =   + 1F4   + 1E3;
V4 =   + *F4   + 1E4;
V5 =   + *F4   + 1E5;
V6 =   + *F4   + 1E6;
V7 =   + 1F6   + 1E7;
V8 =   + 1F8   + 1E8;
V9 =   + 1F9   + 1E9;
V10 =   + 1F1   + 1E10;
V11 =   + *F1   + 1E11;
V12 =   + 1F2   + 1E12;
V13 =   + *F2   + 1E13;
V14 =   + 1F5   + 1E14;
V15 =   + *F5   + 1E15;
V16 =   + *F5   + 1E16;
V17 =   + *F5   + 1E17;
V18 =   + *F5   + 1E18;
V19 =   + 1F3   + 1E19;
V21 =   + 1F10   + 1E21;
V22 =   + *F10   + 1E22;
V23 =   + *F10   + 1E23;
V24 =   + *F10   + 1E24;
V25 =   + *F10   + 1E25;
V26 =   + *F10   + 1E26;
F4 =   + *F1   + *F2   + *F3   + 1D4;
F6 =   + *F5   + 1D6;
F7 =   + *F4   + *F6   + 0*F8   + 0*F9   + *F10   + 1D7;
/VARIANCES
F1 = *;
F2 = *;
F3 = *;
F5 = *;
F8 = *;
F9 = *;
F10 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E7 = 0.00;
E8 = 0.00;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
```

```
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
E21 = *;
E22 = *;
E23 = *;
E24 = *;
E25 = *;
E26 = *;
D4 = *;
D6 = *;
D7 = *;
/COVARIANCES
F2 , F1 = -3*;
F9 , F8 = *;
F10 , F8 = *;
F10 , F9 = *;
E6 , E3 = *;
E6 , E4 = *;
E23 , E21 = *;
E24 , E23 = *;
E26 , E25 = *;
/LMTEST
 PROCESS=SIMULTANEOUS;
 SET=PFF,PEE,GVF,GFF,BVF,BFF;
/WTEST
 PVAL=0.05;
 PRIORITY=ZERO;
/PRINT
 digit=3;
 linesize =80;
 fit=all;
/TECHNICAL
 iteration= 300;
/OUTPUT
 parameters;
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

```
/TITLE
MODEL 10: Social Desirability Factor
/SPECIFICATIONS
 DATA='F:\MYDOCU~1\EQS\ALLDATA.ESS';
 VARIABLES= 26; CASES=  139;
 METHODS=ML,ROBUST;
 MATRIX=RAW;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1xSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=logTCA; V22=logTA; V23=logTCL; V24=logTL; V25=logNSALE;
V26=logAAR;
/EQUATIONS
V1 =   + 1F7   + *F11   + 1E1;
V2 =   + *F7   + *F11   + 1E2;
V3 =   + 1F4   + *F11   + 1E3;
V4 =   + *F4   + *F11   + 1E4;
V5 =   + *F4   + *F11   + 1E5;
V6 =   + *F4   + *F11   + 1E6;
V7 =   + 1F6   + *F11   + 1E7;
V8 =   + 1F8   + *F11   + 1E8;
V9 =   + 1F9   + *F11   + 1E9;
V10 =   + 1F1   + *F11   + 1E10;
V11 =   + *F1   + *F11   + 1E11;
V12 =   + 1F2   + *F11   + 1E12;
V13 =   + *F2   + *F11   + 1E13;
V14 =   + 1F5   + *F11   + 1E14;
V15 =   + *F5   + *F11   + 1E15;
V16 =   + *F5   + *F11   + 1E16;
V17 =   + *F5   + *F11   + 1E17;
V18 =   + *F5   + *F11   + 1E18;
V19 =   + 1F3   + *F11   + 1E19;
V20 =   + 1F11   + 1E20;
V21 =   + 1F10   + 1E21;
V22 =   + *F10   + 1E22;
V23 =   + *F10   + 1E23;
V24 =   + *F10   + 1E24;
V25 =   + *F10   + 1E25;
V26 =   + *F10   + *F11   + 1E26;
F4 =   + *F1   + *F2   + *F3   + 1D4;
F6 =   + *F5   + 1D6;
F7 =   + *F4   + *F6   + *F8   + *F9   + *F10   + 1D7;
/VARIANCES
F1 = *;
F2 = *;
F3 = *;
F5 = *;
F8 = *;
F9 = *;
F10 = *;
F11 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
```

```
E5 = *;
E6 = *;
E7 = 0.00;
E8 = 0.00;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
E20 = 0.00;
E21 = *;
E22 = *;
E23 = *;
E24 = *;
E25 = *;
E26 = *;
D4 = *;
D6 = *;
D7 = *;
/COVARIANCES
F2 , F1 = *;
F9 , F8 = *;
F10 , F8 = *;
F10 , F9 = *;
/LMTEST
 PROCESS=SIMULTANEOUS;
 SET=PFF,PEE,GVF,GFF,BVF,BFF;
/WTEST
 PVAL=0.05;
 PRIORITY=ZERO;
/TECHNICAL
 iteration= 300;
/PRINT
 digit=3;
 linesize =80;
 fit=all;
/OUTPUT
 parameters;
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

```
/TITLE
MODEL 11: Social Desirability and Attitude Measurement Variable
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\ALLDATA.ESS';
 VARIABLES= 26; CASES=  139;
 METHODS=ML,ROBUST;
 MATRIX=RAW;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1xSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=logTCA; V22=logTA; V23=logTCL; V24=logTL; V25=logNSALE;
V26=logAAR;
/EQUATIONS
V1 =   + 1F7   + 1E1;
V2 =   + *F7   + 1E2;
V3 =   + 1F4   + 1E3;
V4 =   + *F4   + 1E4;
V5 =   + *F4   + 1E5;
V6 =   + *F4   + *F11   + 1E6;
V7 =   + 1F6   + 1E7;
V8 =   + 1F8   + 1E8;
V9 =   + 1F9   + 1E9;
V10 =   + 1F1   + 1E10;
V11 =   + *F1   + 1E11;
V12 =   + 1F2   + 1E12;
V13 =   + *F2   + 1E13;
V14 =   + 1F5   + 1E14;
V15 =   + *F5   + 1E15;
V16 =   + *F5   + 1E16;
V17 =   + *F5   + 1E17;
V18 =   + *F5   + 1E18;
V19 =   + 1F3   + 1E19;
V20 =   + 1F11   + 1E20;
V21 =   + 1F10   + 1E21;
V22 =   + *F10   + 1E22;
V23 =   + *F10   + 1E23;
V24 =   + *F10   + 1E24;
V25 =   + *F10   + 1E25;
V26 =   + *F10   + 1E26;
F4 =   + *F1   + *F2   + *F3   + 1D4;
F6 =   + *F5   + 1D6;
F7 =   + *F4   + *F6   + 0*F8   + 0*F9   + *F10   + 1D7;
/VARIANCES
F1 = *;
F2 = *;
F3 = *;
F5 = *;
F8 = *;
F9 = *;
F10 = *;
F11 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
```

```
E5 = *;
E6 = *;
E7 = 0.00;
E8 = 0.00;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
E20 = 0.00;
E21 = *;
E22 = *;
E23 = *;
E24 = *;
E25 = *;
E26 = *;
D4 = *;
D6 = *;
D7 = *;
/COVARIANCES
F2 , F1 = -3*;
F9 , F8 = *;
F10 , F8 = 0*;
F10 , F9 = 0*;
E6 , E3 = *;
E6 , E4 = *;
E23 , E21 = *;
E24 , E23 = *;
E26 , E25 = *;
/LMTEST
 PROCESS=SIMULTANEOUS;
 SET=PFF,PEE,GVF,GFF,BVF,BFF;
/WTEST
 PVAL=0.05;
 PRIORITY=ZERO;
/PRINT
 digit=3;
 linesize =80;
 fit=all;
/TECHNICAL
 iteration= 300;
/OUTPUT
 parameters;
 standard errors;
 listing;
 data='EQSOUT&.ETS';
/END
```

```
/TITLE
MODEL 12: SELF-MONITORING: INVARIANCE OF FACTORIAL STRUCTURE
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\SMHIA.ESS';
 VARIABLES= 26; CASES=   61;
 METHODS=ML;
 MATRIX=RAW;
 GROUPS=2;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1XSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=LOGTCA; V22=LOGTA; V23=LOGTCL; V24=LOGTL; V25=LOGNS;
V26=LOGAAR;
/EQUATIONS
V1 =   + 1F7  + 1E1;
V2 =   + *F7 + 1E2;
V3 =   + 1F4  + 1E3;
V4 =   + *F4  + 1E4;
V5 =   + *F4  + 1E5;
V6 =   + *F4  + 1E6;
V7 =   + 1F6  + 1E7;
V10 =   + 1F1  + 1E10;
V11 =   + *F1  + 1E11;
V12 =   + *F1  + 1E12;
V13 =   + *F1  + 1E13;
V14 =   + 1F5  + 1E14;
V15 =   + *F5  + 1E15;
V16 =   + *F5  + 1E16;
V17 =   + *F5  + 1E17;
V18 =   + *F5  + 1E18;
V19 =   + 1F3  + 1E19;
F4 =   + 3*F1 + 0*F3  + 1D4;
F6 =   + 0*F5  + 1D6;
F7 =   + 12*F4  - 0*F6 + 1D7;
/VARIANCES
F1 = *;
F3 = *;
F5 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E7 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
```

```
D4 = *;
D6 = *;
D7 = *;
/END
/TITLE
GROUP 2 = SMLO with everything
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\SMLOWA.ESS';
 VARIABLES= 26; CASES=   78;
 METHODS=ML;
 MATRIX=RAW;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1XSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=LOGTCA; V22=LOGTA; V23=LOGTCL; V24=LOGTL; V25=LOGNS;
V26=LOGAAR;
/EQUATIONS
V1 =  + 1F7  + 1E1;
V2 =  + *F7 + 1E2;
V3 =  + 1F4  + 1E3;
V4 =  + *F4  + 1E4;
V5 =  + *F4  + 1E5;
V6 =  + *F4  + 1E6;
V7 =  + 1F6  + 1E7;
V10 =  + 1F1  + 1E10;
V11 =  + *F1  + 1E11;
V12 =  + 1F2  + 1E12;
V13 =  + *F2  + 1E13;
V14 =  + 1F5  + 1E14;
V15 =  + *F5  + 1E15;
V16 =  + *F5  + 1E16;
V17 =  + *F5  + 1E17;
V18 =  + *F5  + 1E18;
V19 =  + 1F3  + 1E19;
F4 =  + 0*F1 + 1*F2  + 0*F3  + 1D4;
F6 =  + 0*F5  + 1D6;
F7 =  + 12*F4  - 0*F6 + 1D7;
/VARIANCES
F1 = *;
F2 = *;
F3 = *;
F5 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E7 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
```

```
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
D4 = *;
D6 = *;
D7 = *;
/COVARIANCES
F2,F1 = -3*;
/CONSTRAINTS
(1,V2,F7)=(2,V2,F7);
(1,V4,F4)=(2,V4,F4);
(1,V5,F4)=(2,V5,F4);
(1,V6,F4)=(2,V6,F4);
(1,V15,F5)=(2,V15,F5);
(1,V16,F5)=(2,V16,F5);
(1,V17,F5)=(2,V17,F5);
(1,V18,F5)=(2,V18,F5);
(1,F3,F3)=(2,F3,F3);
(1,F5,F5)=(2,F5,F5);
(1,F4,F3)=(2,F4,F3);
(1,F6,F5)=(2,F6,F5);
(1,F7,F4)=(2,F7,F4);
(1,F7,F6)=(2,F7,F6);
/TECHNICAL
ITERATION=100;
/LMTEST
/PRINT
FIT=ALL;
/END
```

```
/TITLE
MODEL 13: SELF-MONITORING: INVARAINCE OF FACTORIAL MEANS, CONSTRAINTS
RELEASED
GROUP 1 = SMhi with everything
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\SMHIA.ESS';
 VARIABLES= 26; CASES=   61;
 METHODS=ML;
 MATRIX=RAW;
 GROUPS=2;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1XSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=LOGTCA; V22=LOGTA; V23=LOGTCL; V24=LOGTL; V25=LOGNS;
V26=LOGAAR;
/EQUATIONS
V1 =   + 1F7  + 1E1;
V2 =   + *F7 + 1E2;
V3 =   + 1F4  + 1E3;
V4 =   + *F4  + 1E4;
V5 =   + *F4  + 1E5;
V6 =   + *F4  + 1E6;
V7 =   + 1F6  + 1E7;
V10 =   + 1F1  + 1E10;
V11 =   + *F1  + 1E11;
V12 =   + *F1  + 1E12;
V13 =   + *F1  + 1E13;
V14 =   + 1F5  + 1E14;
V15 =   + *F5  + 1E15;
V16 =   + *F5  + 1E16;
V17 =   + *F5  + 1E17;
V18 =   + *F5  + 1E18;
V19 =   + 1F3  + 1E19;
F4 =   + 3*F1 + 0*F3  + 1D4;
F6 =   + 0*F5  + 1D6;
F7 =   + 12*F4  - 0*F6 + 1D7;
/VARIANCES
F1 = *;
F3 = *;
F5 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E7 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
```

```
E18 = *;
E19 = 0.00;
D4 = *;
D6 = *;
D7 = *;
/END
/TITLE
GROUP 2 = SMLO with everything
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\SMLOWA.ESS';
 VARIABLES= 26; CASES=    78;
 METHODS=ML;
 MATRIX=RAW;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1XSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=LOGTCA; V22=LOGTA; V23=LOGTCL; V24=LOGTL; V25=LOGNS;
V26=LOGAAR;
/EQUATIONS
V1 =   + 1F7   + 1E1;
V2 =   + *F7 + 1E2;
V3 =   + 1F4   + 1E3;
V4 =   + *F4   + 1E4;
V5 =   + *F4   + 1E5;
V6 =   + *F4   + 1E6;
V7 =   + 1F6   + 1E7;
V10 =   + 1F1   + 1E10;
V11 =   + *F1   + 1E11;
V12 =   + 1F2   + 1E12;
V13 =   + *F2   + 1E13;
V14 =   + 1F5   + 1E14;
V15 =   + *F5   + 1E15;
V16 =   + *F5   + 1E16;
V17 =   + *F5   + 1E17;
V18 =   + *F5   + 1E18;
V19 =   + 1F3   + 1E19;
F4 =   + 0*F1 + 1*F2   + 0*F3   + 1D4;
F6 =   + 0*F5   + 1D6;
F7 =   + 12*F4   - 0*F6 + 1D7;
/VARIANCES
F1 = *;
F2 = *;
F3 = *;
F5 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E7 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
```

```
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
D4 = *;
D6 = *;
D7 = *;
/COVARIANCES
F2,F1 = -3*;
/CONSTRAINTS
(1,V2,F7)=(2,V2,F7);
(1,V4,F4)=(2,V4,F4);
(1,V5,F4)=(2,V5,F4);
(1,V6,F4)=(2,V6,F4);
(1,V15,F5)=(2,V15,F5);
(1,V16,F5)=(2,V16,F5);
(1,V17,F5)=(2,V17,F5);
(1,V18,F5)=(2,V18,F5);
(1,F3,F3)=(2,F3,F3);
(1,F5,F5)=(2,F5,F5);
(1,F4,F3)=(2,F4,F3);
(1,F6,F5)=(2,F6,F5);
/TECHNICAL
ITERATION=100;
/LMTEST
/PRINT
FIT=ALL;
/END
```

```
/TITLE
MODEL 14: MORAL REASONING, INVARIANCE OF FACTORIAL STRUCTURE
GROUP 1 = Dithi with everything
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\DITHIA.ESS';
 VARIABLES= 26; CASES=   56;
 METHODS=ML;
 MATRIX=RAW;
 GROUPS=2;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1XSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=LOGTCA; V22=LOGTA; V23=LOGTCL; V24=LOGTL; V25=LOGNS;
V26=LOGAAR;
/EQUATIONS
V1 =   + 1F7  + 1E1;
V2 =   + *F7  + 1E2;
V3 =   + 1F4  + 1E3;
V4 =   + *F4  + 1E4;
V5 =   + *F4  + 1E5;
V6 =   + *F4  + 1E6;
V7 =   + 1F6  + 1E7;
V8 =   + 1F8  + 1E8;
V9 =   + 1F9  + 1E9;
V10 =   + 1F1  + 1E10;
V11 =   + *F1  + 1E11;
V12 =   + 1F2  + 1E12;
V13 =   + *F2  + 1E13;
V14 =   + 1F5  + 1E14;
V15 =   + *F5  + 1E15;
V16 =   + *F5  + 1E16;
V17 =   + *F5  + 1E17;
V18 =   + *F5  + 1E18;
V19 =   + 1F3  + 1E19;
V21 =   + 1F10  + 1E21;
V22 =   + *F10  + 1E22;
V23 =   + *F10  + 1E23;
V24 =   + *F10  + 1E24;
V25 =   + *F10  + 1E25;
V26 =   + *F10  + 1E26;
F4 =   - 0*F1  + 0*F2  + 0*F3  + 1D4;
F6 =   + 100*F5  + 1D6;
F7 =   + 10*F4  + 0*F6  - 0*F8  + 0*F9  + 0*F10  + 1D7;
/VARIANCES
F1 = *;
F2 = *;
F3 = *;
F5 = *;
F8 = *;
F9 = *;
F10 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
```

```
E5 = *;
E6 = *;
E7 = 0.00;
E8 = 0.00;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
E21 = *;
E22 = *;
E23 = *;
E24 = *;
E25 = *;
E26 = *;
D4 = *;
D6 = *;
D7 = *;
/COVARIANCES
F2 , F1 = -3*;
F9 , F8 = *;
F10 , F8 = 0*;
F10 , F9 = 0*;
E6 , E4 = *;
E16 , E15 = *;
E26 , E25 = *;
/END
/TITLE
GROUP 2 = DitLO with everything
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\SPLIT\DITLO\DITLOA.ESS';
 VARIABLES= 26; CASES=   83;
 METHODS=ML;
 MATRIX=RAW;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1XSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=LOGTCA; V22=LOGTA; V23=LOGTCL; V24=LOGTL; V25=LOGNS;
V26=LOGAAR;
/EQUATIONS
V1 =   + 1F7  + 1E1;
V2 =   + *F7  + 1E2;
V3 =   + 1F4  + 1E3;
V4 =   + *F4  + 1E4;
V5 =   + *F4  + 1E5;
V6 =   + *F4  + 1E6;
V7 =   + 1F6  + 1E7;
V8 =   + 1F8  + 1E8;
V9 =   + 1F9  + 1E9;
```

```
V10 =  + 1F1  + 1E10;
V11 =  + *F1  + 1E11;
V12 =  + 1F2  + 1E12;
V13 =  + *F2  + 1E13;
V14 =  + 1F5  + 1E14;
V15 =  + *F5  + 1E15;
V16 =  + *F5  + 1E16;
V17 =  + *F5  + 1E17;
V18 =  + *F5  + 1E18;
V19 =  + 1F3  + 1E19;
V21 =  + 1F10  + 1E21;
V22 =  + *F10  + 1E22;
V23 =  + *F10  + 1E23;
V24 =  + *F10  + 1E24;
V25 =  + *F10  + 1E25;
V26 =  + *F10  + 1E26;
F4 =  - 0*F1  + 0*F2  + 0*F3  + 1D4;
F6 =  + 100*F5  + 1D6;
F7 =  + 10*F4  + 0*F6  - 0*F8  + 0*F9  + 1*F10  + 1D7;
/VARIANCES
F1 = *;
F2 = *;
F3 = *;
F5 = *;
F8 = *;
F9 = *;
F10 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E7 = 0.00;
E8 = 0.00;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
E21 = *;
E22 = *;
E23 = *;
E24 = *;
E25 = *;
E26 = *;
D4 = *;
D6 = *;
D7 = *;
/COVARIANCES
F2 , F1 = -3*;
```

```
F9 , F8 = *;
F10 , F8 = 0*;
F10 , F9 = 0*;
E6 , E5 = *;
E24 , E21 = *;
E24 , E23 = *;
E25 , E22 = *;
E26 , E23 = *;
E26 , E25 = *;
/CONSTRAINTS
(1,V2,F7)=(2,V2,F7);
(1,V4,F4)=(2,V4,F4);
(1,V5,F4)=(2,V5,F4);
(1,V6,F4)=(2,V6,F4);
(1,V11,F1)=(2,V11,F1);
(1,V13,F2)=(2,V13,F2);
(1,V15,F5)=(2,V15,F5);
(1,V16,F5)=(2,V16,F5);
(1,V17,F5)=(2,V17,F5);
(1,V18,F5)=(2,V18,F5);
(1,V22,F10)=(2,V22,F10);
(1,V23,F10)=(2,V23,F10);
(1,V24,F10)=(2,V24,F10);
(1,V25,F10)=(2,V25,F10);
(1,V26,F10)=(2,V26,F10);
(1,F1,F1)=(2,F1,F1);
(1,F2,F2)=(2,F2,F2);
(1,F3,F3)=(2,F3,F3);
(1,F5,F5)=(2,F5,F5);
(1,F8,F8)=(2,F8,F8);
(1,F9,F9)=(2,F9,F9);
(1,F10,F10)=(2,F10,F10);
(1,F2,F1)=(2,F2,F1);
(1,F9,F8)=(2,F9,F8);
(1,F10,F8)=(2,F10,F8);
(1,F10,F8)=(2,F10,F8);
(1,F4,F1)=(2,F4,F1);
(1,F4,F2)=(2,F4,F2);
(1,F4,F3)=(2,F4,F3);
(1,F6,F5)=(2,F6,F5);
(1,F7,F4)=(2,F7,F4);
(1,F7,F6)=(2,F7,F6);
(1,F7,F8)=(2,F7,F8);
(1,F7,F9)=(2,F7,F9);
(1,F7,F10)=(2,F7,F10);
/TECHNICAL
ITERATION=300;
/LMTEST
/PRINT
FIT=ALL;
/END
```

```
/TITLE
MODEL 15: MORAL REASONING, INVARAINCE OF FACTORIAL STRUCUTRE,
CONSTRAINTS RELEASED
GROUP 1 = Dithi with everything
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\DITHIA.ESS';
 VARIABLES= 26; CASES=   56;
 METHODS=ML;
 MATRIX=RAW;
 GROUPS=2;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1XSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=LOGTCA; V22=LOGTA; V23=LOGTCL; V24=LOGTL; V25=LOGNS;
V26=LOGAAR;
/EQUATIONS
V1 =   + 1F7   + 1E1;
V2 =   + *F7   + 1E2;
V3 =   + 1F4   + 1E3;
V4 =   + *F4   + 1E4;
V5 =   + *F4   + 1E5;
V6 =   + *F4   + 1E6;
V7 =   + 1F6   + 1E7;
V8 =   + 1F8   + 1E8;
V9 =   + 1F9   + 1E9;
V10 =   + 1F1   + 1E10;
V11 =   + *F1   + 1E11;
V12 =   + 1F2   + 1E12;
V13 =   + *F2   + 1E13;
V14 =   + 1F5   + 1E14;
V15 =   + *F5   + 1E15;
V16 =   + *F5   + 1E16;
V17 =   + *F5   + 1E17;
V18 =   + *F5   + 1E18;
V19 =   + 1F3   + 1E19;
V21 =   + 1F10   + 1E21;
V22 =   + *F10   + 1E22;
V23 =   + *F10   + 1E23;
V24 =   + *F10   + 1E24;
V25 =   + *F10   + 1E25;
V26 =   + *F10   + 1E26;
F4 =   - 0*F1   + 0*F2   + 0*F3   + 1D4;
F6 =   + 100*F5   + 1D6;
F7 =   + 10*F4   + 0*F6   - 0*F8   + 0*F9   + 0*F10   + 1D7;
/VARIANCES
F1 = *;
F2 = *;
F3 = *;
F5 = *;
F8 = *;
F9 = *;
F10 = *;
E1 = *;
E2 = *;
E3 = *;
```

```
E4 = *;
E5 = *;
E6 = *;
E7 = 0.00;
E8 = 0.00;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
E21 = *;
E22 = *;
E23 = *;
E24 = *;
E25 = *;
E26 = *;
D4 = *;
D6 = *;
D7 = *;
/COVARIANCES
F2 , F1 = -3*;
F9 , F8 = *;
F10 , F8 = 0*;
F10 , F9 = 0*;
E6 , E4 = *;
E16 , E15 = *;
E26 , E25 = *;
/END
/TITLE
GROUP 2 = DitLO with everything
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\SPLIT\DITLO\DITLOA.ESS';
 VARIABLES= 26; CASES=   83;
 METHODS=ML;
 MATRIX=RAW;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1XSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=LOGTCA; V22=LOGTA; V23=LOGTCL; V24=LOGTL; V25=LOGNS;
V26=LOGAAR;
/EQUATIONS
V1 =   + 1F7  + 1E1;
V2 =   + *F7  + 1E2;
V3 =   + 1F4  + 1E3;
V4 =   + *F4  + 1E4;
V5 =   + *F4  + 1E5;
V6 =   + *F4  + 1E6;
V7 =   + 1F6  + 1E7;
V8 =   + 1F8  + 1E8;
```

```
V9 =  + 1F9  + 1E9;
V10 =  + 1F1  + 1E10;
V11 =  + *F1  + 1E11;
V12 =  + 1F2  + 1E12;
V13 =  + *F2  + 1E13;
V14 =  + 1F5  + 1E14;
V15 =  + *F5  + 1E15;
V16 =  + *F5  + 1E16;
V17 =  + *F5  + 1E17;
V18 =  + *F5  + 1E18;
V19 =  + 1F3  + 1E19;
V21 =  + 1F10  + 1E21;
V22 =  + *F10  + 1E22;
V23 =  + *F10  + 1E23;
V24 =  + *F10  + 1E24;
V25 =  + *F10  + 1E25;
V26 =  + *F10  + 1E26;
F4 =  - 0*F1  + 0*F2  + 0*F3  + 1D4;
F6 =  + 100*F5  + 1D6;
F7 =  + 10*F4  + 0*F6  - 0*F8  + 0*F9  + 1*F10  + 1D7;
/VARIANCES
F1 = *;
F2 = *;
F3 = *;
F5 = *;
F8 = *;
F9 = *;
F10 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E7 = 0.00;
E8 = 0.00;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
E21 = *;
E22 = *;
E23 = *;
E24 = *;
E25 = *;
E26 = *;
D4 = *;
D6 = *;
D7 = *;
/COVARIANCES
```

```
F2 , F1 = -3*;
F9 , F8 = *;
F10 , F8 = 0*;
F10 , F9 = 0*;
E6 , E5 = *;
E24 , E21 = *;
E24 , E23 = *;
E25 , E22 = *;
E26 , E23 = *;
E26 , E25 = *;
/CONSTRAINTS
(1,V2,F7)=(2,V2,F7);
(1,V4,F4)=(2,V4,F4);
(1,V5,F4)=(2,V5,F4);
(1,V6,F4)=(2,V6,F4);
(1,V11,F1)=(2,V11,F1);
(1,V13,F2)=(2,V13,F2);
(1,V15,F5)=(2,V15,F5);
(1,V16,F5)=(2,V16,F5);
(1,V17,F5)=(2,V17,F5);
(1,V18,F5)=(2,V18,F5);
(1,V22,F10)=(2,V22,F10);
(1,V23,F10)=(2,V23,F10);
(1,V24,F10)=(2,V24,F10);
(1,V25,F10)=(2,V25,F10);
(1,V26,F10)=(2,V26,F10);
(1,F1,F1)=(2,F1,F1);
(1,F2,F2)=(2,F2,F2);
(1,F3,F3)=(2,F3,F3);
(1,F5,F5)=(2,F5,F5);
(1,F8,F8)=(2,F8,F8);
(1,F9,F9)=(2,F9,F9);
(1,F10,F10)=(2,F10,F10);
(1,F2,F1)=(2,F2,F1);
(1,F9,F8)=(2,F9,F8);
(1,F10,F8)=(2,F10,F8);
(1,F10,F8)=(2,F10,F8);
(1,F4,F1)=(2,F4,F1);
(1,F4,F2)=(2,F4,F2);
(1,F4,F3)=(2,F4,F3);
(1,F6,F5)=(2,F6,F5);
(1,F7,F8)=(2,F7,F8);
(1,F7,F9)=(2,F7,F9);
(1,F7,F10)=(2,F7,F10);
/TECHNICAL
ITERATION=300;
/LMTEST
/PRINT
FIT=ALL;
/END
```

```
/TITLE
MODEL 18: MORAL REASONING, INVARAINCE OF LATENT MEANS
GROUP 1 = Dithi with everything
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\SPLIT\DITHI\DITHIA.ESS';
 VARIABLES= 26; CASES=    56;
 METHODS=ML;
 MATRIX=RAW;
 ANAL=MOM;
 GROUPS=2;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1XSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=LOGTCA; V22=LOGTA; V23=LOGTCL; V24=LOGTL; V25=LOGNS;
V26=LOGAAR;
/EQUATIONS
V1 =  8.1*V999 + 1F7  + 1E1;
V2 =  -2*V999 + .079*F7  + 1E2;
V3 =  -2*V999 + 1F4  + 1E3;
V4 =  -2*V999 + 1.128*F4  + 1E4;
V5 =  -2*V999 + .7*F4  + 1E5;
V6 =  -2*V999 + 1*F4  + 1E6;
V7 =  -0.5*V999 + 1F6  + 1E7;
V8 =  22*V999 + 1F8  + 1E8;
V9 =  19*V999 + 1F9  + 1E9;
V10 =  0*V999 + 1F1  + 1E10;
V11 =  1*V999 + 1*F1  + 1E11;
V12 =  -3*V999 + 1F2  + 1E12;
V13 =  -3*V999 + .7*F2  + 1E13;
V14 =  1*V999 + 1F5  + 1E14;
V15 =  -1*V999 + .5*F5  + 1E15;
V16 =  .4*V999 + 1*F5  + 1E16;
V17 =  .3*V999 + 1*F5  + 1E17;
V18 =  -0.6*V999 + .4*F5  + 1E18;
V19 =  6*V999 + 1F3  + 1E19;
V21 =  5*V999 + 1F10  + 1E21;
V22 =  5*V999 + 1*F10  + 1E22;
V23 =  4*V999 + 1*F10  + 1E23;
V24 =  5*V999 + 1*F10  + 1E24;
V25 =  5*V999 + 1*F10  + 1E25;
V26 =  8*V999 + 1*F10  + 1E26;
F4 =  0.341*V999 -  0*F1  + 0.141*F2  + 0*F3  + 1D4;
F6 =  -0*V999 -  0.36*F5  + 1D6;
F7 =  0*V999 + 15*F4 + 0.5*F6 - 0*F8 + 0*F9 + 1.3*F10 + 1D7;
F1 = 0.8*V999 + D1;
F2 = -0.4*V999 + D2;
F3 = 0.6*V999 + D3;
F5 = -0.6*V999 + D5;
F8 = 1*V999 + D8;
F9 = 0.6*V999 + D9;
F10 = 0.4*V999 + D10;
/VARIANCES
D1 TO D10 = *;
E1 = *;
E2 = *;
```

```
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E7 = 0.00;
E8 = 0.00;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
E21 = *;
E22 = *;
E23 = *;
E24 = *;
E25 = *;
E26 = *;
/COVARIANCES
D2 , D1 = -3*;
D9 , D8 = 0*;
D10 , D9 = 0*;
D10 , D8 = 0*;
E6 , E3 = *;
E6 , E4 = *;
/END
/TITLE
GROUP 2 = DitLO with everything
/SPECIFICATIONS
 DATA='C:\MYDOCU~1\EQSDAT~1\SPLIT\DITLO\DITLOA.ESS';
 VARIABLES= 26; CASES=   83;
 METHODS=ML;
 MATRIX=RAW;
 ANAL=MOM;
/LABELS
V1=I1; V2=I2; V3=A1; V4=A2; V5=A3;
V6=A4; V7=SN1XSN2; V8=C1; V9=C2; V10=P1;
V11=P2; V12=N1; V13=N2; V14=CG1; V15=CG2;
V16=NG1; V17=NG2; V18=NG3; V19=ACH; V20=SDS;
V21=LOGTCA; V22=LOGTA; V23=LOGTCL; V24=LOGTL; V25=LOGNS;
V26=LOGAAR;
/EQUATIONS
V1 =  8.1*V999 + 1F7  + 1E1;
V2 =  -2*V999 + .079*F7  + 1E2;
V3 =  -2*V999 + 1F4  + 1E3;
V4 =  -2*V999 + 1.128*F4  + 1E4;
V5 =  -2*V999 + .7*F4  + 1E5;
V6 =  -2*V999 + 1*F4  + 1E6;
V7 =  -0.5*V999 + 1F6  + 1E7;
V8 =  22*V999 + 1F8  + 1E8;
V9 =  19*V999 + 1F9  + 1E9;
V10 =  0*V999 + 1F1  + 1E10;
```

```
V11 =  1*V999 + 1*F1  + 1E11;
V12 =  -3*V999 + 1F2  + 1E12;
V13 =  -3*V999 + .7*F2  + 1E13;
V14 =  1*V999 + 1F5  + 1E14;
V15 =  -1*V999 + .5*F5  + 1E15;
V16 =  .4*V999 + 1*F5  + 1E16;
V17 =  .3*V999 + 1*F5  + 1E17;
V18 =  -0.6*V999 + .4*F5  + 1E18;
V19 =  6*V999 + 1F3  + 1E19;
V21 =  5*V999 + 1F10  + 1E21;
V22 =  5*V999 + 1*F10  + 1E22;
V23 =  4*V999 + 1*F10  + 1E23;
V24 =  5*V999 + 1*F10  + 1E24;
V25 =  5*V999 + 1*F10  + 1E25;
V26 =  8*V999 + 1*F10  + 1E26;
F4 =  0V999 -  0*F1  + 0.141*F2  + 0*F3  + 1D4;
F6 =  0V999 -  0.36*F5  + 1D6;
F7 = 0V999 + 15*F4 + 0.5*F6 - 0*F8 + 0*F9 + 1.3*F10 + 1D7;
F1 = 0V999 + D1;
F2 = 0V999 + D2;
F3 = 0V999 + D3;
F5 = 0V999 + D5;
F8 = 0V999 + D8;
F9 = 0V999 + D9;
F10 = 0V999 + D10;
/VARIANCES
D1 TO D10 = *;
E1 = *;
E2 = *;
E3 = *;
E4 = *;
E5 = *;
E6 = *;
E7 = 0.00;
E8 = 0.00;
E9 = 0.00;
E10 = *;
E11 = *;
E12 = *;
E13 = *;
E14 = *;
E15 = *;
E16 = *;
E17 = *;
E18 = *;
E19 = 0.00;
E21 = *;
E22 = *;
E23 = *;
E24 = *;
E25 = *;
E26 = *;
/COVARIANCES
D2 , D1 = -3*;
D9 , D8 = 0*;
D10 , D9 = 0*;
D10 , D8 = 0*;
```

```
E6 , E3 = *;
E6 , E4 = *;
/CONSTRAINTS
(1,V2,F7)=(2,V2,F7);
(1,V4,F4)=(2,V4,F4);
(1,V5,F4)=(2,V5,F4);
(1,V6,F4)=(2,V6,F4);
(1,V11,F1)=(2,V11,F1);
(1,V13,F2)=(2,V13,F2);
(1,V15,F5)=(2,V15,F5);
(1,V16,F5)=(2,V16,F5);
(1,V17,F5)=(2,V17,F5);
(1,V18,F5)=(2,V18,F5);
(1,V22,F10)=(2,V22,F10);
(1,V23,F10)=(2,V23,F10);
(1,V24,F10)=(2,V24,F10);
(1,V25,F10)=(2,V25,F10);
(1,V26,F10)=(2,V26,F10);
(1,F4,F1)=(2,F4,F1);
(1,F4,F2)=(2,F4,F2);
(1,F4,F3)=(2,F4,F3);
(1,F6,F5)=(2,F6,F5);
(1,F7,F8)=(2,F7,F8);
(1,F7,F9)=(2,F7,F9);
(1,F7,F10)=(2,F7,F10);
(1,V1,V999)=(2,V1,V999);
(1,V2,V999)=(2,V2,V999);
(1,V3,V999)=(2,V3,V999);
(1,V4,V999)=(2,V4,V999);
(1,V5,V999)=(2,V5,V999);
(1,V6,V999)=(2,V6,V999);
(1,V7,V999)=(2,V7,V999);
(1,V8,V999)=(2,V8,V999);
(1,V9,V999)=(2,V9,V999);
(1,V10,V999)=(2,V10,V999);
(1,V11,V999)=(2,V11,V999);
(1,V12,V999)=(2,V12,V999);
(1,V13,V999)=(2,V13,V999);
(1,V14,V999)=(2,V14,V999);
(1,V15,V999)=(2,V15,V999);
(1,V16,V999)=(2,V16,V999);
(1,V17,V999)=(2,V17,V999);
(1,V18,V999)=(2,V18,V999);
(1,V19,V999)=(2,V19,V999);
(1,V21,V999)=(2,V21,V999);
(1,V22,V999)=(2,V22,V999);
(1,V23,V999)=(2,V23,V999);
(1,V24,V999)=(2,V24,V999);
(1,V25,V999)=(2,V25,V999);
(1,V26,V999)=(2,V26,V999);
/TECHNICAL
ITERATION=100;
/LMTEST
/PRINT
FIT=ALL;
/END
```

# APPENDIX C

**Dictionary of Terms**

Variable names and definition

I1, I2 – measured variables for the Intention factor.

A1, A2, A3, A4 – measured variables for the Attitude factor.

SN1, SN2 – measured variables for Subjective Norm factor.

SN1xSN2 – measurement variable for Subjective Norm factor, obtained by multiplying SN1 with SN2.

C1, C2 – measured variables for Compensation Structure factor.

P1.1, P2.1 – belief the behavior will lead to positive outcome i; there are two different outcomes for each scenario.

P1.2, P2.2 – evaluation of positive outcome i.

P1, P2 – measured variables for Positive Belief Evaluation factor. P1 is obtained by multiplying P1.1 by P1.2, and P2 is obtained by multiplying P2.1 by P2.2.

N1.1, N1.2 - belief the behavior will lead to negative outcome i; there are two different outcomes for each scenario.

N1.2, N2.2 – evaluation of negative outcome i.

N1, N2 – measured variables for Negative Belief Evaluation factor. N1 is obtained by multiplying N1.1 by N1.2, and N2 is obtained by multiplying N2.1 by N2.2.

CG1.1, CG1.2– measure normative beliefs about what coworkers think about the behavior to report fraudulently on the financial statements; there are two referents in this group for each scenario.

CG1.2, CG2.2 – motivation to comply with each referent i.

CG1, CG2 – measured variables for Coworkers Group factor. Each CGi is obtained by multiplying CGi.1 by CGi.2.

NG1.1, NG1.2, NG1.3– measure normative beliefs about what non-coworkers think about the behavior to report fraudulently on the financial statements; there are three referents in this group for each scenario.

NG1.2, NG2.2, NG3.2 – motivation to comply with each referent i.

NG1, NG2, NG3 – measured variables for Non-coworkers Group factor. Each NGi is obtained by multiplying NGi.1 by NGi.2.

ACH – need for achievement scores.

SM – self-monitoring scores.

DIT – defining issues test scores.

SDS – social desirability scale scores.

# VITA

Nancy Uddin

| | |
|---|---|
| 1967 | Born February 16 in Detroit, Michigan. |
| 1985 | Graduated from Saint Francis Xavier's Greenherald School, Dhaka, Bangladesh. |
| 1985-89 | Attended William Paterson University, Wayne, New Jersey; majored in Accounting. |
| 1989 | B.A., William Paterson University. |
| 1989-91 | Employed as an accountant by Henne, Nardi, Peche & Co., Totowa, New Jersey. |
| 1991-2000 | Graduate work in Accounting, Rutgers University, Newark, New Jersey. |
| 1991 | Research Assistant, KPMG Peat Marwick, New York, New York. |
| 1991-92 | Teaching Assistantship, Department of Accounting, Rutgers University. |
| 1997-98 | Instructor, Department of Accounting, Rutgers University. |
| 1998-99 | Teaching Assistantship, Department of Accounting, Rutgers University. |
| 1999 | Assistant Professor, Monmouth University, West Long Branch, New Jersey. |
| 2000 | Ph.D. in Management, Accounting concentration. |